BULGARIA

2026 CITY DATA INSIGHTS

LANCET COUNTDOWN: HEALTH AND CLIMATE CHANGE IN EUROPE

The 2026 Europe Cities Report of the Lancet Countdown presents a systematic, policy-relevant set of climate change and health indicators for European cities. This document highlights key Bulgaria-specific city-level findings.

As the world's fastest-warming continent, Europe faces an escalating public health crisis. Cities sit on the front line of this threat, with dense populations, heat-trapping infrastructure and limited cooling due to inadequate green space. All of this multiplies the dangers from climate-related heatwaves, floods, droughts and wildfires. These environmental hazards directly harm human health and disproportionately affect the most vulnerable, including children, older adults, outdoor workers and low-income communities. Cities also offer substantial opportunities for effective climate action.

In 2023, about half of Bulgaria's population (3.2 million out of 6.4 million people) lived in 18 cities, according to the Urban Audit definition. Around 41% of the urban population lived in Sofia, the capital and largest city, while 37.5% lived in 15 small and medium-sized cities. This high population density exacerbates the health risks of climate change for urban populations. Among Bulgaria's urban population, 612,800 (19%) were aged over 65 and 500,800 (16%) were children under 15, meaning over a third are at higher risk from climate change.

Heat and Health

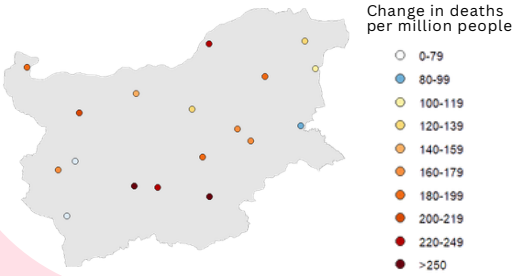
Urban populations are increasingly exposed to extreme heat, contributing to rising heat-related illness and mortality, and undermining livelihoods and wellbeing.

Heat-related mortality

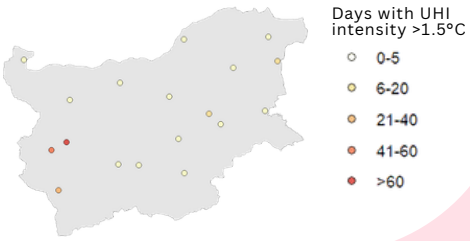
Across Bulgarian cities, average annual heat-related deaths increased by 132.7 per million between 2015 and 2024, compared with 1991 to 2000 (indicator 1.1.2).

Haskovo recorded the largest increase in average annual heat-related deaths per million people (697%), rising from 39 per million in 1991–2000 to 311 in 2015–2024 (indicator 1.1.2).

Change in heat-related mortality rate between 1991–2000 and 2015–24, expressed as the number of annual deaths per million people.



Average number of days with UHI>1.5°C between 2003-2020 across cities in Bulgaria.



Heat exposure in cities

Most cities trap heat, creating an "urban heat island" (UHI) effect that makes urban areas significantly hotter than nearby rural areas. As climate change raises global temperatures and intensifies heatwaves, the UHI effect worsens health risks, driving increases in a range of heat-related health impacts, including heat exhaustion, cardiovascular strain and mortality, particularly among vulnerable populations.

For example, between 2003 and 2020, Sofia recorded more than 300 days on which urban temperatures exceeded those of surrounding rural areas by more than 1.5°C. This averaged 109 days per summer, roughly nine times the Bulgarian urban average of 12.5 days (indicator 1.1.1).

Sustainable urban cooling

To safeguard public health and prevent heat-related deaths, cities must adapt to extreme heat. Expanding tree cover offers a practical and effective means of cooling urban environments and building community resilience.

Urban tree cover

To support urban cooling, reduce air pollution and protect public health, the UN Economic Commission for Europe recommends that cities maintain at least 30% tree cover.

Bulgarian cities had an average tree cover of 17,200 hectares in 2020, equivalent to 22% of total urban land area. Around 39% of cities had tree cover of 30% or more in 2020 (indicator 2.2.4).

Sliven had the largest tree cover by area (54,500 hectares, or 39.9% of total area), while Plovdiv had the smallest (141 hectares, 1.4%). Haskovo recorded the largest percentage increase since 2000 (5.6%), from 10,800 to 11,400 hectares (indicator 2.2.4).

Heat-reflecting surfaces

Darker, heat-absorbing materials contribute to rising urban temperatures. Replacing them with lighter, reflective or natural materials can help to lower land surface temperatures, for example by replacing concrete with soil or vegetation. In Bulgaria, however, the increase in such surfaces has been minimal, leaving considerable scope to expand their use for urban cooling (indicator 2.2.2).

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Sustainable and Healthy Transport

Active travel and public transport

Active and healthy transport, such as walking and cycling, and the use of public transport support urban decarbonisation and improve air quality by reducing vehicle emissions. It also builds daily physical activity into everyday journeys, significantly lowering the risk of chronic disease and improving mental health and wellbeing.

The Sustainable Transport Score measures how easily residents can walk, cycle or use public transport in a city, with 7 out of 10 considered a good score. In 2022, Bulgarian cities fell short, with an average score of 4.6 out of 10. On average, the cities had 21% of their total area within 250 metres of at least one public transport stop and 28.7% of pathways supported walking, while dedicated cycling infrastructure covered only 4.5% of roads (indicator 3.3.1)..

In 2022, Plovdiv achieved the highest overall score (4.1/10). Across individual indicators, top and bottom-performing cities included (indicator 3.3.1):

- Walking: Sofia was the most walkable, with 44.1% of roads being pedestrian-friendly; Shumen the least, at 21%.
- Cycling: Burgas offered the best cycling access, with 16.1% of roads having cycle lanes. Eight of Bulgaria's 18 cities - Shumen, Sliven, Vidin, Blagoevgrad, Pazardzhik, Vratsa, Yambol and Veliko Tarnovo - recorded no meaningful cycling infrastructure (0/10).
- Public Transport: Sofia led, with 40% of its area within 250 metres of a public transport stop; Pazardzhik had just 1%.

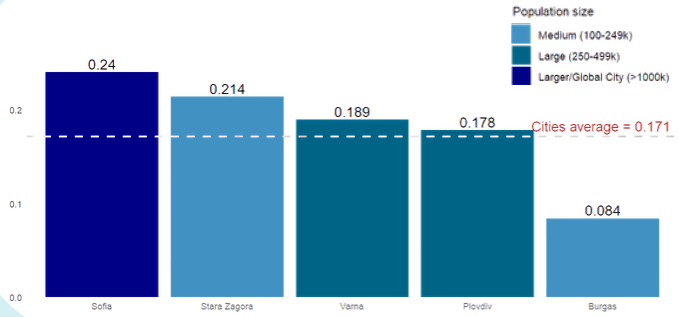
Heat-resilient cycling infrastructure

Climate change is bringing increasingly frequent and prolonged periods of extreme heat to cities, limiting when people can safely walk or cycle outdoors. Building heat-resilient pedestrian and cycling infrastructure, particularly through natural tree shading, is becoming vital to protect urban residents and keep communities moving safely.

In Bulgaria, 16% of cycling paths and shared cycling and pedestrian paths were shaded by tree cover between 2018 and 2020 (indicator 2.2.5).

Of the Bulgarian cities exposed to moderate to high heat stress, Sofia had the highest proportion of shaded infrastructure, at 24% (indicator 2.2.5).

Proportion of shaded cycling infrastructure in cities in Bulgaria



Energy, Air Pollution and Health

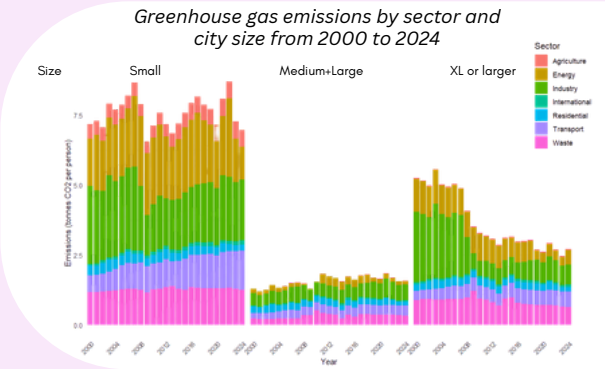
Fossil fuel combustion is a primary driver of rapid global heating and of fine particulate pollution ($PM_{2.5}$), both of which pose severe risks to human health. Decarbonising energy systems by switching to clean, renewable energy removes fossil fuel-related pollutants and greenhouse gas emissions at source, significantly reducing the risk of $PM_{2.5}$-attributable early deaths and chronic illness.

Sectoral sources of greenhouse gas emissions

Between 2000 and 2024, greenhouse gas emissions per person across Bulgarian cities declined by 20%, with the largest reduction in the energy sector (44%) (indicator 3.1.1). These reductions are possibly linked to the 2008–2009 economic crisis, followed by a wider transition to cleaner energy supported by EU environmental standards.

Within the energy sector, Haskovo recorded the greatest reduction in average emissions per person between 2000 and 2024 (81.5%), followed by Yambol (81.3%) and Vratsa (77.4%) (indicator 3.1.1).

Greenhouse gas emissions by sector and city size from 2000 to 2024



$PM_{2.5}$ attributable mortality

Renewable energy expansion has likely contributed to major public health co-benefits across Bulgaria. Between 2000 and 2023, $PM_{2.5}$ mortality attributable to power generation declined by 67.5%, alongside an overall 27.2% decline in premature deaths attributable to $PM_{2.5}$ from dirty fuel use across sectors in Bulgarian cities (indicator 3.2.1).

In 2023, Sofia recorded 153 premature deaths per 100,000 people attributable to $PM_{2.5}$ from dirty fuels, with transport being the leading sectoral contributor at 33% (indicator 3.2.1).

Between 2000 and 2023, Sofia recorded Bulgaria's largest fall in $PM_{2.5}$-attributable mortality, with the rate dropping by 58% (211 fewer deaths per 100,000 people). Sofia also saw the country's largest reduction in mortality attributable to the household sector, again 58%, driven mainly by declining solid fuel combustion (indicator 3.2.1).

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The Lancet Countdown Europe is a regional research collaboration providing an overview of the relationship between public health and climate change, the region's response to climate change, and the health benefits that emerge from this transition. The Lancet Countdown was established in partnership with Wellcome.

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