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POLICY PAPER

Air Quality in Georgia: Need for Urgent Policy Solutions

JANUARY 2023

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INTRODUCTION

Pollution is an existential threat to modern society, one which endangers both human and planetary health. It includes contaminating the air with ozone, sulfur, nitrogen-containing nitrous oxides, and delicate particulate matter (PM2.5). Reduction of air pollution is a key aspect of Green Growth,¹ which, together with attaining the goals of the Paris Agreement, could save around a million lives a year worldwide by 2050 (Rijsberman, 2019). According to the Lancet Commission on Pollution and Health, air pollution was the world's most significant environmental risk factor for disease and premature death in 2019 – responsible for around 9 million premature deaths (Fuller et al., 2022). With 6.7 million fatalities, air pollution (including home and ambient air pollution) continues to be the leading cause of mortality among the distinct forms of pollution. International literature discusses the striking effects of air pollution on health and the diseases it causes. For example, evidence reveals that people who were exposed to black smoke (living in urban areas) for 8-9 years were associated with greater mortality from cardiovascular and respiratory diseases (Beverland et al., 2012); furthermore, long-term (12-year observation) exposure to ambient air pollution is associated with cardiovascular and cerebrovascular diseases (Zhang et al., 2011). Finally, long-term exposure to ambient air pollution is even a risk factor for mental health disorders, ranging from subjective stress to suicide ideation (Shin, Park, & Choi, 2018).

THE CASE OF GEORGIA

According to the World Health Organisation (WHO) database, in just 2019 5,220 people were estimated to have died due to air pollution in Georgia. In other words, according to such estimates, there are 130.6 ambient air pollution-related fatalities per 100,000 Georgians annually – a significantly higher number than most western European countries, and even higher than Armenia and Azerbaijan in the region (Figure 1).

¹ Green growth entails the fostering of economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. It catalyses investment and innovation, which will underpin sustained growth and give rise to new economic opportunities (OECD).

Figure 1. Ambient air pollution attributable death rate (per 100,000 population), 2019

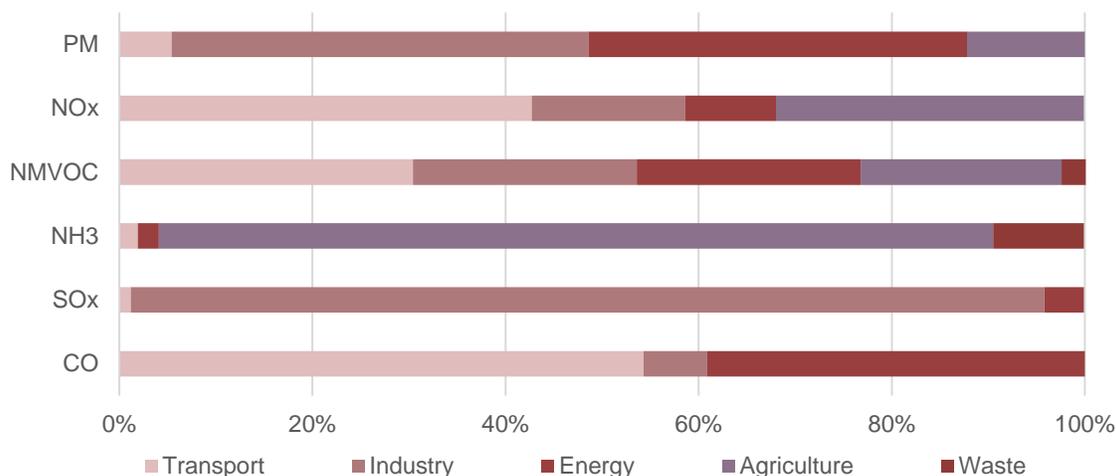


Source: WHO database

AIR POLLUTION – COUNTRY OUTLOOK

According to the Centre on Emission Inventories and Projections (EMEP), around 82% of Georgia’s total particulate matter (PM) emissions derive from the industry and energy sectors (mainly wood consumption for heating) (Figure 2). Agriculture was responsible for emitting 86% of ammonia, industry caused 95% sulfur oxide emissions, while 93% of carbon monoxide emissions came from the transportation and energy sectors. Thus, policymakers should pay special attention to these notable sectors.

Figure 2. The share of economic sectors in the total emission of pollutants into the air in Georgia, 2019



Source: Ambient Air Quality, 2021

Compared to other European countries, Georgia has significantly worse indoor and outdoor air pollution (World Bank, 2020). On a yearly average, particulate matter concentrations are greater than those deemed safe for human health. Respiratory diseases associated with air pollution are also increasing in urban areas because of emissions in cities. As for people in rural areas, they still use polluting fuels for cooking and heating within their homes. Such inefficient cooking methods employ fuels and equipment that contribute significantly to indoor air pollution. For instance, in poorly ventilated homes, indoor smoke can have a PM content that is 100 times more than the tolerable threshold for fine particles (World Bank, 2020). Women, children, and the elderly, who spend most of their time indoors, are particularly exposed.

AIR POLLUTION IN TBILISI

Economic growth and rising income levels are likely to urge people in rural areas to transfer to safer fuels for cooking and heating, and to improve indoor air quality. Nevertheless, the problem of outdoor air pollution cannot be self-correcting, at least in the short term. Rather immediate increases in economic activity and rising car ownership are expected to cause greater air pollution in Georgian cities until the trend reverses.² Looking at the growth dynamics of the number of

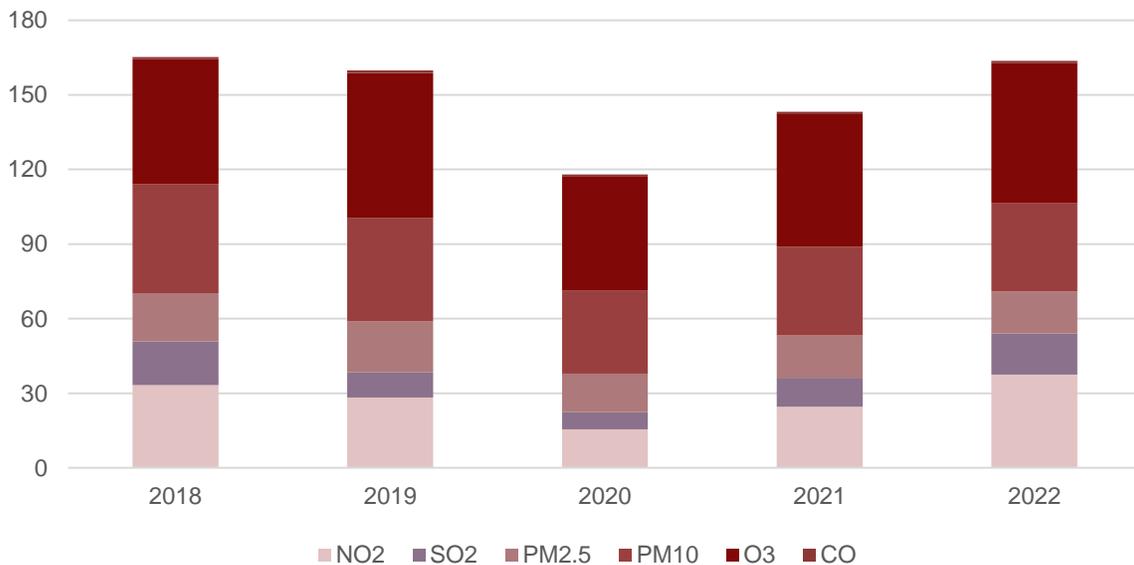
² The environmental Kuznets curve hypothesis suggests that environmental pollution increases at the beginning of economic growth. However, economic growth allows environmental remediation when it passes a certain income level.

vehicles in Georgia, the trend is linear and upward-sloping: car ownership has been constantly increasing, by approximately 70,000-80,000 units per year.³ Notably, data from Geostat also highlights that only 7% of the vehicles owned in 2021 were hybrid or electric (significantly, the growth rate of the share of hybrid/electric vehicles in the total is decreasing).

As another contributing factor, the Georgian population is distributed unevenly, with most people living in the capital (approximately 60% in 2022, according to Geostat data). Notably, around one-third of all vehicles are owned by the population of Tbilisi.

Pollution from vehicles is not the only source of air pollution in Tbilisi. The industry sector also egregiously contributes to total emissions throughout the city.⁴ Tbilisi typically dominates most economic and non-economic parameters among the cities of Georgia, thus, the fact that it is the most polluted city in Georgia hardly comes as a surprise. The data on air pollutants in Tbilisi shows that pollution has increased continuously over the last three years (Figure 3). In 2020, there was a significant drop because of Covid-19; with lower traffic and limited operation of factories there were reduced emission levels in that period. Nevertheless, one cannot claim that there is a significant downward trend.

Figure 3. Air pollutants in Tbilisi by years, mg/m3



Source: Authors' calculations based on Air Quality Portal data

³ Info.police.ge

⁴ Metallurgical industries, mineral industries, toxic waste management, chemical industries, food industries, storage and distribution of oil and oil products, etc. Source: <https://air.gov.ge/>

POLICIES IN PLACE

The Government of Georgia has actively been working to improve air quality control in Georgia. The policies implemented in recent years include regulating the emission of hazardous substances from the industry, transportation, and construction sectors, a focus on urban planning, and promoting green spaces in urban areas.

The regulation of **industry-released** emissions includes instructions regarding the control of potential accidents at industrial sites and the procedures firms must go through during accidents to minimize the emission of hazardous into the atmosphere.⁵ In July 2018, the Government of Georgia introduced the air quality standard, which determines the target levels for different atmospheric substances. The ordinance also identifies that information on air quality should be publicly available in the form of an annual report. Moreover, information about the concentration of pollutants in the air should be updated, at least daily, and if possible, in some regions, even hourly.⁶

Multiple steps were also introduced to reduce **vehicle-induced** emissions. The first step towards reducing such emissions was the fuel quality control mechanism. Within this mechanism, the sulfuric content in petrol and diesel decreased by 25 times and 6 times, respectively (from 2012 to 2017 and from 2012 to 2019, respectively). Since 2017, Georgia has used Euro 5 standard petrol. Furthermore, in 2018 there was no trace of lead detected in numerous gasoline samples.⁷ Since 2016, the policy has also tried incentivizing consumers to switch to modern electric or hybrid vehicles. Namely, the excise tax on hybrid cars less than six years old more than halved, while the same tax on old fuel-combustion vehicles doubled or even tripled (depending on the car's age). The tariff on the import of electric vehicles was also reduced to zero. As a result, the import of hybrid cars increased by 20 times in 2018 compared to 2015. Furthermore, in 2017, the excise tax on petrol imports doubled, and diesel almost tripled. Consequently, petrol and diesel fuel consumption reduced by 10% in 2017.⁸ Finally, in 2018, a modern, effective, and mandatory periodic roadworthiness testing system for all categories of vehicles was introduced and implemented to reduce hazardous emissions from older vehicles.

⁵ <https://matsne.gov.ge/ka/document/view/1119518?publication=0>

⁶ <https://matsne.gov.ge/ka/document/view/4277611?publication=0>

⁷ https://air.gov.ge/en/pages/4/6?news_event_id=1

⁸ Air Quality Portal.

POLICY CHALLENGES AND THE NEED FOR URGENT SOLUTIONS

Despite various policies, including air quality plans in several big cities, the country still needs to reach its targeted pollution levels, which necessitates additional policy measures. From simple anecdotal evidence, it becomes clear that the technical inspection enforcement mechanism still needs to be revised.

Furthermore, as highlighted, the share of electric and hybrid cars in the total fleet is still negligible, while the trend for car ownership keeps increasing. Therefore, urban transport policies and practices play a critical role in incentivizing the reverse of increasing car ownership and helping switch to municipal transport.

Alongside car ownership, the booming construction sector has also been replacing green spaces, contributing to increasing dust levels in the atmosphere.⁹ Moreover, the Russian invasion of Ukraine in part redirected the Asian trade route to Georgia, thus increasing road traffic and the emissions from diesel-fuelled trucks (Leijen, 2022).

Thus, first and foremost, technical inspections must be adequately enforced, and the rules should become more stringent. At the same time, the necessary infrastructure for electric vehicles should be implemented, in a timely manner, to incentivize their use. Furthermore, policymakers should pay special attention to the development of green public transport to decrease the popularity of private car ownership and reduce traffic jam-induced air pollution.

Besides which, residential buildings should not substitute green spaces, instead they should be widely incorporated into their construction. Furthermore, policymakers should impose, and follow, more stringent regulations for construction-induced air pollution and ensure the provision of more green spaces for citizens.

Additionally, if road transit increases throughout the country, the authorities should demand either air pollution filters for cars or install emission absorbers across highways.

Beyond these factors, it is essential to increase awareness among people about the severity of the topic. This would encourage them to take social responsibility for air pollution and require policymakers to press for more radical policy changes.

⁹ Residential Real Estate in Tbilisi, 2022.

Finally, it is of utmost importance that the country develops a green growth strategy that incorporates air quality issues and helps Georgia comply with the European standards of living, thereby creating a safe environment for future generations.

CONCLUSION

International and local research has demonstrated how air pollution can impact human health drastically. Furthermore, a preliminary analysis has shown that the number of Georgian policies to combat air pollution and avoid pollution-induced diseases and fatalities are insufficient to reverse negative trends. Notably, economic growth, without considering the green growth agenda, would in fact worsen the situation. Therefore, preventive measures, both societally and from policymakers, should be taken simultaneously to avoid fatal consequences.

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