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DISCUSSION BRIEF

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Air pollution in Bosnia and Herzegovina: a gender equality, social equity and poverty reduction lens

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Key messages

- In Bosnia and Herzegovina (BiH), like in the rest of Europe, groups in socially or economically deprived situations are more likely to be exposed to higher levels of air pollution.
- In BiH, the elderly, persons with disabilities, the unemployed, persons with health issues and single-headed households (especially the female single-headed ones) are more likely to experience energy poverty than the rest of the population.
- Poverty contributes to air pollution, as poor households are more likely to use cheap and highly polluting fuels for domestic purposes and to run older, highly polluting cars.
- Addressing the structural drivers of social inequity and poverty is key to mitigating the harmful impacts of air pollution.
- Other policy responses include collecting disaggregated data on air pollution exposure and energy poverty to inform policy, improving energy efficiency in buildings (especially in social housing, hospitals and schools), improving the quality and accessibility of public transport, enhancing the housing conditions of poor households, and implementing awareness campaigns that focus on helping the most vulnerable groups in society.

Introduction

Gender inequality and social inequity – understood in terms of access to and control over assets, participation in decision making, and knowledge, which are all dimensions of poverty[1] – are deeply intertwined with environmental change (SEI, 2019). Socio-economic and political factors – such as education, income, political influence, access to legal resources, access to health care and adequate housing – affect people's exposure and vulnerability to environmental problems, with socially disadvantaged[2] groups being disproportionally affected (European Environment Agency, 2018; WHO, 2019). At the same time, solutions to environmental change are not socially

1 In this brief we rely on a multidimensional definition of poverty, which goes beyond income poverty and refers to the lack of resources, power, voice, opportunities and choice, and human security (Sida, 2017).

2 "Social disadvantage relates to socio-economic aspects – such as income, employment, education and socio-economic status – to sociocultural aspects such as gender, ethnicity, religion, culture, migrant status and social capital; to socio-geographical aspects such as living in a deprived neighbourhood; and to age. SDG [socially disadvantaged groups] may actually be affected by more than one of these dimensions." (WHO Regional Office for Europe 2013, p. 2).

Photo: Jasmin Agovic

neutral; they may benefit or disadvantage particular groups in society in different ways (Mackie & Haščič, 2018). Moreover, reducing poverty and strengthening social equity and gender equality can contribute to better environmental outcomes (UNDP, 2010; UNEP, 2017). Thus, it is essential to incorporate gender equality, social equity and poverty considerations into environmental policy and vice versa.

This discussion brief examines the relationships between air pollution, gender inequality, social inequity and poverty in Bosnia and Herzegovina (BiH).[3,4] It summarises the findings from a review of secondary literature and publicly available databases on environment, health, natural resources, gender equality, social equity and poverty in BiH. A broader introduction to the interlinkages between gender equality, social equity, poverty and environmental issues in BiH is available in the SEI policy report "Strengthening environmental policy in BiH with a gender equality, social equity, and poverty reduction approach" (Strambo et al., forthcoming).

3 The discussion brief is based on secondary sources, mainly grey literature (i.e., materials published by well-known organizations, such as organizations within the United Nations system, outside peer-reviewed academic journals. The analysis is limited by significant constraints, such as the lack of recent data on the state of the environment and environmental health impacts in BiH, and the fragmentation of relevant information across multiple sources. Therefore, it does not pretend to be exhaustive. It rather aims to highlight some of the main ways in which air pollution and gender equality, social equity and poverty are linked in the BiH context. Available information does not allow for a differentiated analysis at entity/district level.

4 BiH consists s of two entities: the Federation of Bosnia and Herzegovina, which itself is composed of 10 cantons, and the Republic of Srpska. The BiH Constitution also established the Brčko District, which falls under the responsibility of the institutions of Bosnia and Herzegovina and whose territory is jointly owned by the two entities.

Identity and generalisation

It is important to recognize that men, women, persons with disabilities, the poor, the elderly, children, or Roma people do not have one-dimensional identities. They have multiple, fluid identities that intersect with each other. For example, a woman may be elderly or young, poor or affluent, Roma or non-Roma. Therefore, to avoid generalisations, one needs to account for these multiple, intersecting identities. Unfortunately, available information on the interactions between gender equality, social equity and poverty and environmental challenges in BiH does not allow for such a detailed assessment. The analysis compiled below, then, uses some generalisations, which further studies could help nuance.

´This brief proceeds in three parts. First, the brief concisely outlines the air pollution challenges in BiH. It then explains how and why gender inequality, social inequity and poverty contributes to air pollution in BiH and vice versa. Particular attention is given to the population subgroups that are especially vulnerable to the impacts of air pollution. Finally, the brief explores how policy measures can best address gender inequality, social inequity, poverty and air pollution challenges concomitantly.

Woman with face mask in polluted area. Photo: Ubanzon/Gettyimages

Air pollution in BiH

Air pollution constitutes the biggest environmental health risk in Europe (European Court of Auditors, 2018). Groups in socially or economically deprived situations are more likely to be exposed to higher levels of air pollution (WHO, 2019). People who are unemployed, on a low income or who have a lower level of education tend to be more negatively affected by air pollution and other environmental health hazards, not only because of greater exposure, but also due to higher vulnerability (European Environment Agency, 2018).

In BiH, the levels of air pollution are often considerably over the World Health Organisation (WHO) air quality guideline values, as well as the European Union (EU) and domestic air quality standards (European Environment Agency, 2020a; World Bank, 2019).[5] This means BiH has one of the highest average mortality rates[6] from air pollution in the world (European Commission, 2019). Air pollution is associated with significant health concerns, especially cardiovascular, respiratory and lung diseases, as well as impacts on the nervous system and cancer (European Environment Agency, 2020b; UNECE, 2018; UNEP, 2013). In 2016, exposure to ambient air pollution from fine particulate matter (PM2.5)[7] in BiH caused the premature deaths of approximately 3,300 people and cost the equivalent of between 5.9–10.5% of gross domestic product (GDP) (Awe et al., 2019).

Emissions from household heating by using firewood and coal, as well as those from industrial activities and vehicles, generate severe air pollution, especially during the winter months, often exceeding the WHO Air Quality Guidelines and less stringent EU Air Quality Standards (UNECE, 2018). Private cars in BiH are around 17 years old on average, which means that they do not comply with modern standards regarding harmful gas emissions (UNECE, 2018). The residential sector's energy and heating requirements means that it is a significant source of air pollution because of its high level of inefficiency and use of polluting materials for heating (Sustainable Development Goals Fund, 2017). While some publicly owned buildings (such as schools, administrative buildings and hospitals) have been improved with international donors' financial and technical assistance (Sustainable Development Goals Fund, 2017), residential buildings have, so far, received less attention within existing mechanisms. Low-income households find it difficult to allocate the financial resources needed to improve energy efficiency and the transition to cleaner technologies and energy sources (UNECE, 2018).

Interactions between gender inequality, social equity, poverty and air pollution

Poverty contributes to air pollution as poor households are more likely to use cheap and highly polluting fuels for domestic purposes. Only 63% of the population in BiH had access to clean cooking technologies in 2016 (World Bank, 2020). The use of firewood for heating purposes prevails in the country, especially among economically disadvantaged households (UNEP, 2013) and in rural areas (Robić & et al., 2016). The gendered division of labour in BiH (World Bank et al., 2015), whereby women tend to work more with reproductive tasks in the household, means women are likely to be more exposed to indoor air pollution than men.

The WHO finds that "energy poverty presents some of the largest environmental inequalities across a range of cohort types including rural/urban areas, ethnicity and – most especially – income groups" in Eastern European countries (WHO, 2019). Key drivers of energy poverty include energy prices[8], falling household income and home energy inefficiency (Stoerring, 2017). In BiH, the elderly, persons with disabilities, the unemployed, persons with health issues and single-headed households (especially the female single-headed ones) are more likely to be energy poor than the rest of the population. This is because of their low income and/or their energy needs; for instance, they might spend more time at home (Agić et al., 2017). Poverty can also worsen the negative health impacts of air pollution by limiting access to information and health care resources (World Bank, 2019).

In BiH, the use of solid fuels – which are dirtier than other energy sources – is higher among Roma households (92%) than in non-Roma households (70%) (UNICEF, 2014). The availability of services such as electricity and sanitation depend on the legal registration of residential buildings with permits. This contributes to low access to these services for Roma people, many of whom live in informal settlements

5 The WHO Air Quality Guidelines set the minimum level for PM10 and PM2.5 annual mean to 20 and 10 µg/m3 respectively. The EU annual limit values are set at 40 µg/m3 for PM10 and 25 µg/m3 for PM2.5, while air quality standards in BiH are set at an annual mean of 40 µg/m3 for PM10 and 20 µg/m3 for PM2.5 in both FBiH and RS. In 2018, the annual mean for the BiH was over 50 µg/m3 for PM10 and over 40 µg/m3 for PM2.5 (European Environment Agency, 2020a).

6 The WHO reported 223.6 deaths per 100,000 due to air pollution in 2012 (WHO, 2016)

7 Particulate matters, which constitute a type of air pollutant, are "are inhalable and respirable particles composed of sulphate, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water" (WHO, 2021). Particles with a diameter of less than 10 microns (PM10), including fine particles less than 2.5 microns (PM2.5) are the most dangerous to people's health, as "they are capable of penetrating peoples' lungs and entering their bloodstream" (WHO, 2021).

8 In post-socialist countries – like BiH – energy poverty has been linked to price increases associated with the liberalization of national energy markets (Bouzarovski & Herrero, 2017).

Haze of polluted air over Sarajevo, capital of BiH. Photo: Jasmin Agovic

(OSCE's Office for Democratic Institutions and Human Rights, 2014). Wealthier and more educated Roma households are more likely to use electricity for cooking than less wealthy and educated Roma households (Bernat, 2015).

Due to the use of solid fuels as a domestic energy source and settlement characteristics, income-poor households are more likely to be exposed to air pollution (World Bank, 2019). Roma people and people living in refugee camps also appear to be especially exposed as air pollution is often a persistent issue in poor-quality housing and temporary settlements (Nikoloski & Marnie, 2018; World Bank, 2019).

Moreover, the income-poor are more likely to drive older, high-emission vehicles (World Bank, 2019) and settle in areas that are unfit for inhabitations (UN in Bosnia and Herzegovina, 2017), where centralised heating is not available. Because they often do not meet building standards, informal constructions also tend to increase heating needs, which are often met with coal. This results in a large amount of polluting emissions (Husika & Suljić, 2019).

Certain disadvantaged groups are particularly at risk from the impacts of air pollution. These groups include people with pre-existing lung and heart disease or diabetes, as well as the elderly, pregnant women and children (European Environment Agency, 2020b). Both physiological and socio-economic factors related to people's behaviours and activities contribute to increased vulnerability to air pollution's negative impacts (Makri & Stilianakis, 2008). In Europe, "people of lower socio-economic status tend to live, work and go to school in places with worse air quality" (European Environment Agency, 2020b).

In BiH, most air pollution related deaths occur in people aged 50 and older, mostly through cardiovascular diseases (Awe et al., 2019). The Association of Specialists in Public Health of the Federation of Bosnia and Herzegovina highlights that children, pregnant women, the elderly and the poor are especially sensitive to the effects of polluted air (Association of Specialists in Public Health of the Federation of Bosnia and Herzegovina, 2020). The 2020 Situation Analysis of Children in BiH identifies air pollution as a threat to children's right to health (UNICEF, 2020). Moreover, measures to cope with air pollution may have undesirable consequences for children. For instance, in Sarajevo, prolonged school closures have been implemented in response to the excess of safe limits of particulate matter (UNICEF, 2017). This has affected children's education, and the prevailing gendered-biased distribution of care responsibilities have had a negative impact on women's working hours and labour opportunities in BiH (see Montt 2018).

Policy considerations

There is little data available on the impacts of air pollution on human health in BiH. The 2012 State of the Environment Report suggests incorporating this data segment into the jurisdiction of the public health institutes in the two entities (UNEP, 2013). Data on air pollution exposure disaggregated by income, sex, age and location would enable identification of the most exposed groups and help policy makers develop suitable mitigation actions. The World Bank,

for instance, recommends improving the collection and reporting of morbidity data based on disease type and age group (Awe et al., 2019). Instituting appropriate metrics to assess and monitor energy poverty, including collecting disaggregated data on cooking and heating fuel use, would contribute to better informed and more effective policy making (WHO, 2019).

In addition to the urgent and essential need to address the structural inequity underlying differentiated vulnerability and exposure (Islam & Winkel, 2015; UNDP, 2019), there are also various measures that would help reduce air pollution related inequalities. The UN in BiH and the WHO recommend measures with multiple benefits (e.g., poverty reduction and increased well-being). These include improving energy efficiency in buildings (especially in social housing), and improving the quality and accessibility of public transport, which also contributes to climate mitigation and enables faster commutes (UN in Bosnia and Herzegovina, 2017; WHO, 2019). Enhancing the housing conditions of poor households, including Roma households, could help reduce air pollution and its negative health impacts (Nikoloski & Marnie, 2018). Improving air quality in schools can also bring about significant health benefits for children (European Environment Agency, 2020b).

Measures to increase the population's awareness of the risks associated with exposure to air pollution can also incorporate elements that help especially vulnerable groups. From a planning perspective, the WHO highlights the need to define short-term action plans for areas where disadvantaged people tend to live or spend their time (WHO, 2019). It is important to include the views of such groups in the development of these plans.

Regarding energy poverty, the WHO recommends strong social security protections, such as social tariffs or energy bill protection measures, to guarantee that energy costs are met (WHO, 2019). However, in BiH, the fiscal situation makes it difficult to implement new measures that can be financed by public funds (Robić & et al., 2016). Other possible measures include prioritizing those who suffer from energy poverty in retrofitting programs and encouraging local governments to reallocate resources towards increasing energy efficiency – instead of subventions (Agić et al., 2017). There are already some examples of this approach in Canton Sarajevo, where the government, in cooperation with the United Nations Development Programme (UNDP), has subsidised the replacement of old inefficient stoves with certified stoves in households (UNDP, 2021).

Air quality policies such as imposing new vehicle standards, may also affect disadvantaged people disproportionally. A poverty and social impact analysis of air quality policy could help identify such distributional impacts and guide the design of accompanying measures (World Bank, 2019).

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