

The background of the slide is a photograph showing the silhouettes of several people working in a forest. They appear to be planting or tending to young trees. The sun is low on the horizon, creating a warm, golden glow that filters through the tall, thin trees. The overall mood is one of environmental stewardship and hope for a greener future.

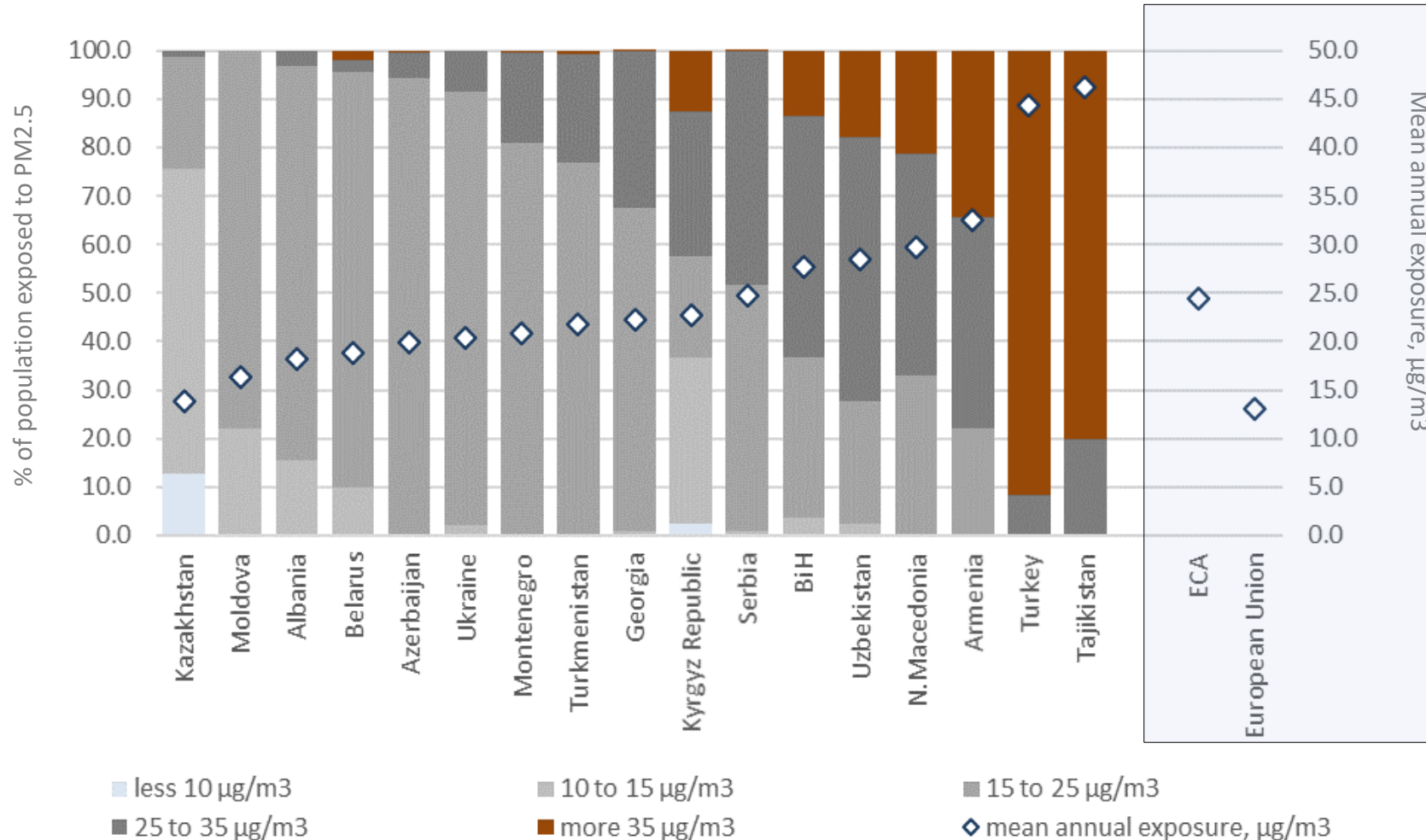
Tackling air pollution for improved health and a greener future

UNDP Istanbul Regional Hub for Europe and Central Asia

Prepared for the Eighteenth session of the Joint Task Force on Environmental Statistics and Indicators. Geneva, 18-19 October 2021.

Mean annual exposure to PM2.5 ($\mu\text{g}/\text{m}^3$) – ECA vs. EU

% of population exposed to air pollution – PM2.5 concentrations



Mean annual exposure to PM2.5, $\mu\text{g}/\text{m}^3$ (y-axis on the right).

- In **Europe & Central Asia (ECA)**, mean annual exposure to PM2.5 (24.9 $\mu\text{g}/\text{m}^3$) is **84% higher** than the EU's average annual exposure (13.5 $\mu\text{g}/\text{m}^3$).

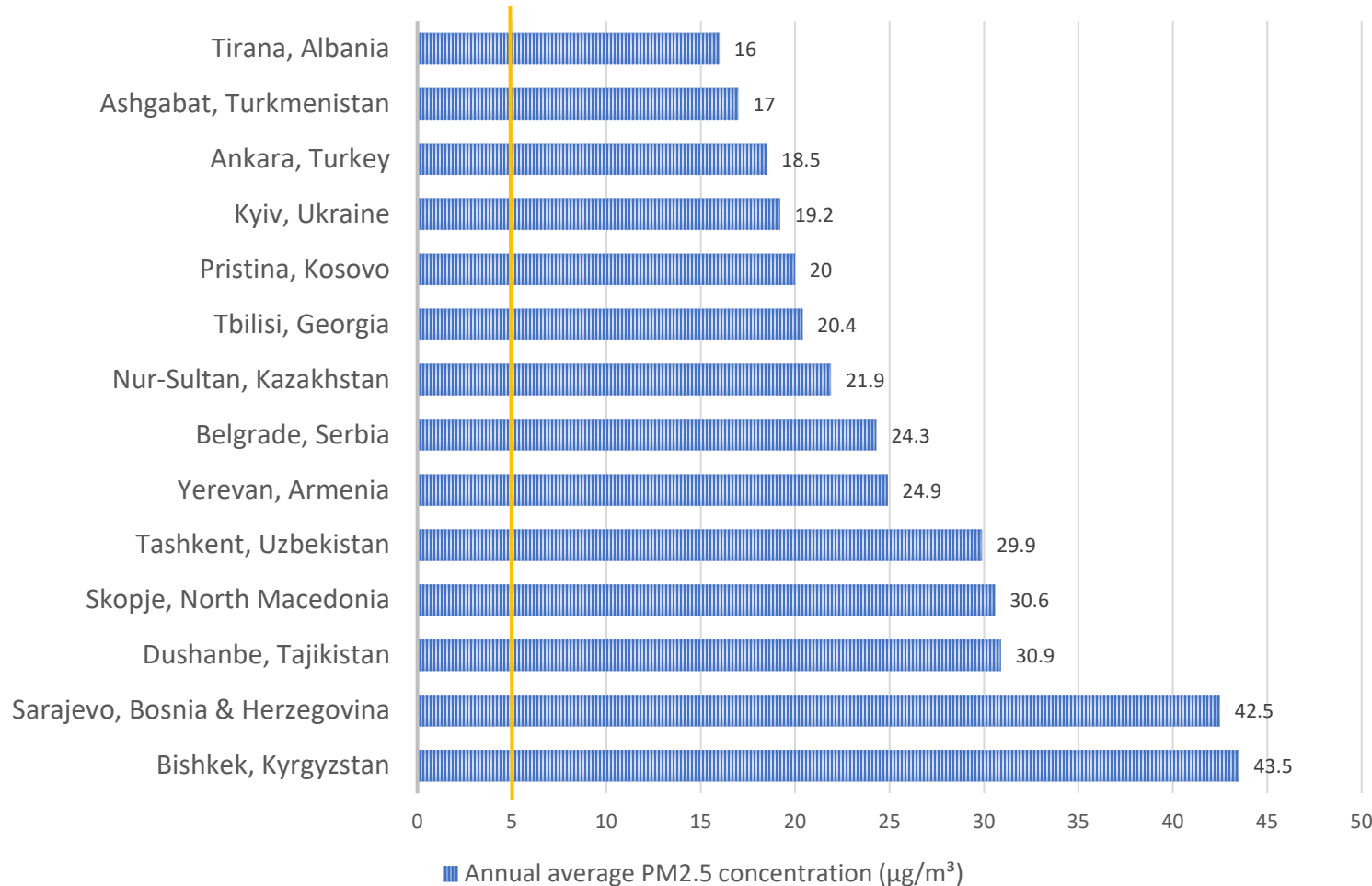
% of population exposed to PM2.5 concentrations **more than 35 $\mu\text{g}/\text{m}^3$ (y-axis on the left).**

- Tajikistan: **80%**
 - Turkey: **91.6%**
 - Armenia: **34.3%**
- Population living in places where annual PM2.5 concentrations are more than **35 $\mu\text{g}/\text{m}^3$** .

WHO new recommended value for PM2.5 is **5 $\mu\text{g}/\text{m}^3$** (annual-mean), [2021 Guidelines](#).

Min 7 times higher than the new threshold set by WHO.

Annual average PM2.5 concentrations in 2020, compared to WHO PM2.5 recommended value (5 $\mu\text{g}/\text{m}^3$, annual-mean)



- The COVID-19 lockdowns have caused short-term global air pollution declines last year.
- In 2020, PM2.5 concentrations exceeded the WHO threshold in all capital cities in the region.

PM2.5 – particles less than 2.5 micrometers in diameter

Penetrate deeply into the lung, irritate the alveolar wall, and impair lung function.

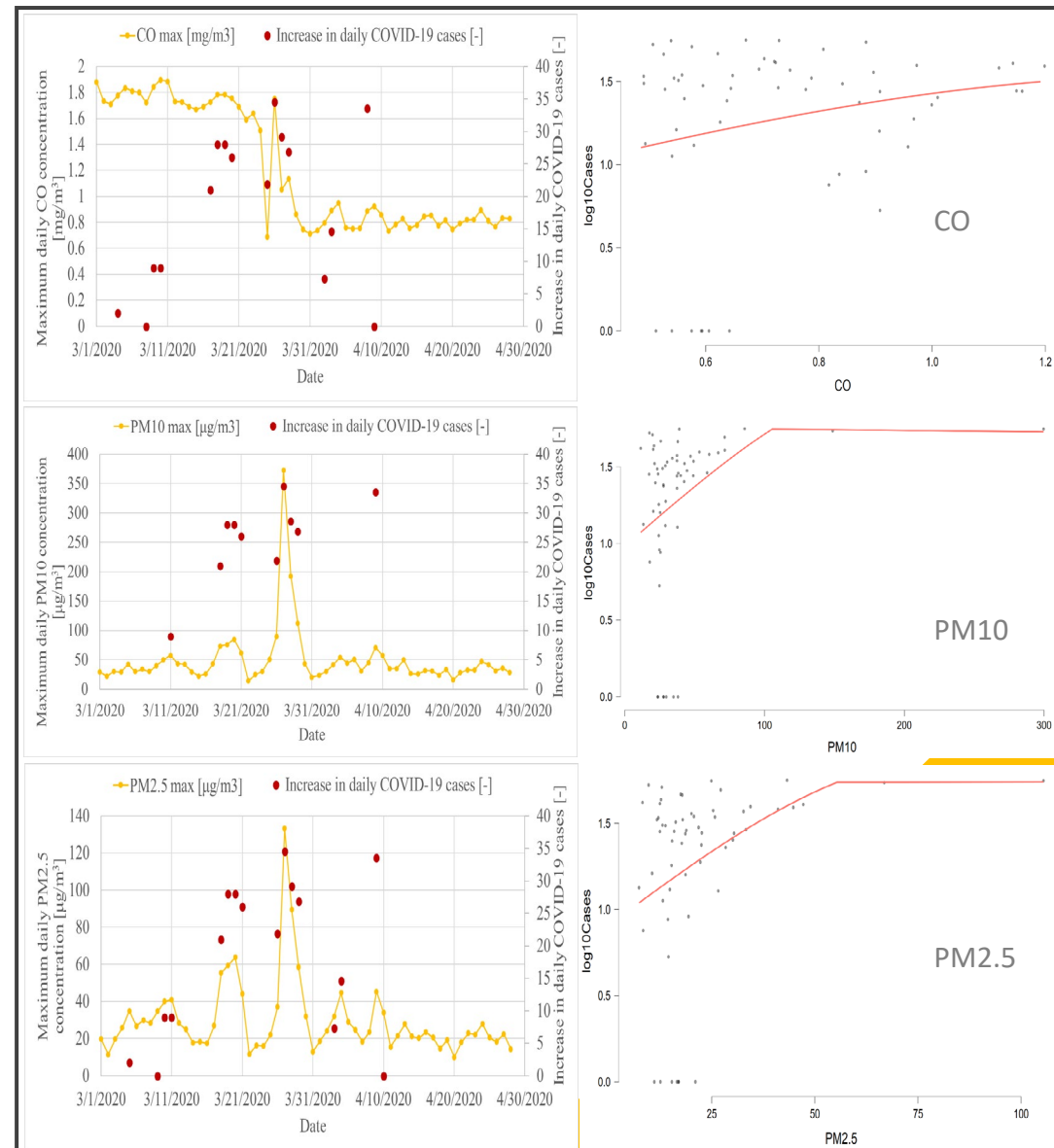
Solid fuels combustion for heating and cooking, fossil-fuel based power generation...

Case study 1: Correlation between COVID-19 and air quality in Serbia

- **Objective:** Short-term exposure to air pollutants and COVID-19 incidence in two cities with the highest number of COVID-19 cases - Belgrade and Niš.
- **Research period:** 15 March – 6 May 2020 (the period of lockdown in 2020).
- **Air pollutants analysed:** PM2.5, PM10, SO₂, CO, and NO₂
- **Results:** Short-term exposure to PM2.5, PM10, CO, NO₂ is correlated with the increase in the number of COVID-19 cases, while SO₂ concentrations are negatively associated with the number of daily confirmed cases (due to its virucidal nature).
- **The strongest positive correlation observed for PM2.5, PM10,** compared to other pollutants analysed (CO, NO₂).

More research needs to be undertaken in this area.

Research results for Belgrade

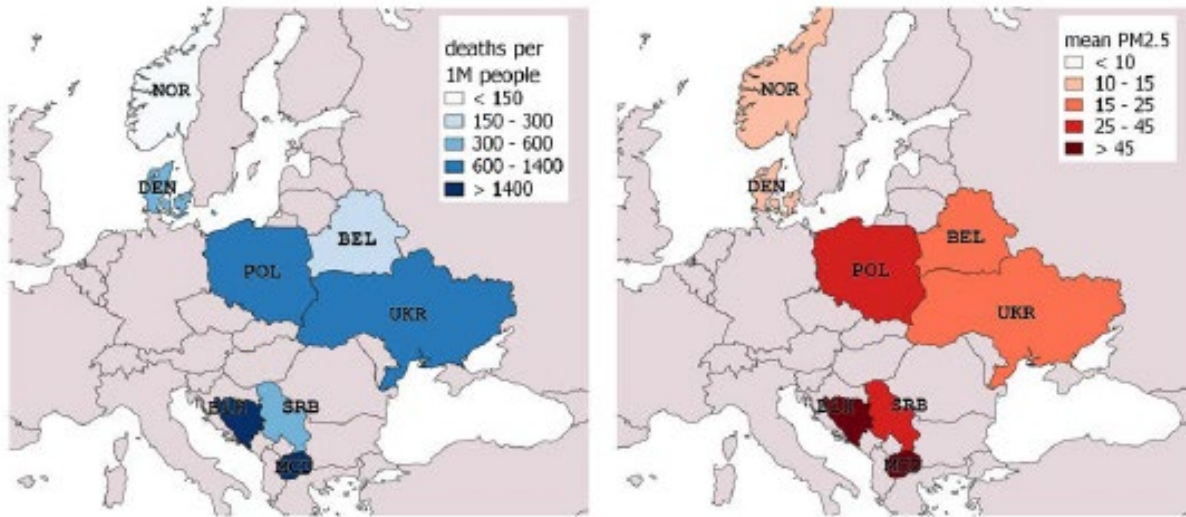


Case study 2: Air quality monitoring data for analysis of the pace and intensity of COVID-19 spread in Central and Eastern Europe and the Balkans

- The [study](#) is based on the data gathered by Airly – a Polish innovator and promoter of air quality identified under the Polish Challenge Fund, implemented by UNDP IRH.
- **Research period:** from November 2020 to the end of March 2021 (heating season).
- **Air pollutant analysed:** PM2.5
- **Results:** positive correlation between PM2.5 and COVID-19 outcomes (0.88 for the number of deaths and 0.58 for the number of cases, calculated based on the Pearson correlation coefficient).

Note: the results do not imply direct causality, as the morbidity and mortality rates are the outcome of many factors (e.g., population age and density, healthcare quality and capacity, implemented restrictions and policies, etc.).

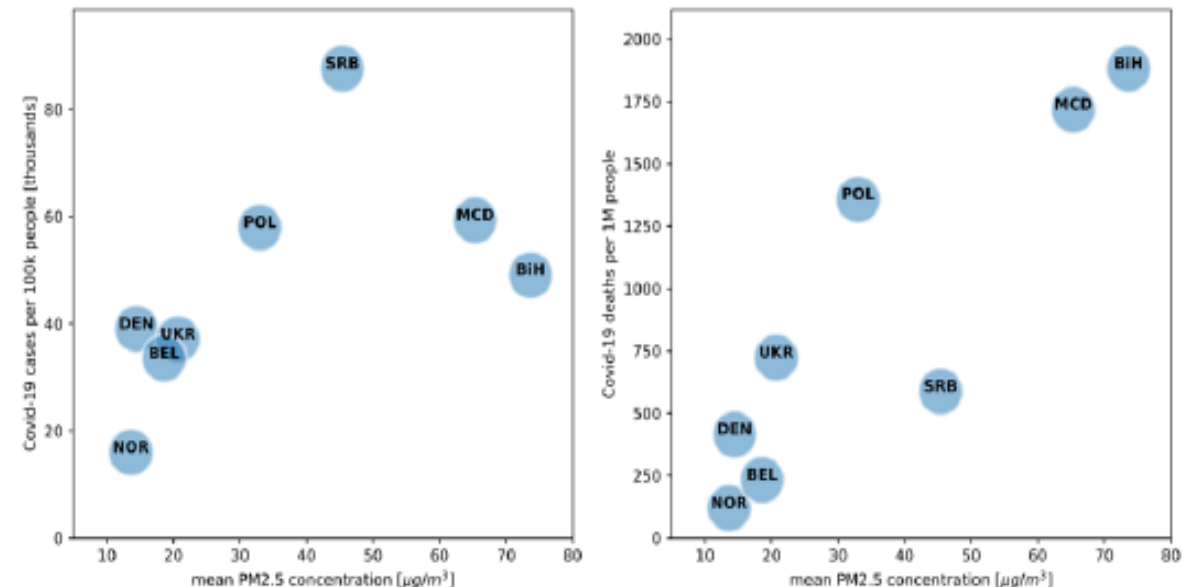
Figure 1: Number of COVID-19 deaths through the end of March 2021 and mean PM2.5 concentration from November 2020 to 21 March 2021



The depiction and use of boundaries, geographic names and related data shown on the map do not imply official endorsement or acceptance by the United Nations, including UNDP, or UN Member States.

Source: Airly, European Environment Agency, Worldmeters.org

Figure 2: Correlation between COVID-19 mortality/morbidity rates and air pollution (PM2.5 mean concentration from November 2020 to March 2021)



Source: Airly, European Environment Agency, Worldmeters.org

UNDP's Nature, Climate and Energy Offer: integrated policy solutions



Framing Air Pollution for post-COVID-19 recovery – policy suggestions

<u>Nature</u> – Invest in Nature-based Solutions	<u>Climate</u> – Climate Change Mitigation Actions	<u>Energy</u> – Sustainable Infrastructure and Fossil Fuel Subsidy Reforms
<ul style="list-style-type: none">✓ Mitigate risks from degradation and destruction of nature, conservation of critical ecosystem services (> restoration of forests and wetlands, sustainable forest management).✓ Greening cities and promoting eco-design.✓ Chemical and waste management, zero-waste pathway.✓ Sustainable agriculture and supply chain using circular economy practices.✓ Greening stimulus packages – repurposing harmful subsidies to sustainable management of natural resources.	<ul style="list-style-type: none">✓ Clean energy investment to enhance Nationally Determined Contributions (NDCs).✓ Energy efficient buildings and clean heating/cooking (> mandatory building codes, HVAC standards and labelling, improve insulation and maintenance, efficient solid fuel stoves and boilers, clean cookstoves).✓ Energy efficient power generation and renewables (> wind, solar, geothermal energy).✓ Low-carbon transport and long-term decarbonization strategies (> shared mobility, electric vehicles, fuel quality, etc).✓ Regulatory reform and innovation for a transition to sustainable energy systems, including regulations to quantify short-lived climate pollutants to improve GHG inventories and MRV systems.	<ul style="list-style-type: none">✓ Modernization of energy infrastructure and green renovations.✓ Leverage climate-friendly and resilient infrastructure investment to speed up recovery.✓ Engage utilities to clean up the grid and introduce smart-grid solutions.✓ Energy storage systems.✓ Diversifying portfolio of oil and gas companies with a strong focus on renewable energy.✓ Carbon pricing measures and fossil fuel subsidies reforms – redirect energy subsidy to renewables technology investments, target subsidies to most vulnerable, and transfer subsidies to social investments.

Source: Tackling air pollution in Europe and Central Asia for improved health and a greener future, UNDP IRH, 2021.

Available at: https://www.eurasia.undp.org/content/rbec/en/home/library/environment_energy/tackling-air-pollution-in-europe-and-central-asia.html

Air Pollution and SDGs: complex and multidimensional



Less than 10yrs left to deliver on the
Agenda 2030

SDGs

Air pollution is directly mentioned under: **SDG 3.9** (substantial reduction of health impacts from hazardous substances) and **SDG 11.6** (reduction of adverse impacts of cities on people).



Cross-cutting



Pollutants such as SO₂ and NO_x from the combustion of fossil fuels mix with precipitation causing harmful acid rain that can compromise water quality, increase acidity of the oceans and pose a major threat to forests and ecosystems.



Power generation, industry and transport are large contributors to air pollution. Electricity from renewable energy offers significant public health benefits.



Chemicals released into the air increase air pollution and contribute to harmful effects on human health. Sustainable waste management practices are critical to control these harmful chemicals.



It can cause health problems, crop damage and affect food quality and security. Reducing air pollution can help families become healthier, save on medical expenses, and improve productivity and prosperity.

Useful UNDP resources published in the ECA region, 2020 and 2021.



[Tackling air pollution in Europe and Central Asia for improved health and a greener future. UNDP IRH, 2021.](#)



Air quality monitoring data for analysis of the pace and intensity of the coronavirus (COVID-19) spread in Central and Eastern Europe and the Balkans

by Piotr A. Kowalczyk (UNDP), Marcin Sawicki (UNDP), Aleksander Kozior (UNDP), Jakub Marcyk (UNDP), Cansu Demir (UNDP), Eva Lachout (UNDP), Katarzyna Rostkiewicz (UNDP)

The correlation between ambient air quality and heightened transmission rates/case severity of COVID-19 has been recognized in previous studies. The initial results have shown that an increase of only 1 µg/m³ in PM_{2.5} is associated with an 11 percent increase in the COVID-19 death rate.¹ Nevertheless, there is very limited data available on air quality and its correlation with COVID-19. The lack of necessary data affects policy preparation and the development of national strategies that would focus on reducing air pollution with a view to combating the ongoing pandemic and other health issues. Air pollution is a major public health threat² and one of the main environmental problems in developing countries. Capturing the combined impact of both threats is a challenge that the entire international community faces.

The United Nations Sustainable Development Goals (SDGs) mention air pollution under two targets. SDG 11.6 promotes reduction of waste, targets from hazardous substances and SDG 13.6 reduction of adverse impacts of cities on people. However, there are also indirect links to other SDGs, such as clean water, conservation and industry innovation.³ The United Nations Development Programme Regional Hub and its country offices have joined the discussion, capturing links between air pollution and COVID-19 on both the global and local scales – Ukraine, Serbia and Moldova are good examples.⁴

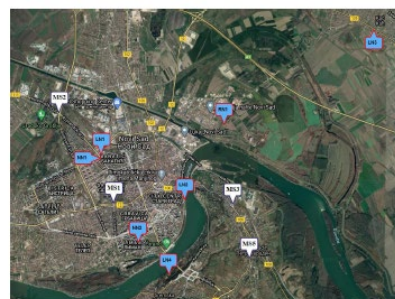
The solutions that need to be overcome include how to deliver air quality data without delay for government, emergency and response and how to facilitate data dissemination facilities. There are three main forms of pollution in terms of type and concentration, and pollution information is presented in concentrations of different pollutants, which makes it difficult for the public to understand. A graphic presentation of the air quality index makes it easier to understand the general state and pollution. The "finger test" approach allows identification of the sources of air pollution, such as traffic, industry, and the burning of waste.

[Air quality monitoring data for analysis of the pace and intensity of the coronavirus \(COVID-19\) spread in Central and Eastern Europe and the Balkans. UNDP IRH, 2021.](#)



Analysis of the correlations between the COVID-19 pandemic and air quality

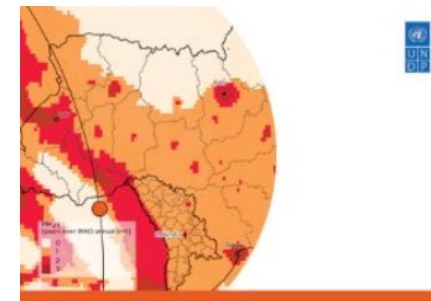
[Analysis of the correlations between the COVID-19 pandemic and air quality. UNDP Serbia and Vinča Institute, 2020.](#)



Analysis of the correlations between the COVID-19 pandemic and air quality

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[Addressing climate change and health in the Europe and Central Asia region. UNDP and WHO, 2020.](#)



COVID-19 Impact on Air Quality in Ukraine and the Republic of Moldova

Work Order REPORT

Support provided by United Nations Development Programme (UNDP)



[COVID-19 Impact on Air Quality in Ukraine and the Republic of Moldova. UNDP Moldova, UNDP Ukraine, and European Space Agency, 2020.](#)



United Nations Development Programme



Addressing climate change and health in the Europe and Central Asia region

A Joint Value Proposition and Service Offering



Thank you!

For any questions, please contact us:

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