Regional Outlook 2021 - Country notes

Colombia

Progress in the net zero transition

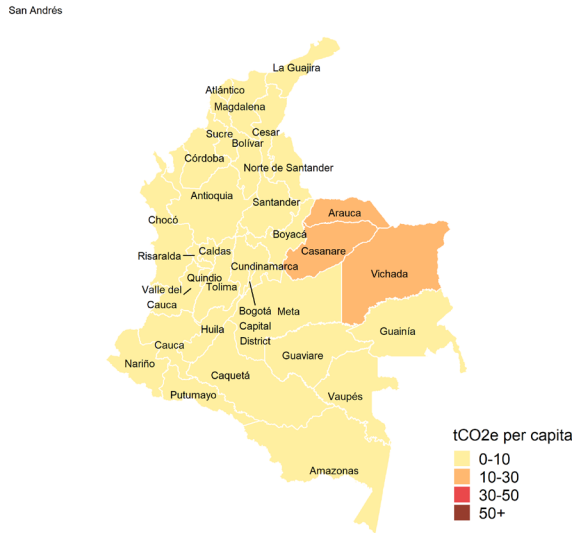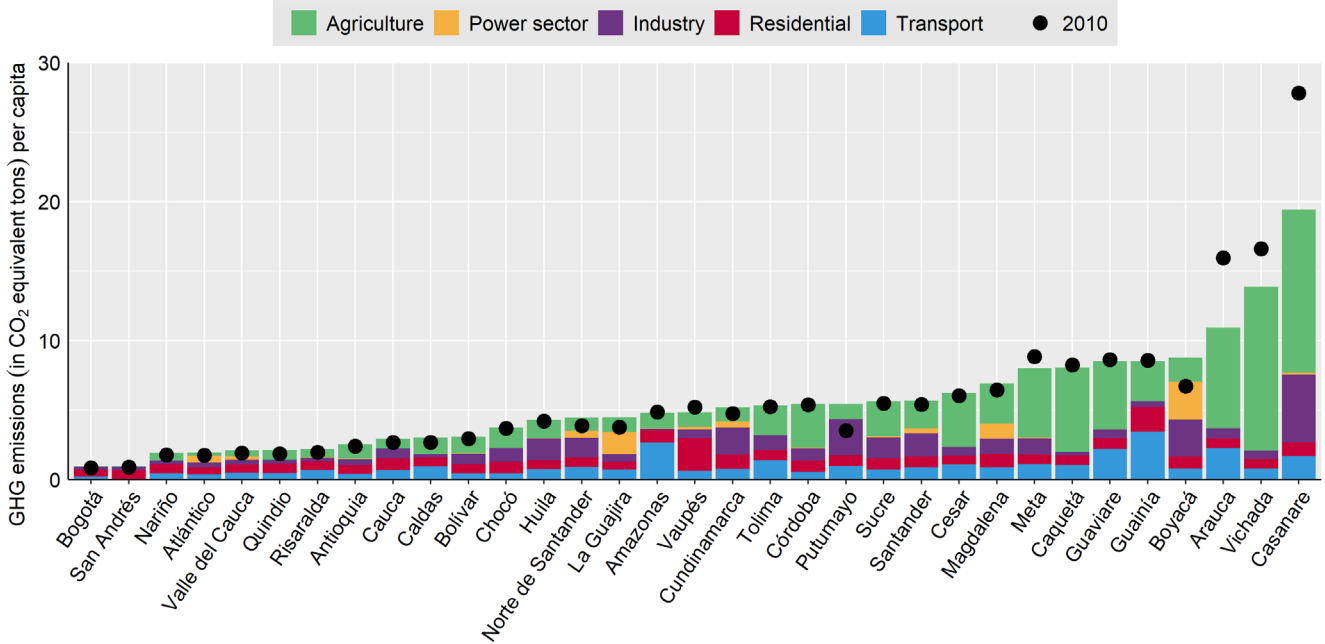| EMISSIONS		
2018 OECD average: **11.5 tCO$_2$e/capita**	**2018 Colombian average:** **3.7 tCO$_2$e/capita**	**Colombian net zero target:** **No commitment yet**

Large regions (TL2)

Figure 1. Estimated regional greenhouse gas emissions per capita
Tons CO$_2$ equivalent (tCO$_2$e), large regions (TL2), 2018

Greenhouse gas (GHG) emissions per capita generated in most Colombian large regions are below 10 tCO$_2$e per capita. Only Casanare and Vichada have higher emissions per capita than the OECD average of 11.5.

Estimated emissions per capita in Casanare are more than twenty times higher than in Bogotá.
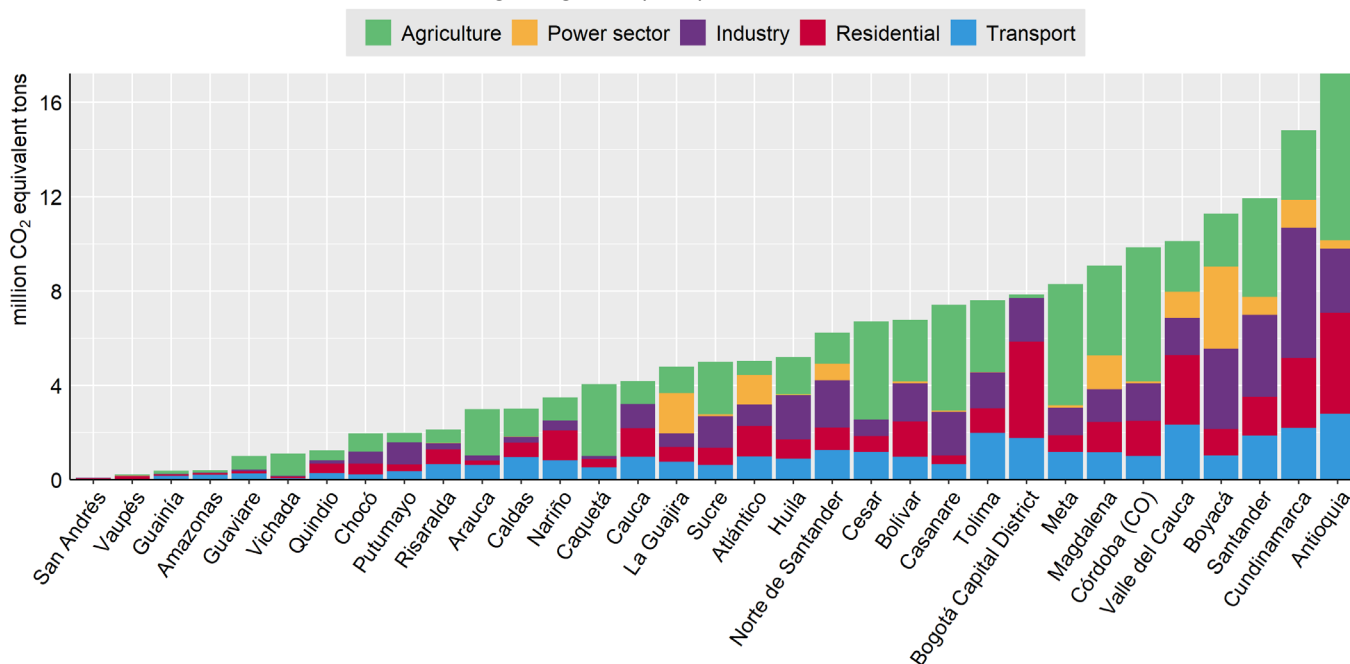
Figure 2. Estimated GHG emissions per capita
Tons CO$_2$ equivalent, 2010 & 2018, large regions (TL2)

Agricultural emissions are the largest in many regions. Emissions per capita have changed little in most regions between 2010 and 2018.

Figure 3. Estimated GHG emissions

Million tons CO_2 equivalent, 2018, large regions (TL2)

Estimated absolute emissions are largest in Antioquia, Cundinamarca and Santander.

Target notes: Emissions targets included in the Net Zero Tracker database from ECIU before January 25, 2021 are considered.
Figure notes: Figures 1, 2, 3, the national and the OECD average show OECD calculations based on estimated greenhouse gas emissions data from the European Commission's Joint Research Centre (ECJRC). The Emissions Database for Global Atmospheric Research of the ECJRC allocates national greenhouse gas emissions to locations according to about 300 proxies. See Box 3.7 in the 2021 *OECD Regional Outlook* for more details.

ENERGY

Colombian electricity mix

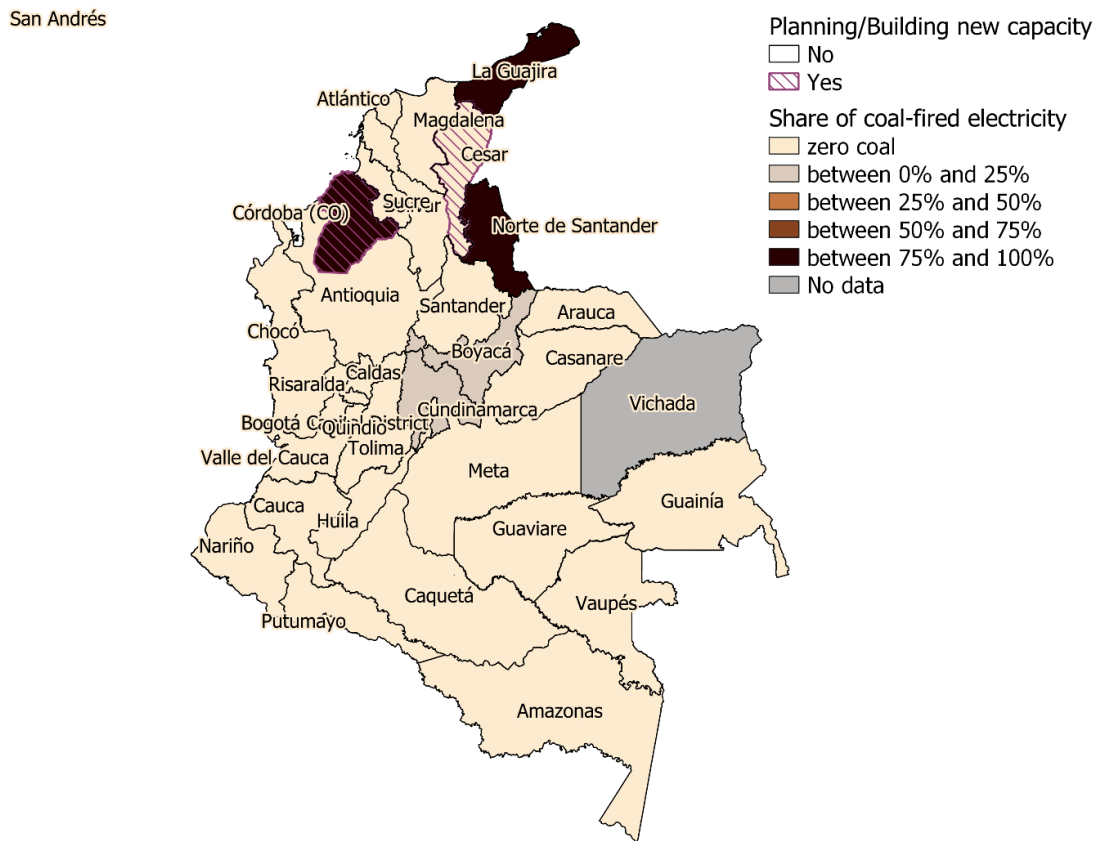### Figure 4. National electricity generation by energy source in 2019

Coal	Oil	Natural gas	Hydro	Wind	Solar	Biofuels

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%
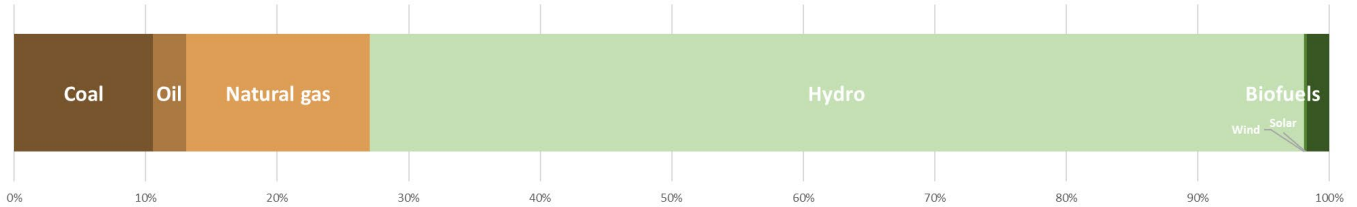
Share of coal-fired electricity generation

2019 OECD average: 23%	2019 Colombian average: 11%	2030 well below 2°C benchmark for Central and South America: 0% 2030 1.5°C benchmark for OECD countries: 0%

Figure 5. Regional coal-fired electricity generation estimates
Per cent of total electricity generation, large regions (TL2), 2017

Planning/Building new capacity
- No
- Yes

Share of coal-fired electricity
- zero coal
- between 0% and 25%
- between 25% and 50%
- between 50% and 75%
- between 75% and 100%
- No data

Most regions do not use coal in electricity generation. Some regions still rely largely on coal. For example, Córdoba, La Guajira and Norte de Santander exclusively used coal for electricity generation in 2017. New capacity is planned or being built in Córdoba and Cesar (Global Coal Plant Tracker, last accessed in April 2021). Since OECD regions should be phasing out coal by 2030 and the average lifespan of a coal power plant is 40 years, adding such capacity would expose regions to stranded asset risks, resulting in financial market risks and economic costs.
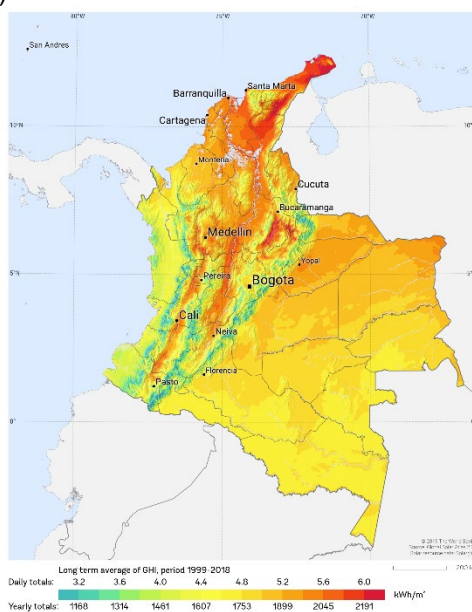
Wind power

2019 OECD average: 8%	2019 Colombian average: 0.1%	2030 well below 2°C benchmark for Central and South America: >8%

Figure 6. Wind power potential
Mean wind power density (W/m2)
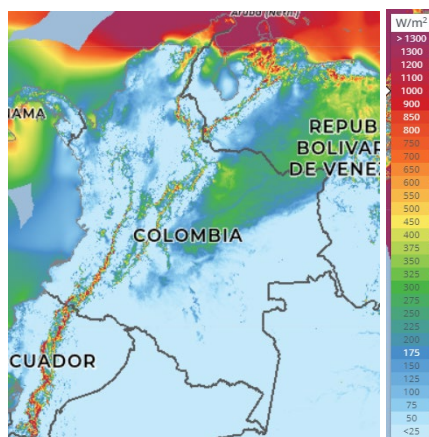
Source: Map produced by The Global Wind Atlas

Solar power

2019 OECD average: 3%	2019 Colombian average: 0.2%	2030 well below 2°C benchmark for Central and South America: >11%

Figure 7. Solar power potential
Global horizontal irradiation (kWh/m2)

Source: Map produced by The Global Solar Atlas

Although national wind and solar shares are low, Colombia has a large share of zero-emission electricity generation due to hydropower. Wind power potential is fairly low in Colombia. However, regions such as La Guajira, where coal-fired electricity generation is more prominent, have very large potential in solar power.

Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. According to the Powering Past Coal Alliance (PPCA), a phase-out of unabated coal by 2030 for OECD countries is cost-effective to limit global warming to 1.5°C.
Figure notes: Figure 4 shows data from the IEA (2020). Figure 5 shows OECD calculations based on the Power Plants Database from the WRI. The database captures electricity generation from the power plants connected to the national power grid. As a result, small electricity generation facilities disconnected from the national power grid might not be captured. See here for more details. Figure 5 also includes coal plans (defined as new capacity announced, pre-permit, permit or in construction) from the Global Coal Plant Tracker published by Global Energy Monitor. Figures 6 and 7 show the power potential of solar and wind. Mean wind power density (WPD) is a measure of wind power available, expressed in Watt per square meter (W/m²). Global horizontal irradiation (GHI) is the sum of direct and diffuse irradiation received by a horizontal surface, measured in kilowatt hours per square metre (kWh/m²).

AGRICULTURE

Figure 8. Estimated GHG emissions from agriculture per capita and relative difference to country means for GDP per capita, relative poverty and long-term unemployment

Large regions (TL2), 2018
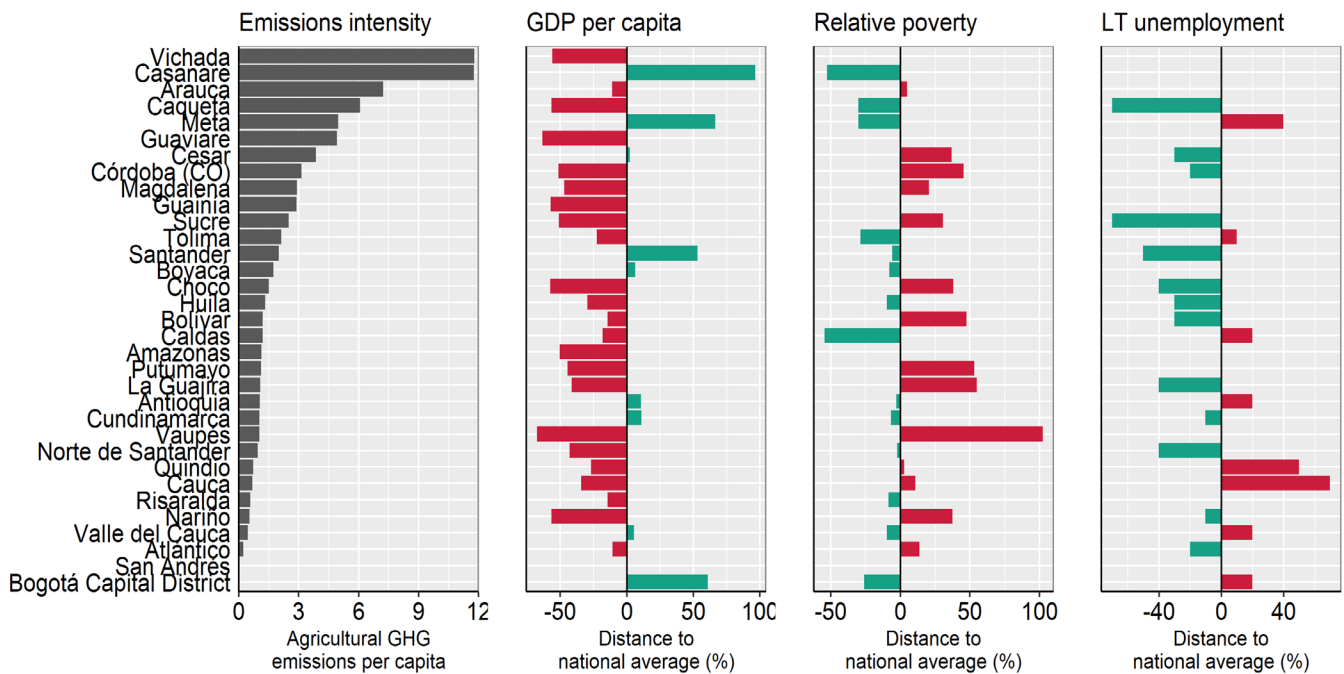
While agriculture is not a sector that was broadly identified as being subject to employment risks as identified based on employment effects simulated across OECD countries (See Box 3.9 of the 2021 *OECD Regional Outlook*), it will be subject to important transformations, for example with respect to animal farming, fertiliser use and carbon sequestration. Employment in agricultural activities is very limited in OECD countries.

Regions with a higher emissions per capita in agriculture may have a higher transition risk from rising carbon prices. In Colombia, agricultural emissions per capita are highest in Vichada and Casanare. The transition to net-zero greenhouse gas emissions needs to be just, avoiding social hardship. Regions with higher agricultural emissions per capita are not necessarily the worst performers in terms of GDP per capita, poverty risk and long-term unemployment compared to the national average.

Figure notes: Figure 8 is based on data from OECD Statistics and ECJRC. Poverty risk is assessed from individuals' survey respondents indicating there have been times in the past 12 months when they did not have enough money to buy food that they or their family needed. Long-term unemployment is defined as unemployed for 12 months or more.

TRANSPORT

Electrification of passenger cars

| **2019 Colombian average share of full-electric new passenger car sales: <3%**	**Benchmarks for new zero-emission passenger car sales:** **IEA well-below 2°C benchmark: 100% by 2040.** **Aligned with net zero emissions by 2050: 100% by 2035 at the latest. 2030 cost-effective.**	**Colombian target sales of zero emission new passenger cars:** **No phase out date of internal combustion cars yet**

Modal shift

Bogota has an average public transport performance. For comparison, London (UK) has among the highest public transport performance scores. Inhabitants of the metropolitan area of London can on average reach 95% of the population living within 8 km in 30 minutes by public transport.

Figure 9. Public transport performance in 2018
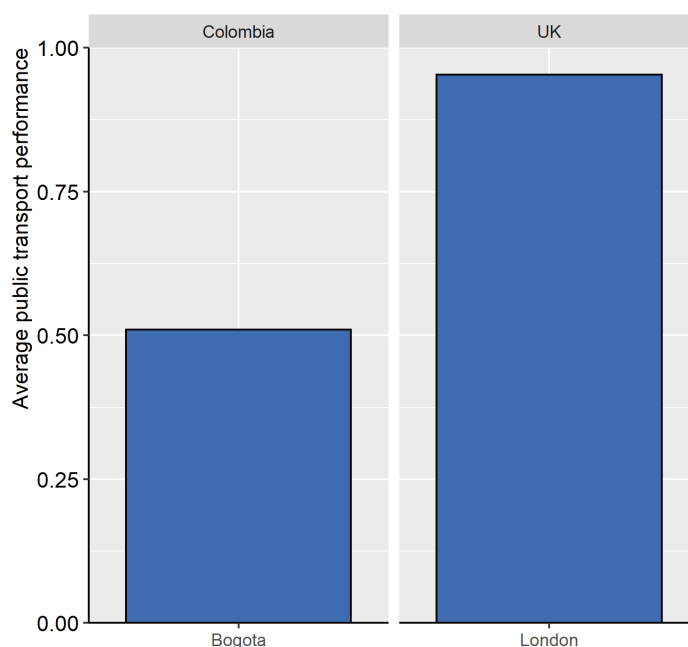
Benchmark notes: In the IEA's Sustainable Development Scenario, OECD countries (such as the European Union, Japan and the United States) as well as China fully phase out conventional car sales by 2040. This scenario is aligned with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. The UK Committee on Climate Change finds that all new cars and vans should be electric (or use a low carbon alternative such as hydrogen) by 2035 at the latest to reach net zero GHG emission targets by 2050. A more cost-effective date from the point of view of users is 2030.
Figure notes: Figure 9 is based on data from ITF and OECD Statistics. See Box 3.10 in the 2021 *OECD Regional Outlook* for more details. GDP per capita is expressed in USD per head, PPP, constant prices from 2015.
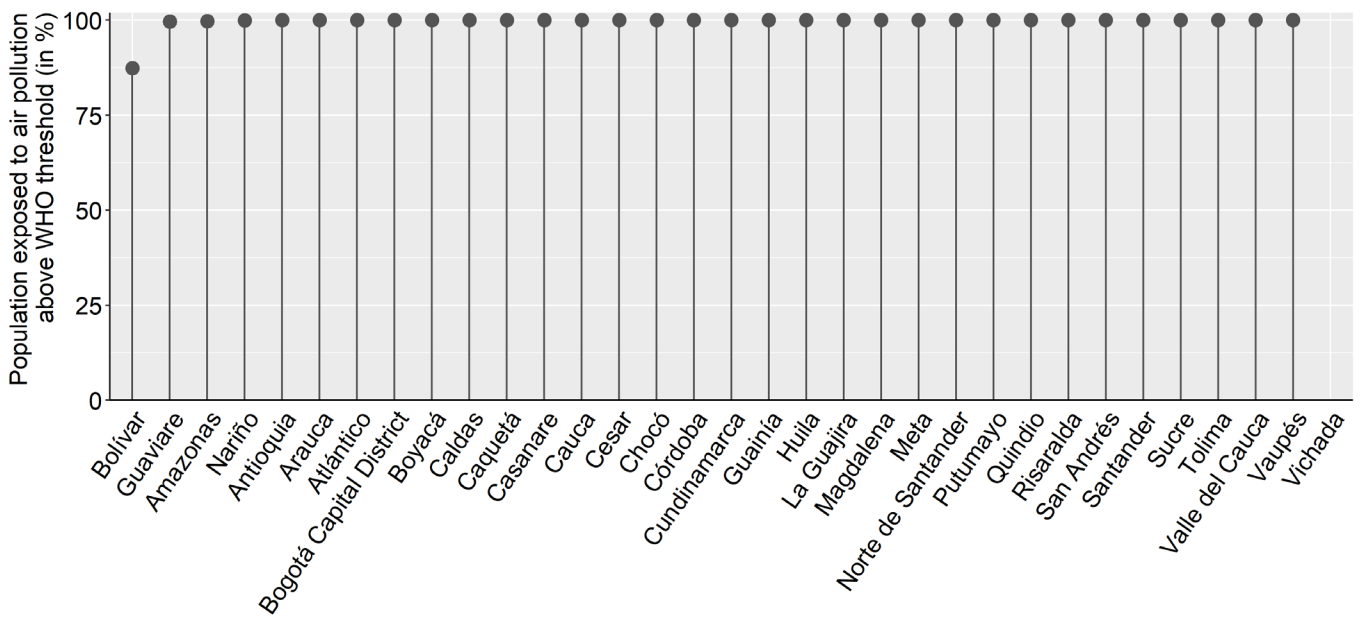
AIR POLLUTION

Large regions (TL2)

2019 OECD share of population exposed above the WHO-recommended threshold: 62%	2019 Colombian share of population exposed above the WHO-recommended threshold: 99%	WHO-recommended air quality threshold: PM2.5 annual mean concentration < 10 µg/m³

Figure 10. Share of population exposed to levels of air pollution above the WHO-recommended threshold

Percentage of population exposed to above 10 µg/m³ PM2.5, large regions (TL2), 2019

Policies towards net-zero greenhouse gas emissions can bring many benefits beyond halting climate change. They include reduced air and noise pollution, reduced traffic congestion, healthier diets, enhanced health due to increased active mobility, health benefits through thermal insulation, and improved water, soil and biodiversity protection. Some are hard to quantify.

In nearly all regions 100% of the population is exposed to small particulate matter air pollution above the WHO threshold. Small particulate matter (PM2.5) is the biggest cause of human mortality induced by air pollution. Major disease effects include stroke, cardiovascular and respiratory disease. Air pollution amplifies respiratory infectious disease such as Covid-19. It affects children the most. It reduces their educational outcomes as well as worker productivity.

Figure notes: Figure 10 is based on data from OECD Statistics.