

Air quality in Île-de-France in 2020: an exceptional year

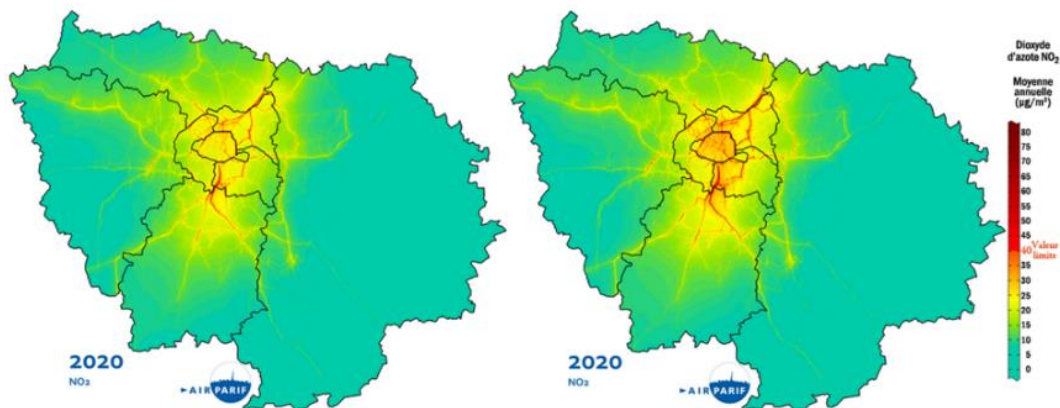
The annual report prepared by Airparif, as the independent air quality observatory in Île-de-France, has been published today. It highlights a significant drop in pollution levels for nitrogen dioxide (NO₂) and a more limited drop for particulate matter (PM₁₀ and PM_{2.5}), while ozone (O₃) concentrations have continued to increase, as they have overall in the Northern Hemisphere. Analysing the situation for each pollutant, Airparif explains this general improvement as a combination of the continuation, in 2020, of the downward trend in air pollution in recent years, relatively dispersive meteorological conditions over part of the year, and the impact of the COVID-19 health crisis. Despite this decrease, two air quality guideline values from the World Health Organisation (WHO) are still not respected for the 12 million inhabitants of the Île-de-France region. Tens of thousands of these inhabitants are also exposed to levels exceeding the European and French regulatory limit values.

The impact on air pollution resulting from the restriction of activities due to the pandemic is primarily visible with nitrogen dioxide, a pollutant mainly caused by road traffic. For example, nitrogen dioxide (NO₂) concentrations have dropped by 30% in Paris, with 2/3 of this decrease due to restrictions on activity as part of the effort to control the coronavirus pandemic. On the other hand, the impact of these restrictions is not very significant for regulated particulate matter (PM₁₀ and PM_{2.5}) due to weather influences, but also due to other sources that were not - or only slightly - affected by the restrictions (heating, agriculture, etc.).

In order to determine the factors responsible for this improvement in air quality, which is both a trending improvement (linked to policies implemented over time) and a temporary improvement (associated with restrictions on activity), Airparif created a simulation by reconstituting, under identical meteorological conditions, the air quality in Île-de-France in 2020 without restriction measures in response to the coronavirus pandemic.

2020 observed situation, with restriction measures

Theoretical 2020 situation, without restriction measures



Annual average nitrogen dioxide concentrations in 2020

- 2020 is characterized by a strong decrease in nitrogen dioxide (NO₂) concentrations compared to 2019. This decline varies across the Île-de-France region with, for example - 20% in the inner suburbs and -30% in Paris. Sanitary restrictions contributed to 2/3 of the decrease in Paris and half of the decrease observed in the inner suburbs. The decrease in pollution levels in the inner suburbs is essentially a result of the downward trend in air pollution in the Île-de-France region and weather conditions favourable to the dispersion of

pollutants. The

impact of reduced activity is most visible in Paris, where the density of urbanisation, the intensity of road traffic and the high level of economic activity usually generate higher levels of pollutant emissions.

The drop in NO₂ concentrations has led to a sharp decrease in the number of people potentially exposed to an exceedance of the regulatory limit value for this pollutant, from nearly 500,000 in 2019 to several tens of thousands in 2020. **On the other hand, this NO₂ limit is still largely exceeded in the proximity of road traffic, particularly in the heart of the Paris metropolitan area.**

- **PM₁₀ and PM_{2.5} fine particulate matter concentrations are slightly lower in 2020 than in 2019. The impact of the restrictions on average particulate matter concentrations is smaller than it is for NO₂. This is explained by a greater diversity of particle-emitting activities; traffic not being the major source (especially in the winter) and significant sources in normal times such as heating - and in particular wood heating - have been accentuated due to the considerable presence of the Ile-de-France residents at home (lockdown and teleworking).** At the measurement stations set up by Airparif, the regulatory limit values for PM₁₀ and PM_{2.5} are respected. However, the WHO's air quality recommendation for PM_{2.5} at the daily level is still exceeded in almost the entire Île-de-France region in 2020, with the recommendation for PM₁₀ exceeded for one out of every two residents of the Île-de-France region. The assessment shows that the percentage of the population exposed to an exceedance of the annual WHO recommendation for PM₁₀ decreases from 30% in 2019 to 10% in 2020. **Of this 20% decrease, 15% is related to the underlying trend and 5% is related to the lockdown measures taken to fight the pandemic (i.e., an additional benefit for nearly 500,000 people).**
- **Ozone (O₃) concentrations, a secondary pollutant that is formed in the atmosphere from a chemical reaction between other pollutants and in the presence of intense sunlight, increased in 2020,** consistent with what has been observed in the Île-de-France region for several years, and generally in the Northern Hemisphere. **The regulatory air quality target and the limit recommended by the WHO are still largely exceeded at any given location in the Île-de-France region.** The impact of the pandemic-related reduction of activities on average ozone concentrations has not been assessed: ozone, a relatively seasonal pollutant whose peaks are generally observed in June, July and August, was hardly impacted since these three months were not (or only slightly) concerned by the restrictions of activities related to the health crisis.

Airparif notes that the overall number of pollution episodes is slightly lower in 2020 than in 2019. There were five days when the recommendation and information threshold for particulate matter (PM₁₀) was exceeded during the winter period, and nine days when the threshold was exceeded due to ozone (O₃) during the summer period. The particulate matter pollution episode that occurred on March 28, 2020, despite the strong deceleration of many sectors of activity, is explained by particulate matter emissions from sources not concerned by the lockdowns: notably wood heating and the agricultural sector, with nitrogen fertilizer treatments typical of the early spring. This episode would have been more significant with normal traffic.

These results are fully detailed in the Airparif report [“Bilan 2020 de la qualité de l'air en Île-de-France”, available here \(in French\)](#), which also summarizes monitoring of the impacts of each lockdown and re-opening phase on air quality, conducted throughout the year by Airparif.

As part of its mission to provide information and raise awareness about air quality issues, Airparif also publishes an [Airparif Dossier: "COVID-19 and air quality", available here \(in French\)](#), following the relationship between the coronavirus epidemic and air pollution, drawing on the work of experts, especially regarding health issues.

This press release and the associated documents are based on the recommendations from the World Health Organization and the European and French standards currently in force. Important discussions are underway to revise these standards at both the WHO and European Commission levels, as demonstrated by the presentation of the "Zero Pollution Action Plan" by the Commission on May 12, 2021. Statistics on pollution episodes are also based on current regulations, which could evolve to include PM_{2.5} in the process of triggering pollution episodes, and a revision of limits for other pollutants. Finally, these different discussions are conducted in a litigation context between several European countries, including France and the European Commission for non-compliance with the regulatory limit values for air quality.

Press contacts

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