1. Indicator name			
Annual average of PM_{10}			
Update date:	31/01/2023	**Version:**	1.1

2. Area	
Main Area	Environment and surroundings
Sub-Area	Air quality

3. Definition

The indicator measures the annual average amount of particulate material or suspended particles with a diameter of less than 10 µg (PM_{10}) concentrated in a point in the territory, per unit of air volume. These particles come from various sources of emission.

4. Calculation formula

not applicable

5. Reading

This indicator makes it possible to observe differences between the PM_{10} emission levels between municipalities or aggregations of municipalities (if these values are higher or lower) and/or the temporal evolution, and therefore if the emission levels have increased or decreased compared to a specific period. The unit of measurement is µg/m^3.
In September 2021, the World Health Organization (WHO) published guidelines recommending that annual average levels of PM_{10} not exceed 15 µg/m^3.

6. Periodicity

yearly

7. Source

Department of Climate Action, Food and Rural Agenda (Directorate General of Environmental Quality and Climate Change)

8. Constraints

Geographical ☐	temporary ☐	Statistical secrecy ☐

Description of limitations

9. ODS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐

Indicator the SUB-SDGs that this indicator can relate to.

11.6

10. Comments and observations

PM_{10} particles are one of the most important air pollutants in terms of affecting human health, as they can be inhaled and penetrate the respiratory system where they can cause inflammation and harmful effects on people's health such as deterioration of the respiratory and cardiovascular systems, alteration of the body's defence systems against foreign materials, damage to lung tissue, carcinogenesis, and premature mortality, among others.

The data have been obtained from the modelling of the annual PM_{10} averages published by the General Directorate of Environmental Quality and Climate Change.

For the years 2015 and 2016, the forecast model used was ARAMIS (Regional Air-Quality Modelling Integrated System), which is an air quality modelling system developed by MaiR (Mesoscale and Microscale Atmospheric Modelling and Research Group) , group of researchers from the Department of Astronomy and Meteorology of the University of Barcelona.
For the years 2017 onwards, the forecast model used is CALIOPE (CALIdad del aire Operational Para España), from the Department of Earth Sciences of the Barcelona Supercomputing Center (BSC), which offers operationally the hourly forecast of air quality of the air (at 24h and 48h) for Catalonia in resolution of 4x4 Km and 1x1Km.

These forecast models contain an emissions model that is developed according to data provided by the General Directorate of Environmental Quality and Climate Change, among others.
https://mediambient.gencat.cat/ca/05_ambits_dactuacio/atmosfera/qualitat_de_laire/avaluacio/analisi-anual-dels-models-de-qualitat-de-laire/

Definition of concepts:
Suspended particles: These are polluting particles present in the atmosphere of small size (sometimes microscopic), but larger than molecules. They are usually generated from some anthropogenic activity or by natural processes.
These particles are made up of a wide variety of sizes, shapes and chemical compositions.

Immission: Concentration of one or more pollutants at a given point from various sources of emission.