CO2 : a reference point for ventilation standards

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Sandra Chochod / Marcin Mezynski – Product Management / Marketing – April 21

Agenda

- Netatmo vision
- Key facts in Europe

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Netatmo vision

- **Which sensors to measure Indoor Air Quality?**
  - CO_2 sensor on our products
  - Other sensors on the market: VOC, Formaldehyde, PM etc…

- **Is CO_2 a good indicator for Indoor Air Quality?**
  - CO_2 is a good indicator of stuffiness[1].
    - It means that CO_2 measurements can be used to evaluate the adequation between air exchange rate and room's occupancy density. When there is too much CO_2 in a room, it means this room is not ventilated enough.
    - If there are other pollutants, they are not evacuated and therefore they might be highly concentrated.
  - CO_2 is a worldwide well-known indicator (increased consideration with the current situation, legislation…)
  - CO_2 sensors are reliable

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Source:
- (1) « Avis » of the French Agency for Food, Environmental and Occupational Health & Safety. Topic: « concentrations de CO_2 dans l'air intérieur et effets sur la santé » (17 juillet 2013)
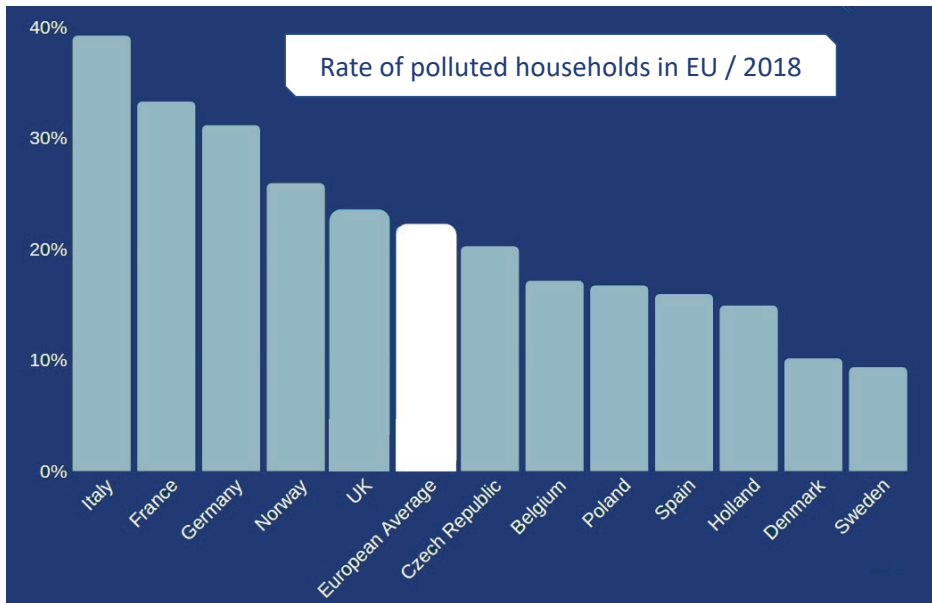
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Netatmo vision

- **Can CO_2 alone be considered as the perfect indicator of the Indoor Air Quality?**
  - Other pollutants can be high in the room even with a low CO_2 level (domestic activities like cleaning, maintenance, DIY, painting that can induce COV production).
  - A high concentration of CO_2 means a bad Indoor Air Quality but the opposite is not true.

- **CO_2 is the best indicator of Indoor Air Quality and more over of the need to ventilate a room.**
  - CO_2 being naturally produced by humans they are the main source in indoor environment. It gives an indicator of the level of air containment in a room at the most important time: when there are people in it.

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User behaviour in Europe

Rate of polluted households in EU / 2018

Countries (left to right): Italy, France, Germany, Norway, UK, European Average, Czech Republic, Belgium, Poland, Spain, Holland, Denmark, Sweden
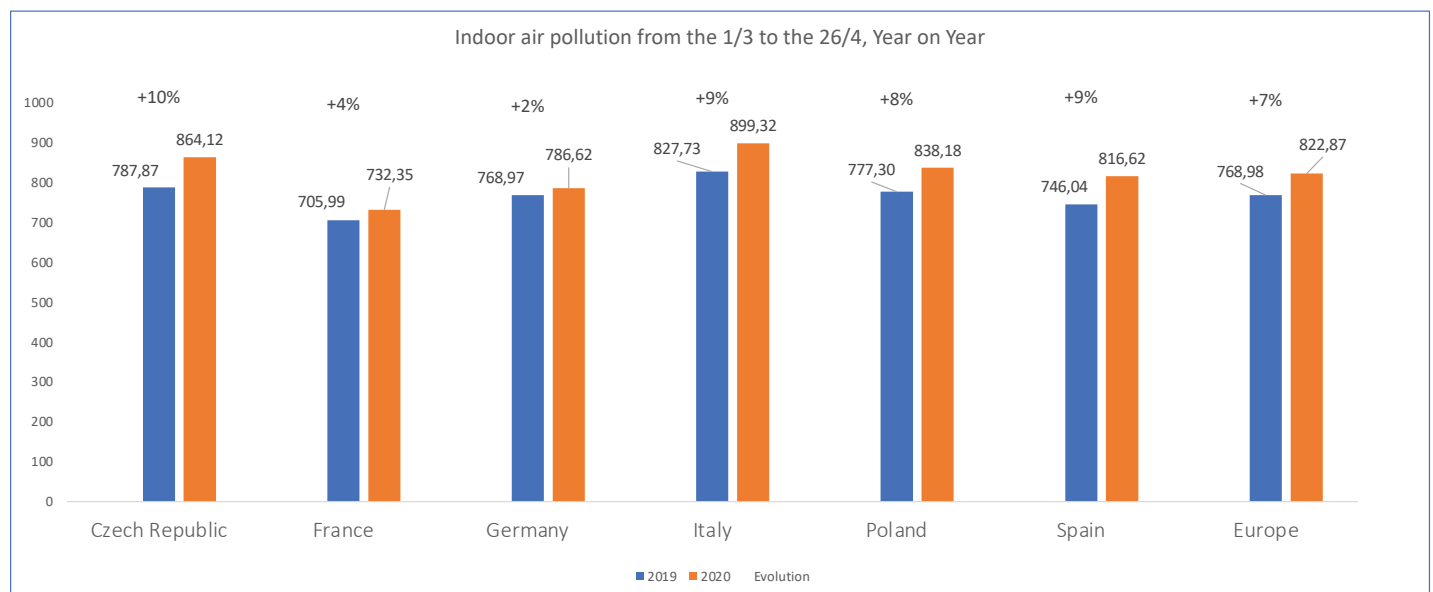
Methodology:

- CO_2 measurements from a minimum of 1,000 Netatmo Weather Stations per country
- GDPR compliant with anonymous data
- Proportion of Stations exceeding the limit of 1,000ppm of CO_2 at least once per day.

- Error margin: 4%

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User behaviour in Europe during 1st lockdown

Indoor air pollution from the 1/3 to the 26/4, Year on Year

Country	+%	2019	2020
Czech Republic	+10%	787,87	864,12
France	+4%	705,99	732,35
Germany	+2%	768,97	786,62
Italy	+9%	827,73	899,32
Poland	+8%	777,30	838,18
Spain	+9%	746,04	816,62
Europe	+7%	768,98	822,87

■ 2019 ■ 2020 Evolution

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Methodology:
- CO_2 measurements from a minimum of the same 1,000 Netatmo Weather Stations per country, on two consecutive years - GDPR compliant with anonymous data
- Average ppm measured -Error margin: 4%

Why is it relevant for individual households?

- As it's not yet mastered by the users
  - Figures shown are for Netatmo clients, who have a device monitoring this gas, what about other clients who don't have it?

- As it's a common factor for other pollutants/elements: Covid-19 has proven it

- As behaviours will change in the next years
  - For example, we believe that the remote work will keep its growth, which was real even before Covid[1]

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Source:
- (1) Joint research center, Telework in the EU before and after the COVID-19: where we were, where we head to, EU Commission

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