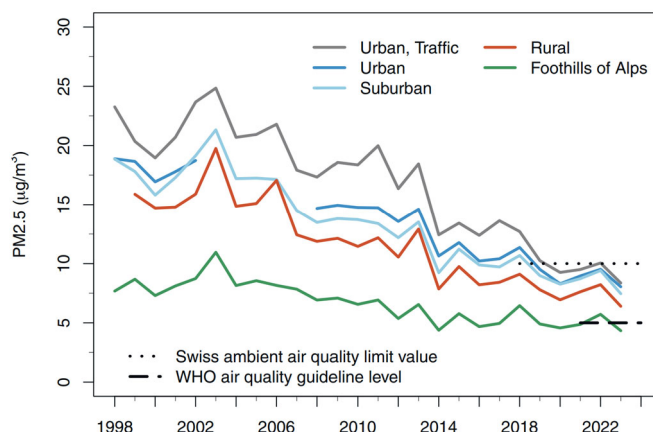


Air Quality Research Shapes Environmental Policy

Brigitte Buchmann, Federal Commission for Air Hygiene FCAH, former member of Empa directorate

Air pollution mitigation in Switzerland is often regarded as a model of effective cooperation between scientific research and environmental policy. Initiated in the early 1980s, the country implemented a series of emission reduction measures that have led to substantial decreases in ambient concentrations of key pollutants such as particulate matter (PM₁₀) and nitrogen dioxide (NO₂) over recent decades (1). These improvements were driven by long-term air quality monitoring, evidence-based regulation, and continuous scientific input (2). In 2021, the World Health Organization (WHO) released new Air Quality Guidelines, recommending significantly lower threshold values based on the latest health evidence (3). Although Switzerland has made notable progress, aligning national legislation with the new WHO guidelines will require further policy adaptation, technological innovation, and a reinforced science-policy interface. This paper examines the key drivers of Switzerland's air quality improvements, evaluates the implications of the new WHO recommendations, and discusses the future direction of air pollution management in Switzerland.



Time series of annual mean PM_{2.5} concentrations at different site types in Switzerland. The Swiss ambient air quality limit value for PM_{2.5} that has been in force in Switzerland since 2018 and the air quality guideline level for annual PM_{2.5} as recommended by WHO in 2021 are shown (2).

- (1) Federal Office for the Environment (2024). *Air Quality in Switzerland – State 2023*. Bern: FOEN, UZ-2418-D
- (2) Hueglin, C., Buchmann, B., Steinbacher, M., & Emmenegger, L. (2024). The Swiss National Air Pollution Monitoring Network (NABEL) – bridging science and environmental policy. *Chimia*, 78(11), 722-727. <https://doi.org/10.2533/chimia.2024.722>
- (3) World Health Organization (2021). *WHO Global Air Quality Guidelines: Particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*. Geneva: WHO.