

# AIRFRESH

# **Newsletter #7**

### **Editorial**

We are pleased to present the second Newsletter of the project **AIRFRESH** "*Air pollution removal by urban forests for a better human well-being*". The main objectives, core actions, and performed activities are presented here.

The Project Team

#### **AIRFRESH: Aims and Activities**

Mass urbanization is one of the most urgent challenges of the 21st century, as ab. 80% of EU population will live in cities in 2030 and outdoor air pollution will cause 6.6 million premature deaths. **Urban reforestation can help** improve air quality and people's wellbeing. To efficiently reduce air pollution and target carbon-neutral and climate-resilient cities, a quantitative and concrete assessment of the role of urban trees in affecting air quality and thermal environment as well as a **suitable selection of tree species** are urgently needed.

In 2020-2024, AIRFRESH aimed to: 1) measure the air pollution removal capacity bytrees within a reforested test area in two Mediterranean cities (Aix-en-Provence - France, and Florence - Italy); and 2) estimate and quantify the environmental benefitsprovided by urban trees at city scale in both cities.

Two test areas were implemented in January 2022 (400 fast-growing trees, mix ofspecies, > 3 m tall, 1ha). Continuous measurements of air pollution concentrations and meteorology were carried out in and around the area, above and below the canopy, before and after tree planting using AirQino sensors.



Fig. 1 - Selection of 400 trees in the nursery Soupe in France (July 2021) with the municipality of Aixen-Provence.

#### AIRFRESH key messages

• A new methodology was developed to detect, classify, and map individual trees and green spaces at city scale, and quantify the amount of pollutants they remove from the urban air.

• The results allow identifying priority areas for greening in densely populated cities.

• Peri-urban forests influence climate conditions and air quality within the cities. Thus **peri-urban areas can be a target for greening strategies**.

• **Private trees in Aix and Florence were more than 80%** of the total, stressing the need of policies for private owners.

• Trees remove air pollutants from the air, e.g. particles ( $PM_{10}$ ), nitrogen dioxide ( $NO_2$ ), tropospheric ozone ( $O_3$ ) and carbon dioxide ( $CO_2$ ), but their efficiency depends on the species and local climate conditions.

• Scientifically-sound recommendations of the **best/worst woody species** for urban polluted environments were made available by AIRFRESH. Recommendations differ in different cities.

• The amount of removed pollutants can compensate the emissions from thousands of cars, e.g., in Aix-en-Provence, trees remove every year 41 tons NO2 (corresponding to the emissions from 6,600 cars), 97 tons  $PM_{10}$  (147,400 cars) and 16,560 tons  $CO_2$  (10,400 cars)

• A methodology was developed for checking compliance of each building with the **3-30-300 rule**, i.e. at least 3 trees must be visible, green coverage in the surroundings must be 30%, the nearest entrance to a green space must be 300 m afar.

• The economic value of air pollution removal and Urban Heat Island reduction by current vegetation, as estimated in terms of avoided premature deaths, was 550 M€ for the city of Florence, 150 M€ for Aix-en-Provence and 700 M€ for Zagreb. The economic value is city dependent.

• This is the **first time** that air pollution and warming reductions by urban forests are quantified in tandem.

• These results help the **implementation of the EU strategies**, e.g. on biodiversity protection and Green Deal, that target planting of 3 billion trees by 2030 in the EU.



Fig. 1 - Stakeholders meeting on urban green - Bucharest 4 November 2024.

#### Stakeholders meeting on urban green - Bucharest 4 November 2024

AIRFRESH worked in Aix-en-Provence in France and Florence in Italy, with **transfer of good practices** to Bucharest city planners and stakeholders in presence of M. Fechet, Minister of Environment, Waters and Forests (Romania), Mr. Alexandru, Secretary of state in Ministry of Research, Innovation and Digitalization; Mr. Davidescu, General Director of National Institute for Research and Development in Forestry "Marin Drăcea" and Mr. Iacovici, Head of Urban Mobility Office - ADIZMB Bucharest City Hall - Ilfov County Council.



Fig. 2 - E. Paoletti, IUFRO, Research director (IRET-CNR), M. Fechet, Minister of Environment, Waters and Forests (Romania), and Mr. Davidescu, General Director of National Institute for Research and Development in Forestry "Marin Drăcea".



## **Upcoming events**

International conference IUFRO RG8.04 "Influence of Air Pollution & Climate Change on Forest Dynamics" 1-5 September 2025 Split, Croatia https://www.iufro-split2025.com

European Forum on Urban Forestry 3-7 June 2025. Zürich, Switzerland https://efuf.org Partners





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