



**LIFE 18 PRE**

## Vegetation for Urban Green Air Quality Plans VEG-GAP



Cities, accounting for 72% of the European population, offer many opportunities such as jobs and services, but also concentrate health risks such as heart disease and stroke, responsible for 80% of cases of premature death, lung diseases and lung cancer, etc. Air pollution is the single largest environmental threat to human health in Europe.

The Ambient Air Quality Directive 2008/50/EC set limit values for ground-level ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>10</sub>) and whenever exceedances occur, the countries and regional authorities have the legal obligation of designing Air Quality Plans (AQPs) and assessing their impacts on air pollution. Currently, the main strategy considered in the majority of urban AQP is to reduce the anthropogenic emissions by means of technical and non-technical measures.

Although the use of greening strategies are receiving increasingly financing, little attention is paid to the emissions from ecosystems/vegetation which are ubiquitous in atmosphere and also contribute to the generation, destruction and transformation of atmospheric pollutants such as gases (O<sub>3</sub> and its precursors, NO<sub>2</sub>, etc) and aerosol particles (PM<sub>10</sub>) in urban areas.

Urban vegetation ecosystem impacts air quality in other ways too, by reducing the air temperature, removing pollutants from the air, etc. Therefore, the authorities looking for solutions to tackle air pollution and climate problems in the cities need to know the potential role of ecosystems/vegetation on maintaining or changing the pollution levels in order to take informed decision in urban planning and managing the extension and the composition of green areas, thus integrating in the best possible way air quality and climate change resilience policies.

The overall effects of urban vegetation/ecosystems are always comprised in an undisclosed way in the air quality studies based on environmental measurements (European Environmental Agency's air quality data, EMEP data, etc) and in the air quality studies based on Chemical Transport Models (CTMs) which are the core of Air Quality Modelling systems (AQMSs). The latter are the only tool able to preliminary estimate the outcome of specific measures included in AQPs supporting thus the policy makers in identifying effective actions in terms of air quality management.

VEG-GAP project aims to develop a strategy for providing new reliable information in support of designing urban Air Quality Plans (AQPs) considering the urban ecosystems/vegetation characteristics. Specifically, the new information will regard the assessment of 1) the contribution of vegetation ecosystems both as a source and sink of air pollution in urban areas; 2) the urban vegetation ecosystems' effects on air temperature (urban heating and cooling patterns) and 3) its impact on air quality for the most relevant pollutants. This information will allow a better understanding and evaluation of the possible risks and benefits for human health and ecosystems themselves associated with air pollution changes induced by vegetation/ecosystems changes.



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