WP1

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Identification of air pollution origin
Source apportionment

WP1- I- Overall Progress Report

The overall progress report of this workpackage will be submitted at a later stage.

WP1-I- Deliverables

- **I.1.1**- Down scaled ad hoc measurement campaign for the apportionment of the contribution of traffic to PM and VOC's during a smog episode. Testing and fine tuning of methods. ***(Report to be submitted at a later stage)***

- **I.1.2**- Definition of overall sampling strategy: Sites selection and methodologies.

The PM sampling will be performed according to the specifications described in the contract. A strong collaboration has been built with ARPA Lombardia during this period and as a result the methodology and the specific location for the stations to be used for the ambient air PM have been decided. Regarding the timing of the first major source apportionment campaign the target date for starting is mid January 2007. The procedures for the acquisition of the equipment and for outsourcing part of the associated analytical chemistry (see deliverables I.1.3 and I.1.4 of this report) have been started; however the feasibility of the campaign in this date will depend on the successful completion of the administrative procedures in time. A delay in these procedures would imply that the timing of this and the subsequent campaigns will be shifted of one year.

Due to the high relevance of $PM_{2.5}$ in the forthcoming air quality legislation the local intensive campaign foreseen for winter 2007-2008 will be devoted to the study of $PM_{2.5}$.

Sites selection

The preliminary sites for the PM_{10} measuring campaign agreed between ARPA and JRC are as follows:

1. Milano/ Giuriati Park is a background site, influenced by traffic but not directly. It is representative for the "average" Milan air quality conditions. It will become the new PARFIL site from 2007 and one of the PM_{10} and $PM_{2.5}$ automatic measuring points. This station is suitable for the urban PM_{10} sources.

2. Milano/ viale Marche is a traffic site with elevated traffic intensity on the internal ring road. It is representative of the traffic in the urban area. Currently it is not measuring PM_{10}. Information on PM_{10} in Milan can be obtained in this zone sensitive to the fluctuations of traffic intensity.

3. Cantù/ via Meucci is a background station in Como area representative for the area Unica Milan- Como- Sempione. The station is located in the area densely populated and characterized by the activities of the small craft workshops often with the furniture industry profile. Wood burning is probably an important source. Cantù and Brianza are located in the hilly area with a more sophisticated orography.

4. Saronno Santuario is a background station of the Sempione zone, typical for the area *Unica* Milano Como Sempione. It is a region with a dense population and a presence of dispersed small medium enterprises, but more diversified than the Brianzola area. The furniture industry is no longer the most important. Although not directly affected by the emissions from traffic, the station is located in area with important transport roads.

5. Bergamo/ via Meucci is an urban background station of the Bergamo agglomeration (3rd biggest one in the Lombardy Region) in the residential area of lower Bergamo. A representative site for exposure of the population in a densely urbanized area in proximity of the preAlps.

6. Brescia/ via Cantore (or Sereno village) is a background station of the Brescia agglomeration (3nd biggest regarding population in Lombardy). This site is characterized by the elevated urbanization, with important industry activities (like the steel production among the others).

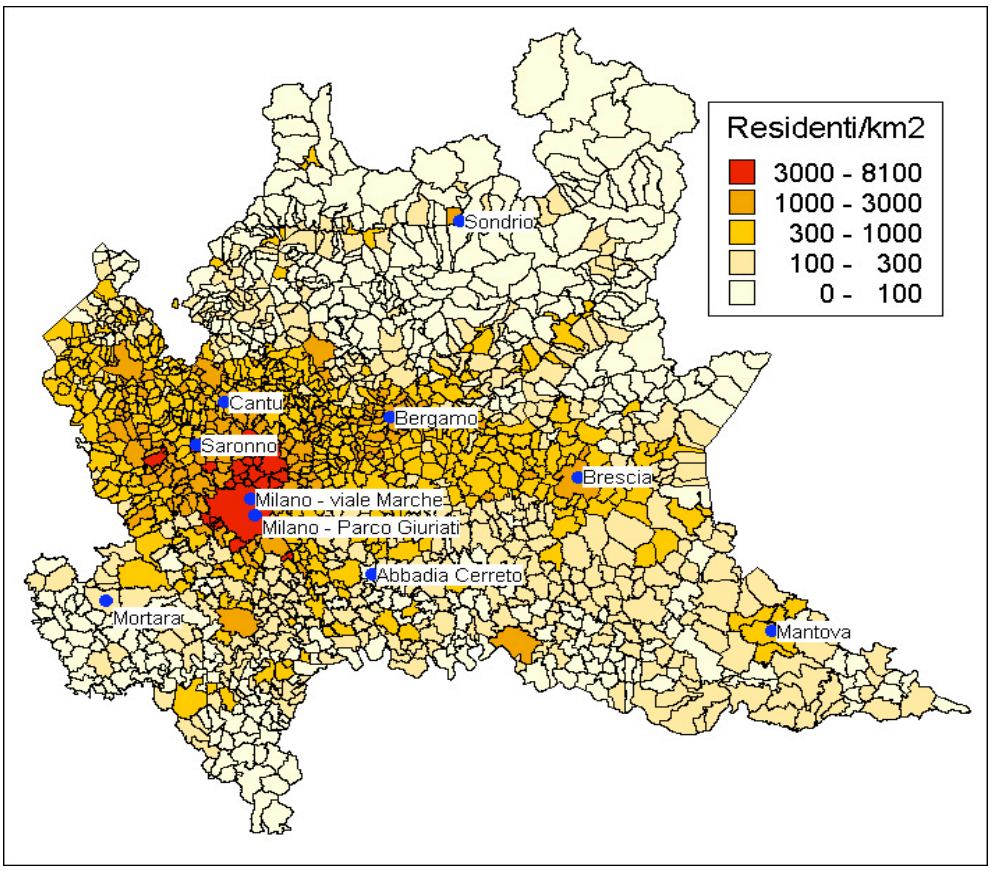
7. Vigevano (or Mortara) is a background station in Lomellina, on the Lombardy plains territory that is characterized by the rice production. The site is located in an urban area significantly populated in this zone.

8. Mantova/ S. Agnese is a background station in the centre of Mantova (pedestrian zone). The city, situated in the eastern part of the Lombardy plain, is influenced by important emissions from the industry surrounding the city. The agricultural production of this territory is also of importance.

9. Sondrio – Valtellina is a station located in the centre of the town situated in the mountain valley thus it is partially influenced by traffic emissions that can be affecting the air quality regarding the PM concentrations in the lower part of the basin. Valtellina is the most important valley in Lombardy with the specific meteorological conditions for the preAlp zone with a significant use of biomass for the heating.

10. Abbadia Cerreto is a rural background station of the plain, near the town of Lodi. It represents an agricultural area with small populated centers spread out over this agricultural lowland. The Tavazzano power station is located in a distance of few dozen kilometers from this site.

The location of the proposed points for the PM_{10} measuring campaign is presented on the following map:



Selected sites for the source apportionment PM_{10} measuring campaign (population density in the Lombardy Region as background map)

- **I.1.3**- Acquisition of PM sampling equipment for all source apportionment sites in Regione Lombardia.

The JRC is in the process of acquiring the low volume samplers needed for the Source apportionment workpackage that will be also used for WP3.
(see annex: I.1.3 PMsamplers.pdf and I.1.3 PMsamplers(Tech).pdf)

I.1.4- Definition of work plan for: *i)* chemical analysis of PM and *ii)* sampling of PM in stack emissions from important sources in Regione Lombardia

Ad. i) A work plan for the chemical analysis has been developed. The administrative procedures for outsourcing the part of chemical analysis that will be carried out outside JRC premises have been started: organic carbon (carbon speciation, Levoglucosan and scanning electron microscopy) and source tracer ions and higher alkanes (see annex: I.1.4chem_PM.doc)

Ad. ii) The methodology for sampling of PM in stack emissions will be similar to that applied within the Krakow Integrated project. The detailed workplan will be developed in collaboration with ARPA Lombardia and the corresponding outsourcing contract will be prepared *(a **report will be submitted at a later stage).***

- **I.1.5**- Sampling of PM_{10} in emissions from wood-burning in small and medium size stoves and boilers (residential heating).

Activities in this field have been initiated in collaboration with ARPA.
(A report will be submitted at a later stage)