Introduction
Elisabetta Angelino (ARPA Lombardia) welcomed the participants and presented the activities of ARPA Lombardia and Regione Lombardia related to air emission and air quality, the cooperation with other local and national institutions and the participation to international project such as City Delta.

The transport panel chairs thanked Elisabetta and Regione Lombardia for their kindness to organise and host the meeting.

The issues in agenda are reported in the following.

Q/A on COPERT 4 software and operation
Charis Kouridis from LAT made a short presentation on COPERT 4 giving information on the general functions of the software and the update with respect the previous version.

The methodology for regulated and not regulated emissions requires information on a number of vehicle, mileage, fuels and technologies. Hot, cold and evaporative emissions in urban, rural and highway mode are estimated. Cold emission are estimated as cold excess emissions before the vehicle reaches the standard emissions and the relative fraction of hot emission depends on temperature, ltrip hot and beta factors. Advanced correction regards mileage degradation, fuel effect, and load and slope correction for HDV.

For the future new vehicle categories such as and small diesel are being considered for inclusion, as well as new fuels (biodiesel, hydrogen and natural gas) and updates and/or verification of the methods on N2O and NH3, cold-start and evaporation losses are planned. A discussion regarding the update of the software, the timing of updating and priorities has been done. The discussion concluded that it is advisable to keep the number of software revisions to a minimum during the year and present any new version before September each year, to allow timely submission of data. However, in case of significant software bugs, a new version could be made available also during the year.

Dimitrios Gkatzoflias from LAT supplied more details on the software operation. The explanation of the software focused on what is new with respect to the previous Copert version. Most importantly, the time series is included in the same database so any methodological updates can be applied to the complete time series in one run. Also, several other tools and check algorithms have been introduced to assist the user in the preparation of an inventory. An issue identified was that although activity data from Copert III, such as the fleet configuration (local/regional vehicle technology) can be imported in the new software, fuel-specific information is not included at the moment and this needs to be introduced manually. Dimitrios said that this possibility will be available to the new software version in the coming September.
Q/A on transport methodology and requests

A long session on question and answer followed. Problems and inconsistencies of the new version of the software were addressed, some of those will be solved in the next version. The most important of these were:

- There is a new classification for the HDV fleet, but information for the past is not easily available; so a tool for the user that help in aggregating the new categories into the old ones can be added in the next future but without proposing for these categories old emission factors.
- Another issue was whether NMVOC had different speciation for different sources. Copert already includes speciation figures but no detailed distinction for vehicles of new emission standards (both gasoline and diesel). A potential new source of information for the NMVOC speciation could be the results from ARTEMIS.
- Regarding chemical speciation of PM (elementary carbon vs organic carbon) the data available in the literature will be summarized to provide such distinction. A clarification was also made for the particle size, that is exhaust PM is contained in the PM$_{2.5}$ fraction, which makes exhaust PM$_{2.5}$=PM$_{10}$=TSP. Finally, the non-exhaust PM methodology is described in the guidebook and will be included in the next software version.

Questions on the differences between ARTEMIS and COPERT were also made. Even though starting from the same basic data, ARTEMIS tries to adapt to local situation whereas COPERT has been developed for the preparation of national emission inventories and its application to lower spatial resolution increases the uncertainty of the results.

The use of urban, rural and highway conditions in the preparation of emissions estimations was discussed related to spatial information and/or driving conditions. The experience in the national inventories is to associate the driving condition to typical average speeds (low, medium and high) to estimate national emissions while the spatial information is used to disaggregate emissions at a local level.

Another question regarded the filter particulates equipments. The EU reduced the PM emission standard of Euro 5 (emissions standard 3 mg/km) and particle filters will become mandatory to reach this limit. With this development, it is expected that the actual PM emission levels from Euro 5 passenger cars will actually decrease below 3 mg/km and this will be relatively straightforward to introduce in the upcoming software version of Copert.

Some clarifications were also provided on NOx emissions from HDV and the unexpected NOx behaviour for Euro II and Euro III vehicles, as a result of electronic engine tuning. The same has been also observed for the various Euro classes of diesel passenger cars. Leonidas Ntziachristos from LAT presented a comparison of emissions measurements with the NECD and Artemis cycle for diesel passenger cars of different emission standard (data originating from TU Graz). The emission levels of different technologies always fulfilled the standard over the NEDC cycle but not over the ARTEMIS driving cycles. NOx emissions are related to fuel efficiency and the weight of the vehicles and are not as efficiently reduced as the emission standards call for. Copert 4 takes into account this inconsistency in the reduction of NOx emissions.

Other presentations
Stefano Caserini presented the first results of a survey on the relationship between annual gasoline and diesel cars mileage and their length of service. Data available for two Italian areas (Ferrara and Milano), shows a clear influence of vehicle age on the amount of kilometres driven annually; older vehicle (both diesel than gasoline) drive annually a lower distance than more recent vehicle. Information on the evolution of vehicle mileage with age is an important tool for a precise
assessment of atmospheric emission from road traffic, due to the great dependence of emission factors on engine technology, strictly connected to the period of vehicles registration. The use of lower mileage for older vehicles is a key point in the assessment of the actual contribution of these vehicles to PM and PM precursor emissions, as well as for the assessment of the effect of vehicle turnover and traffic limitation policy on atmospheric pollution reduction.

Results are compared to data proposed by the EC project Tremove, which contains similar mileage functions. Results found for the two Italian areas of Milan and Ferrara county are lower than Tremove data for older vehicle, whereas average mileage are similar.

A discussion followed about the availability of data, the assumption of Parties for national inventory and the possible collection of data. Parties are invited to submit the information regarding mileage data and assumptions used in national inventories (in particular their dependence on vehicle age, or mileage for different Euro categories) to Stefano Caserini (s.caserini@arpalombardia.it) who will collect the information and report back the results to the expert panel. This information will also be of use to the project funded by the European Commission (DG ENV) to improve the fleet descriptions in Tremove.

Justin Goodwin presented the activity in plan of the projection expert panel of the TFEIP leaded by the UK (Chris Dore and Samantha Baker). Structure, objectives and responsibilities were described. In the next months a detailed work plan will be produced.

At the end of this morning session on Copert 4, the needs of future improvements of Copert were prioritized. Pending methodological issues regard:

1. Inclusion of EURO4 diesel PC specific Emission Factors
2. Reduction factor for EURO5 PC
3. Reduction factor for EURO VI HDV
4. Emission factor for B10,B30, B100, Bioethanol
5. How to consider Biofuels for CO2 reporting
6. Deduction of oxygenates from the fuel mass balance for CO2 reporting
7. More detailed PC classification for CO2 and FC
8. EF for CNG buses and PC
9. Non exhaust PM including size
10. PM chemical and size speciation
11. Cold start methodology update
12. Evaporation methodology update

Some of the improvements (items 1, 2, 3, 4, 6, 8, 9, 10, 12) could be included in the guidebook by July and in the software by September with a new version release. Items 5, 7 and 11 might need some additional consideration.

In the afternoon section, the participants splitted in two groups, one continued with questions and operative problems on the software and the other was the expert panel on transport with specific focus on the Guidebook revision.

**Transport EP with focus on Guidebook revision**

The presentation on the Guidebook update was given by Justin Goodwin (AEAT). The revision of the guidebook was given in December 2006 to a consortium formed by the AEA and TNO and should be finished by July 2008. The main objective is to encourage the highest possibly quality in
reporting guaranteeing the description of Tier 1 methods for all the sources and Tier 2 likely for all the key sources. A continuous updating will be guaranteed along with a wider EF database.

The structure of the guidebook will follow that of the IPCC guidelines, a cross cutting chapter plus a section on projections and gridding, a sector methodology description where sources are described at SNAP level plus a cross cutting section and references. Each draft chapter will be sent to the expert panels for checks.

The panel discussed on issues specific to transport. The discussion concluded that the main revision should concern off-road machinery, because a Tier 3 methodology is already defined for road transport. On the contrary, old EFs are reported in the guidebook for off-road vehicles, and the relevant directives have not been updated. This is a key priority for the consultant to address.

The expert panel can support the consultant in the identification of experts/stakeholders that can provide contribution. At the same time the panel can help in checking information already included in the GB, adding any information which can become available, identifying missing pollutants and/or source categories. A first list of contacts, suggestions and references for additional data was already supplied by the expert panel to the consultant during the discussion (Artemis consortium, list of experts in non-road emissions, etc.). The status under which external experts will submit their data and expertise to the consultant remains to be seen, because financial and data ownership issues may become an obstacle in the process. The expert panel will assist in resolving these issues to the extent possible, by providing the necessary forum for discussion, data exchange and reconciliation.

One of the open questions is how to address the specific time constraints of the consultant, given the time constants of the expert panel. The consultant suggested that some experts or small-scale research could be also funded, if this is required to deliver some specific tasks.

The consultant will raise any particular requests to the panel at a later stage.

**Attachments**
The presentations of the meeting will be posted on the APAT web-site:

www.inventaria.sinanet.apat.it/ept

The list of participants is attached.