The estimation of road transport emissions for 2018 Italian Inventory

The transition to Copert 5

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Overview

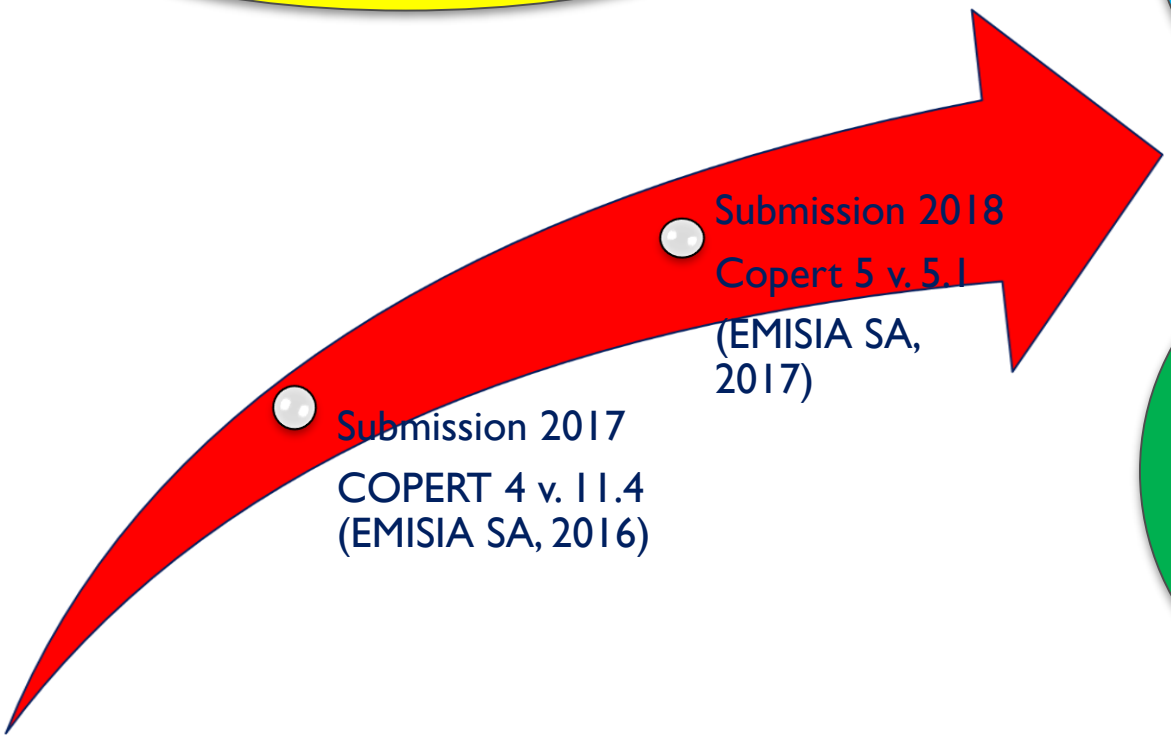
The road transport sector contributes to the total national emissions in 2016 as follows: nitrogen oxides emissions for 48.7% of the total (-60.3% since 1990); emissions of carbon monoxide for 20.5% (-91.1% since 1990), non-methane volatile organic compounds for 13.5% (-84.4% since 1990), PM10 and PM2.5, for 13.1% (-55.9% since 1990) and 12.0% (-62.7% since 1990), respectively, of the total.

The estimation refers to the following vehicle categories:

- 1.A.3.b.i Passenger cars
- 1.A.3.b.ii Light-duty trucks
- 1.A.3.b.iii Heavy-duty vehicles including buses
- 1.A.3.b.iv Mopeds and motorcycles
- 1.A.3.b.v Gasoline evaporation
- 1.A.3.b.vi Road transport: Automobile tyre and brake wear
- 1.A.3.b.vii Road transport: Automobile road abrasion

The Italian experience about Copert 5

THE ESTIMATION OF ROAD TRANSPORT EMISSIONS FOR THE NATIONAL INVENTORY



UNECE CLRTAP SUBMISSION
Air pollutant emissions. COPERT methodology is part of the EMEP/EEA air pollutant emission inventory guidebook

UNFCCC SUBMISSION
Greenhouse gases. Estimation methodology consistent with the 2006 IPCC Guidelines

Strengths of Copert 5

GREATER FLEXIBILITY IN THE MANAGEMENT OF DATA PROCESSING, IN IMPORT AND EXPORT PROCESSES

FASTER ELABORATIONS

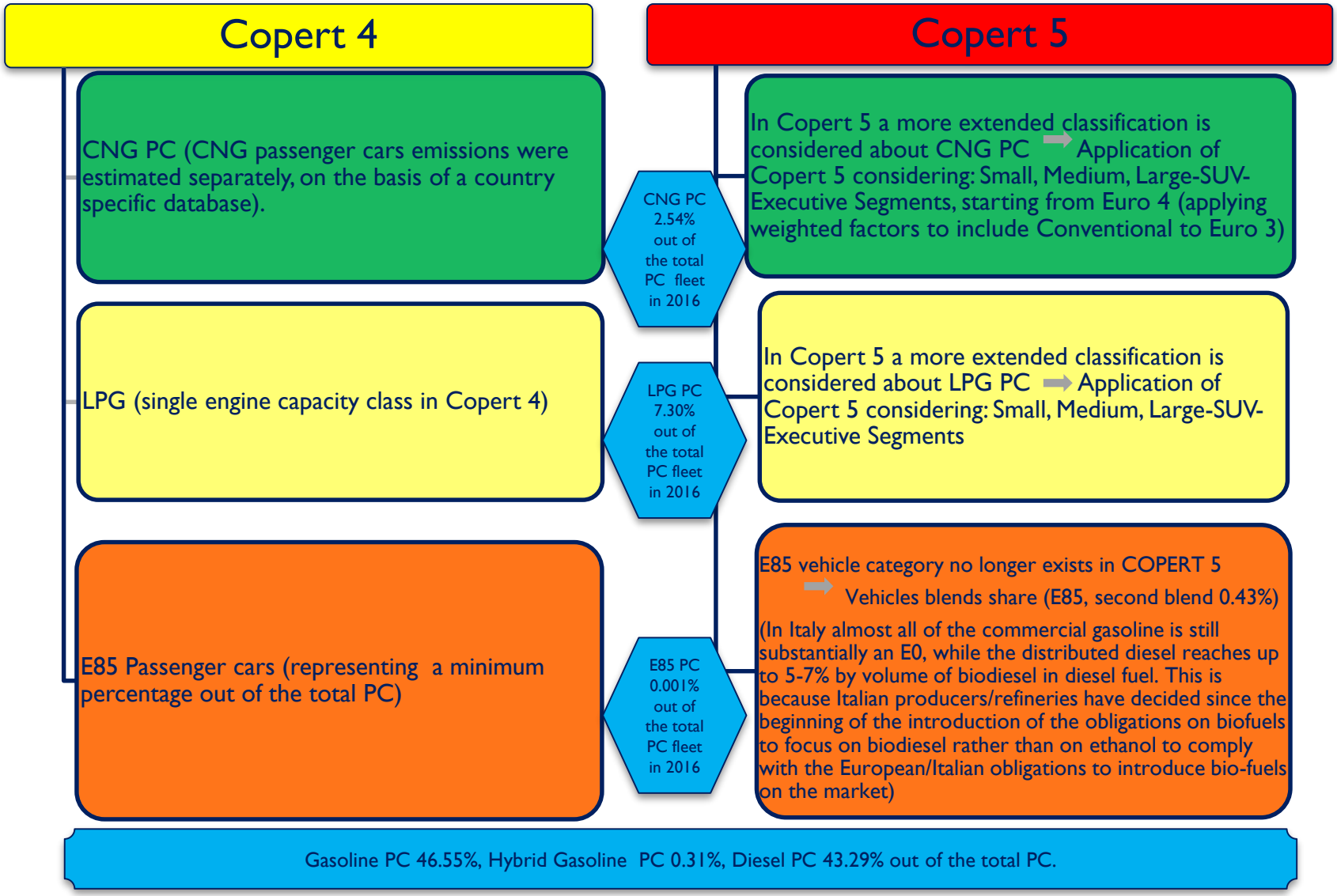
IMPROVED SOFTWARE INTERFACE IN A USER FRIENDLY SOFTWARE

METHODOLOGICAL UPDATES

Updates are related to the fuel, concerning: fuel energy instead of fuel mass calculations; distinction between primary and end - blends - fuels, automated energy balance; updates regard the revision of the metal content of lubricants; updates regard vehicle types, updated vehicle category naming, new vehicle types and emission control technology level; as regards emission factors, one function type and the possibility to distinguish between peak/off-peak urban, have been implemented.

The Italian experience about Copert 5

Changes in the classification of the fleet



Recalculations

Recalculations due to the overall changes applied in 2018 Submission

	CO	NMVOC	NMVOC EVAP	NO_X	PM EXHAUST	PM10	PM2.5
1990	-0.7%	-9.5%	-37.1%	-1.0%	-0.2%	7.3%	4.2%
2015	4.4%	-9.4%	-30.6%	-1.9%	-0.3%	20.0%	13.1%

Use of country specific summer vapour pressure (RVP) values

Variations basically due to the implementation of Recommendations from TERT (NECD Review 2017)

Estimation of emissions also for 1A3bvii Road Transport: Automobile Road Abrasion

Hints for future updates

Software point of view

Introducing the possibility to import country specific emission factors for all years of the historical series, would be very useful mainly when a new version of the software doesn't keep user values previously inserted (for instance Italy uses country specific consumption factors for passenger cars for all the years) . (In *Factors\Hot,* there is the possibility to import hot emission factors for the selected year, and the export applies only to the selected pollutant and not all, a form that allows the import of emission factors for all the years would be helpful).

As regards the exports, introducing the possibility to obtain by Copert 5 an export similar to that obtained by Copert 4 about FC (TON) and mileage (KM_KVEH) for vehicle category and U,R,H share (COP_ACT.DBF from Copert 4), it would be very useful for elaboration purposes.

As regards NMVOC Speciation, it would be helpful to introduce in Copert 5 the export of emissions of different NMVOC species in the detail of vehicle categories for all the years of the historical series, being at now the only possibility per single year by the form Results\NMVOC Speciation (in Copert 4 for instance, the export indeed, in the detail of the vehicle categories and for all the years, of output emissions of indeno_1_2_3_cd_pyrene, benzo_k_fluoranthene, benzo_b_fluoranthene, benzo_a_pyrene, dioxins and furans, was very useful for elaborations).

Hints for future updates

Methodological point of view

Methodological update of emission factors, in particular about CNG Buses emission factors (being at now Euro VI emission factors equal to EEV emission factors, and NO_X and PM emission factors values found greater than diesel buses emission factors values)

As an example, according to the "Etude comparative sur les différentes motorisations de bus", NO_X and PM emissions are much lower in natural gas vehicles than diesel vehicles (Centrale d'Achat du Transport Public, September 2017).

According to the EIG2016, PM emission factor for EEV should be equal to half the value of emission factor of Euro III (the EIG2016 reports 0.01 and 0.005 PM g/km for Euro III and EEV respectively, *EMEP/EEA air pollutant emission inventory guidebook 2016 – Last Update June 2017, 1.A.3.b.i-iv Road transport 2016 - July 2017.pdf,Table 3.45: Emission and consumption factors for urban CNG buses*), but in Copert that doesn't result, in particular for hot urban (both OP and PK).

As regards Particulate emissions from automobile road abrasion, despite the uncertainty and variability, it would be useful for reporting (requested during Review processes) the inclusion of road transport automobile road abrasion emission factors in COPERT model, even on the basis of default emission factors for source category 1.A.3.b.vii, road surface wear reported in the Guidebook (EMEP/EEA, 2016).

As regards the Energy Balance process, it would be useful to introduce an intermediate solution between the automatic balance and the manual adjustment of mileage, giving the possibility to use Country specific information about the trend of mileage for particular vehicle categories, fixing for instance the known variation value between two years of the historical series and allowing to apply the automatic balance to the remaining vehicle categories.

Any plan to include LNG heavy duty trucks vehicles category in Copert 5?

Thank you for your attention!