Modello TREFIC aggiornamento alla versione COPERT 5.9.2 (Settembre 2025)

COPERT

strumento ufficiale EEA

Emissioni da traffico

Approccio ultra-dettagliato "bottom up"

PLUS

estensioni rispetto a COPERT, es. risollevamento

Strumento per il calcolo delle emissioni da traffico stradale

TREFIC

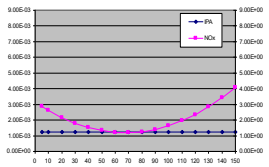
TRaffic Emission Factors Improved Calculation

Percorrenze e velocità

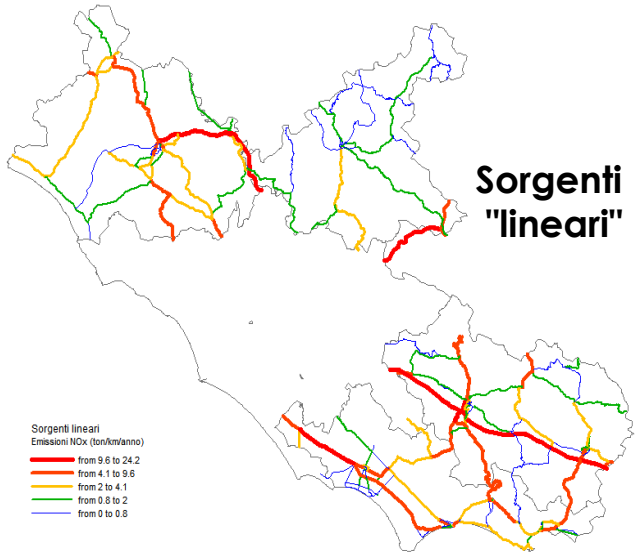
Autovetture benzina	499.466
Autovetture metano	634
Autovetture diesel	57.076
Autovetture GPL	15.147
Autocarri benzina	38.114
Autocarri metano	17
Autocarri GPL	178
Autocarri diesel	46.476
Autobus benzina	21
Autobus diesel	1.809
Motocicli benzina	38.215
Motocarri benzina	1.925
Totale veicoli immatricolati	699.078

Parco veicolare

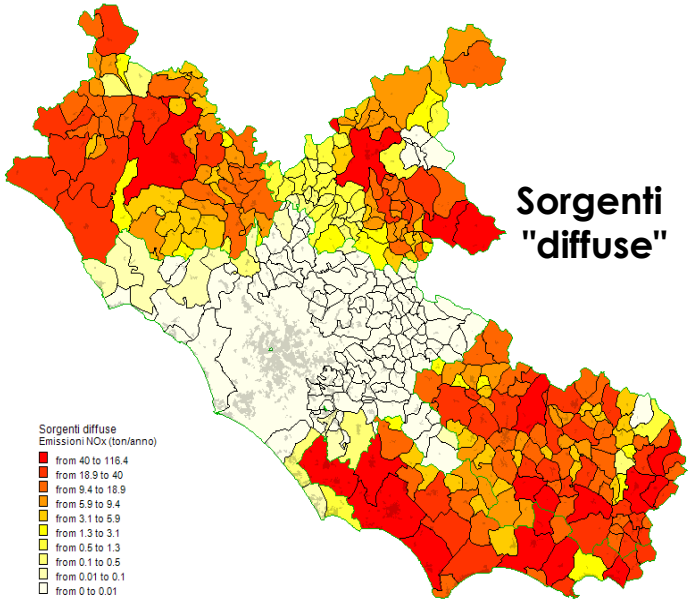
Fattori di emissione (EU COPERT)



Modello di emissione TREFIC



Sorgenti "lineari"

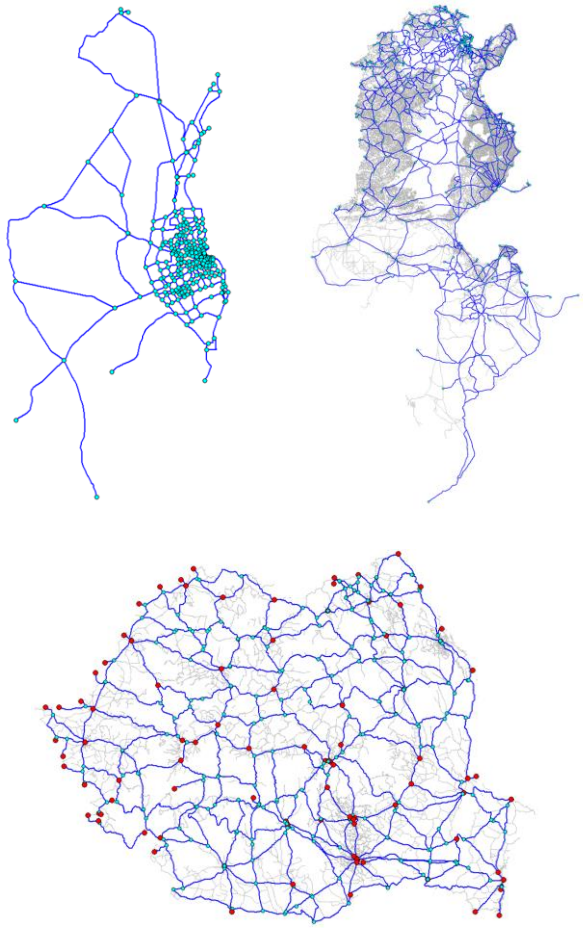


Sorgenti "diffuse"

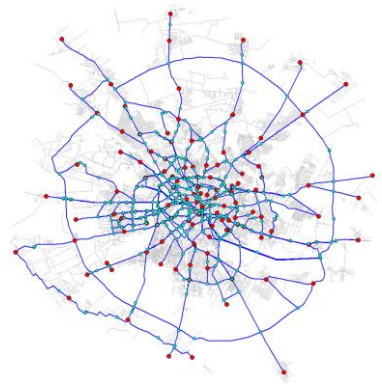
Schema funzionale

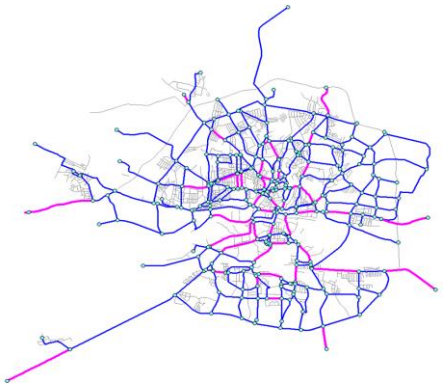
Alcune fortunate applicazioni

Nations

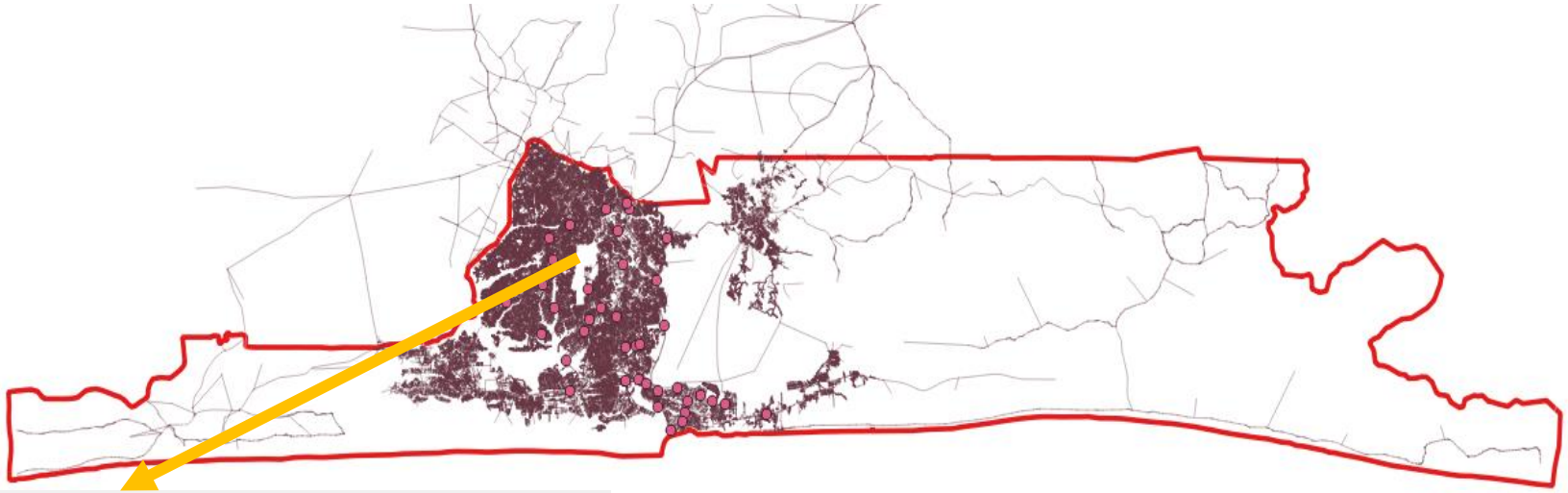


Cities





Lagos State – Nigeria – World Bank



> 140000 links

Tesi di Laurea Magistrale in Ingegneria per l'Ambiente e il Territorio

MODELLO TREFIC PER LA STIMA DELLE EMISSIONI DA TRAFFICO STRADALE: AGGIORNAMENTO ED APPLICAZIONE PER LA CITTA' DI TARANTO

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Correlatore: Dott. Alessandro Nanni

Anno accademico: 2024-25

POLITECNICO MILANO 1863

LA METODOLOGIA COPERT

DIFFERENZE PRINCIPALI TRA LE DUE VERSIONI

COPERT / TREFIC 5.2.2

- AGGIORNAMENTO DEI FATTORI DI EMISSIONE A CALDO
- ESTENSIONE DELLE CATEGORIE VEICOLARI: 418 → 609
- AGGIUNTA/REVISIONE DELLE EMISSIONI A FREDDO
- REVISIONE DEGRADAZIONE EMISSIONI A CALDO
- 44 NUOVI COMPOSTI DA SPECIAZIONE NMVOC
- NUOVI PARAMETRI PER STIMA ABRASIONE

COPERT / TREFIC 5.9.2

TREFIC UPDATE FROM VERSION 5.2.2 TO VERSION 5.9.2

1. Extension of vehicle categories from 418 to 609:

- **Introduction of Euro 7 standards;**
- Revision of nomenclature and update of emission factors for Euro 6 standards;
- **Introduction of electric Passenger Cars, gasoline and diesel PHEVs and HEVs (HDV);**
- **Inclusion of CNG and LNG HDVs, as well as motorcycles and mopeds updated up to Euro 5.**

2. Update and expansion of fuels

- Introduction of biogas as a distinct fuel, separated from fossil natural gas;
- Extension of emission factors for CNG and LNG for LDVs, HDVs, and Euro 6 LPG buses;
- Alignment of fuel consumption and emissions for bi-fuel vehicles.

3. Comprehensive update of exhaust emission factors

- Widespread updates for NOx, CO, VOC, CH_4, N_2O, and NH_3 for LDVs and HDVs;
- General revision of particulate matter PM10, PM2.5, and Black Carbon (EC/BC);
- **Introduction of SPN23 emission factors for all vehicle categories;**
- **Conversion of consumption metrics from Fuel Consumption [g/km] to Energy Consumption [MJ/km];**
- **GHG emissions from EV thanks to the average national or local fuel mix for power production.**

TREFIC UPDATE FROM VERSION 5.2.2 TO VERSION 5.9.2

4. Extension and revision of the cold-start emission methodology

- Introduction of cold-start emissions for HDVs for the pollutants CO, NOx, and VOC;
- Extension of PM and introduction of SPN23 cold-start emissions for all LDV categories;
- Introduction of cold-start emissions for ElC and OM.

5. Revision of non-exhaust emissions

- Emission factors for brake wear, tyre wear and road abrasion aggregated by road type and no longer dependent on vehicle speed;
- Introduction of SPN23 from abrasion processes.

6. Speciation of NMVOC compounds

- Revision of NMVOC profiles for gasoline and diesel LDVs;
- Introduction of 44 new organic compounds for all vehicle categories.

7. Revision of the mileage-dependent emission degradation model

- No longer dependent on vehicle speed, minimum/maximum thresholds at 50,000/200,000 km;
- Methane.