Pourquoi les Véhicules Electriques sont une solution de mobilité durable?

La politique VE en ville permet une amélioration de la qualité de l'air et de l'exposition

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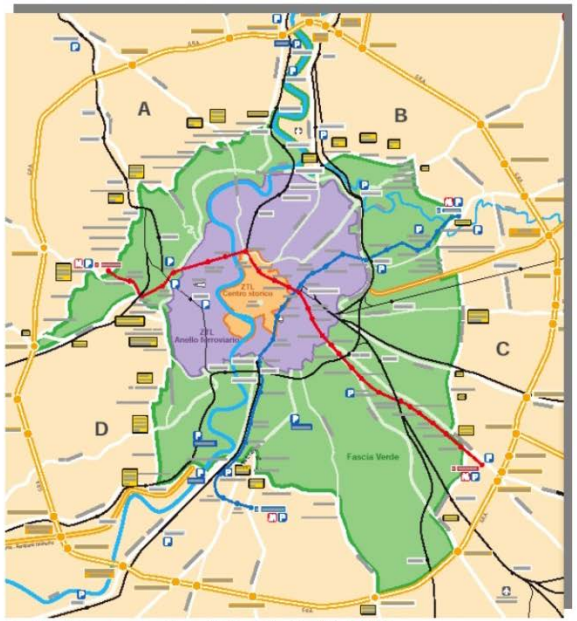
Pourquoi Rome?

Politique de limitation du trafic déjà mis en place

Rome a une population de 2,8 millions d'habitants et elle compte **1,96 million de voitures et plus de 550.000 cyclomoteurs et scooters !**

Les VE, une solution?

→ Evaluer le bénéfice sur la qualité de l'air et l'exposition des habitants d'une introduction massive de VE dans le parc roulant



Zone à trafic limité

Blu Area (ZTL) 5.5 kmq

Anello ferroviario 48.4 kmq

Fascia Verde 154 kmq

External Ring (GRA) 344 kmq

Municipality 1285 kmq

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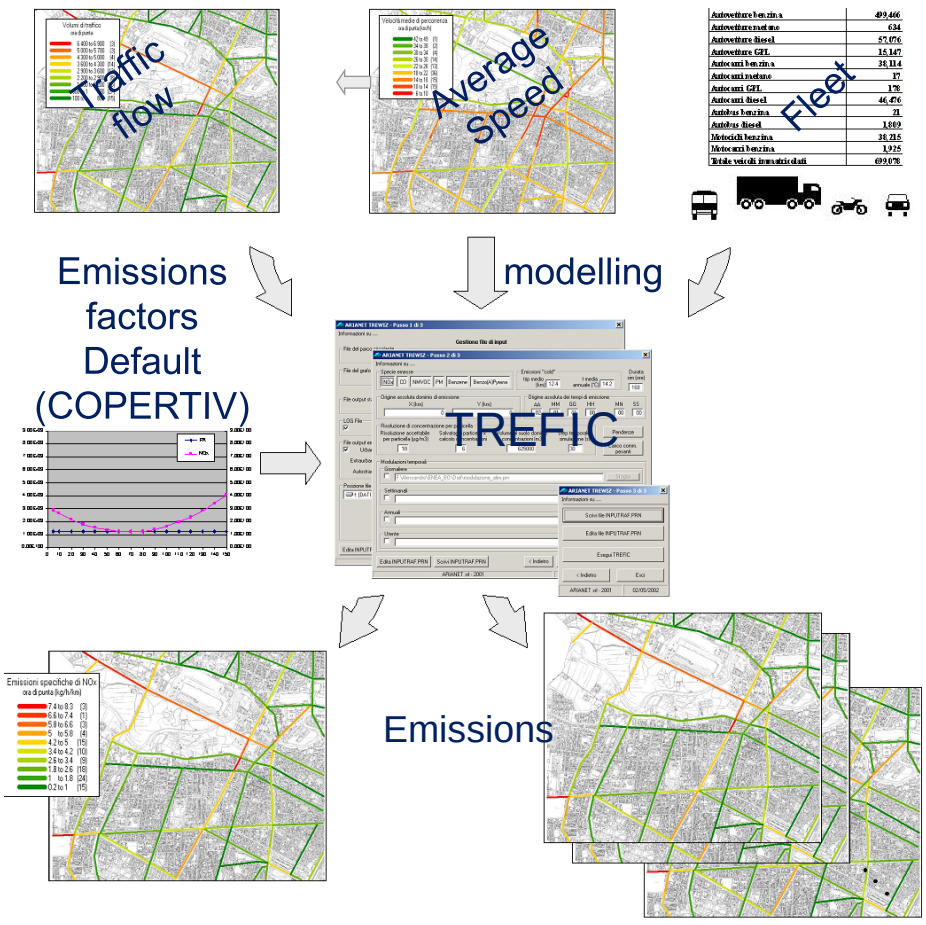
Méthodologie

1

Calculation of changes in the **emissions inventory**, taking into account changes in fleet composition (EV / Thermal)
Impact on thermal power stations of the additional power supply needed

Roma central ZTL Zone:
~20% of EV's for personal vehicles, Light duty Vehicles & 2 wheelers
Replacement of the oldest categories
+ ZTL policy strengthening

Other zones:
~10% of EV's for personal vehicles & Light duty fleet

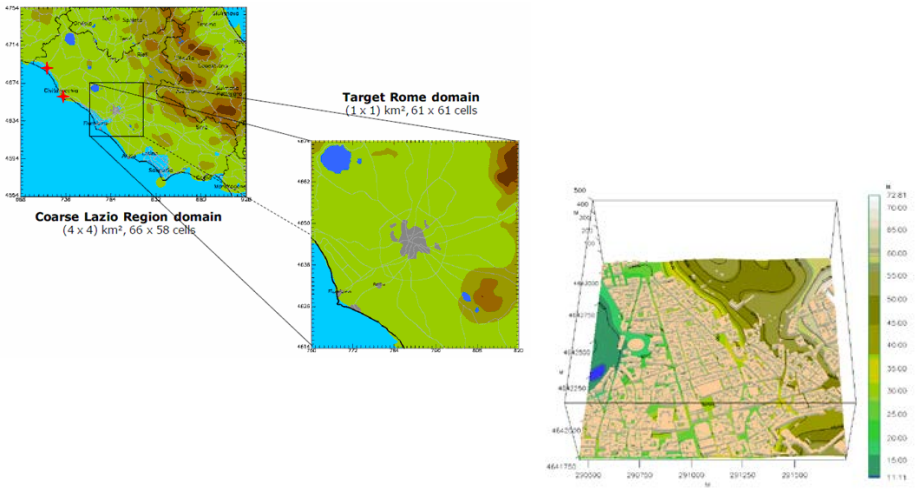


Méthodologie

2 **Numerical simulation of air pollutants** (Nitrogen dioxide, benzene, particulates, carbon monoxide, ozone) by taking into account the dispersion (weather, season), chemistry (large scale), traffic density & patterns…

2 simulation domains

large regional scale (50*50km), street level (1*1 km)



2 scenarios for 2020

- **Base case**(S0) business as usual without any EV introduction
- **Voluntary scenario** (S1)

⇨ EV targeted Public fleet renewal

⇨ Voluntary promotion of EV powered LDV for good delivery

3 **Benefits related to population exposure**

Assessment of the improvements by the mean of IPP index calculation (Population x concentration)

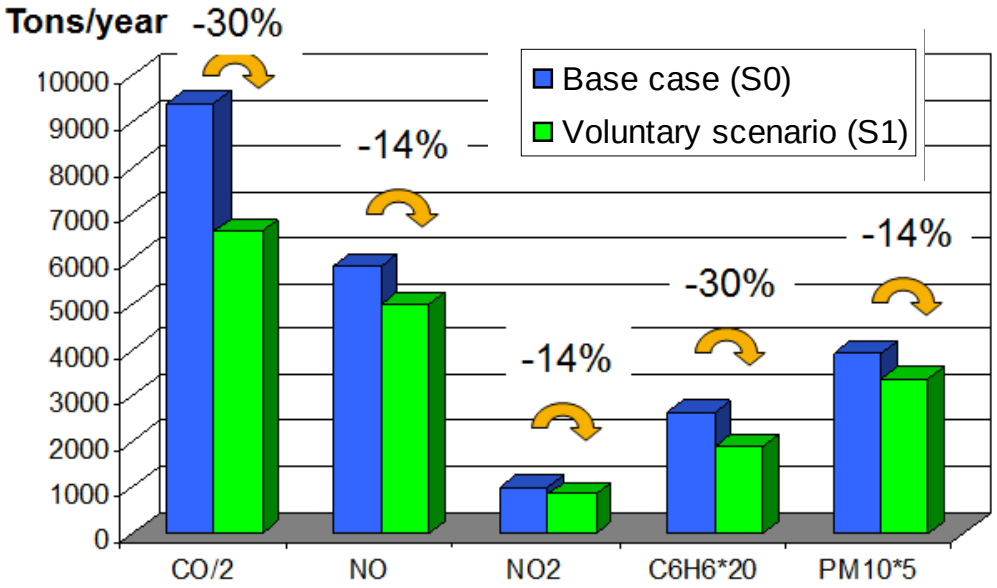
Impact on road traffic emission inventory

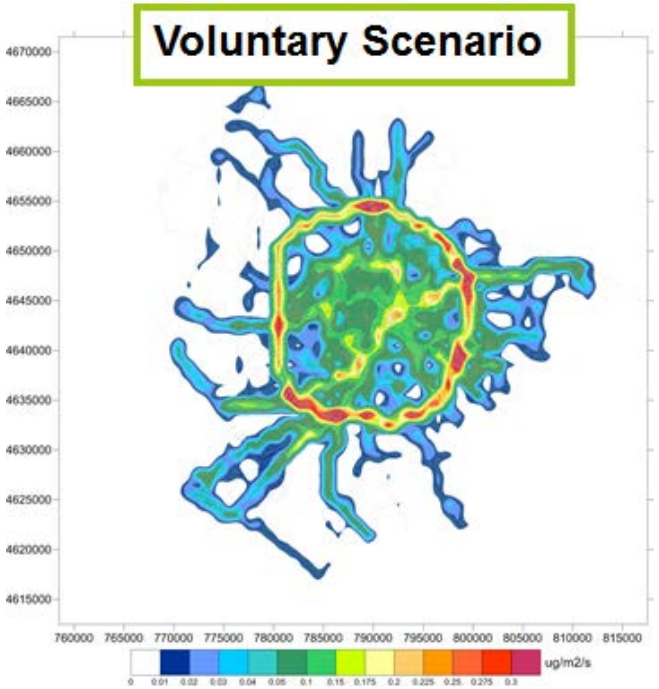
1 **Large scale domain**

- ↘ 14% for NO, NO_2 et PM_{10}
- ↘ ~30% for CO et Benzene

Significant reduction of traffic contribution to overall emissions
(For example CO traffic contribution 13% instead of 19% of total emissions)

Reduction of hot spots visible on major traffic zones



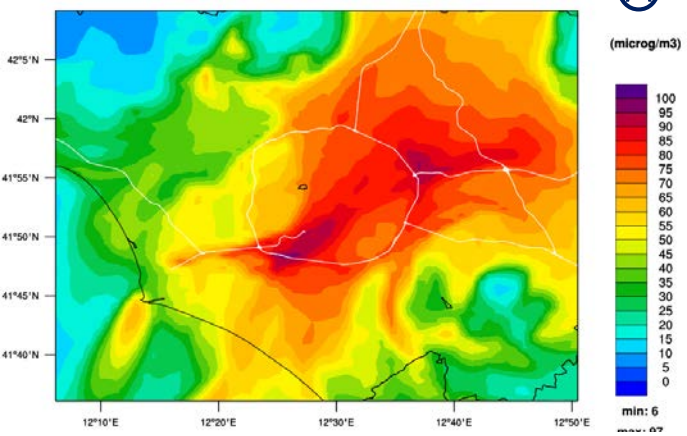


Impact on the regional pollution

2 **NO_2**

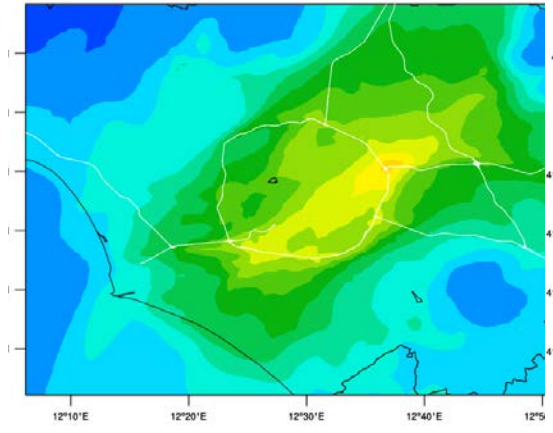
- **Winter** (Daily maximum): the average concentrations can be reduced up to 9%, (2,5 µg/m3) decrease for central Rome
- **Summer** (Average over 24 hours): -10 to 25% over maximum and average values, Up to 5 µg/m3 decrease for central Rome

Winter period: Base case
Absolute concentration
Maximum day 1 (µg/m3)



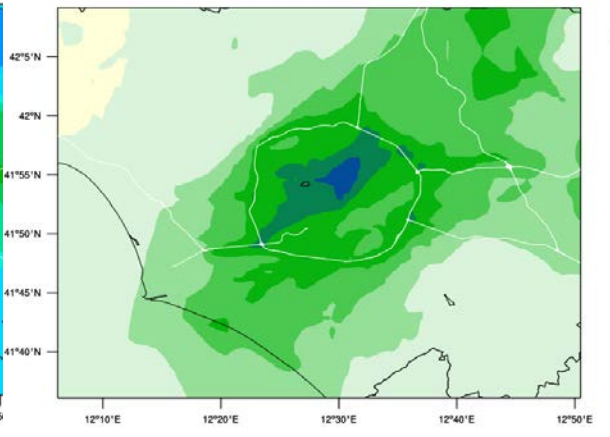
50*50 km

Winter period: Base case
Absolute concentration
Mean value day 1 (µg/m3)



50*50 km

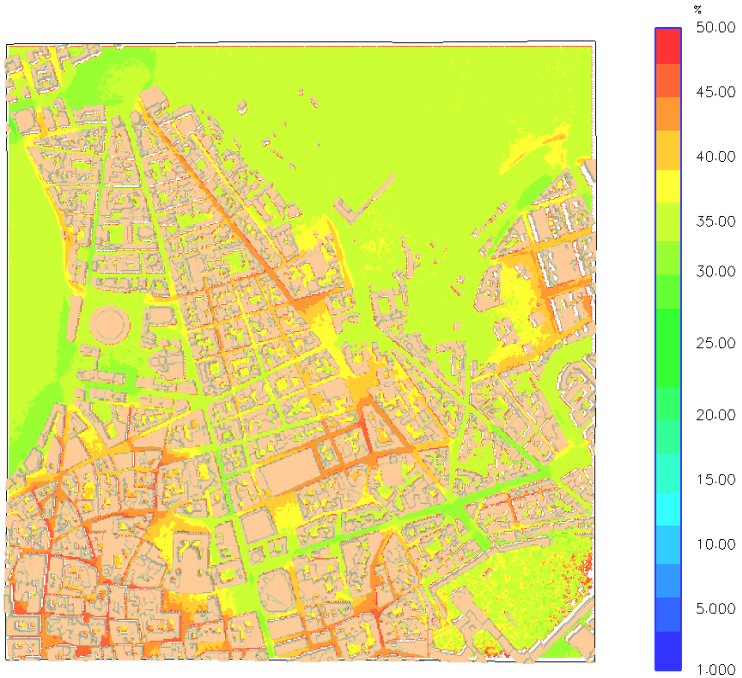
Winter period: Voluntary / Base case
concentration variation
Mean value day 1 (µg/m3)

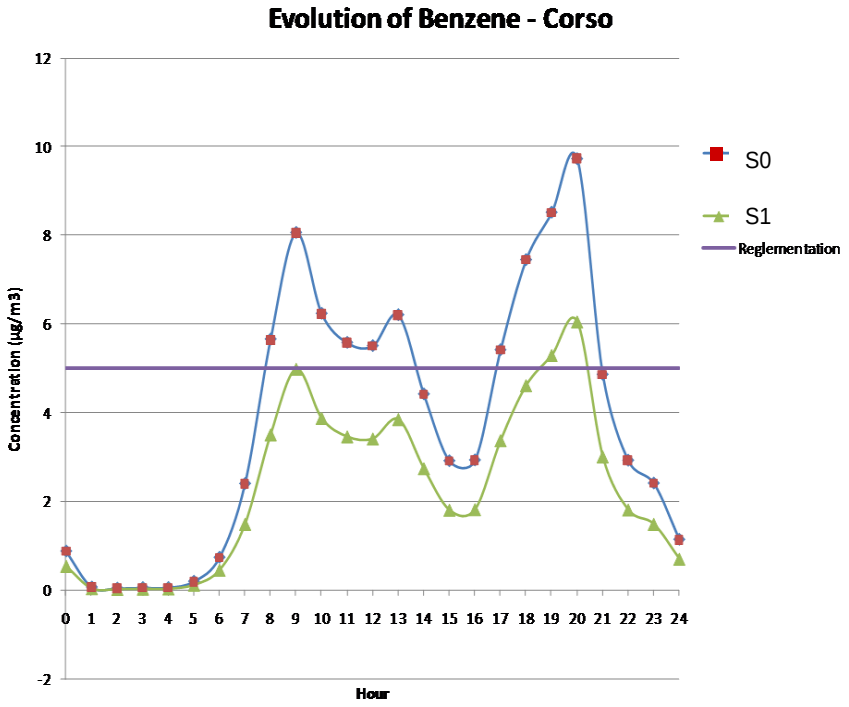


50*50 km

Impact at the street scale

NO_2 concentrations
Variations between S0 and S1 (%)





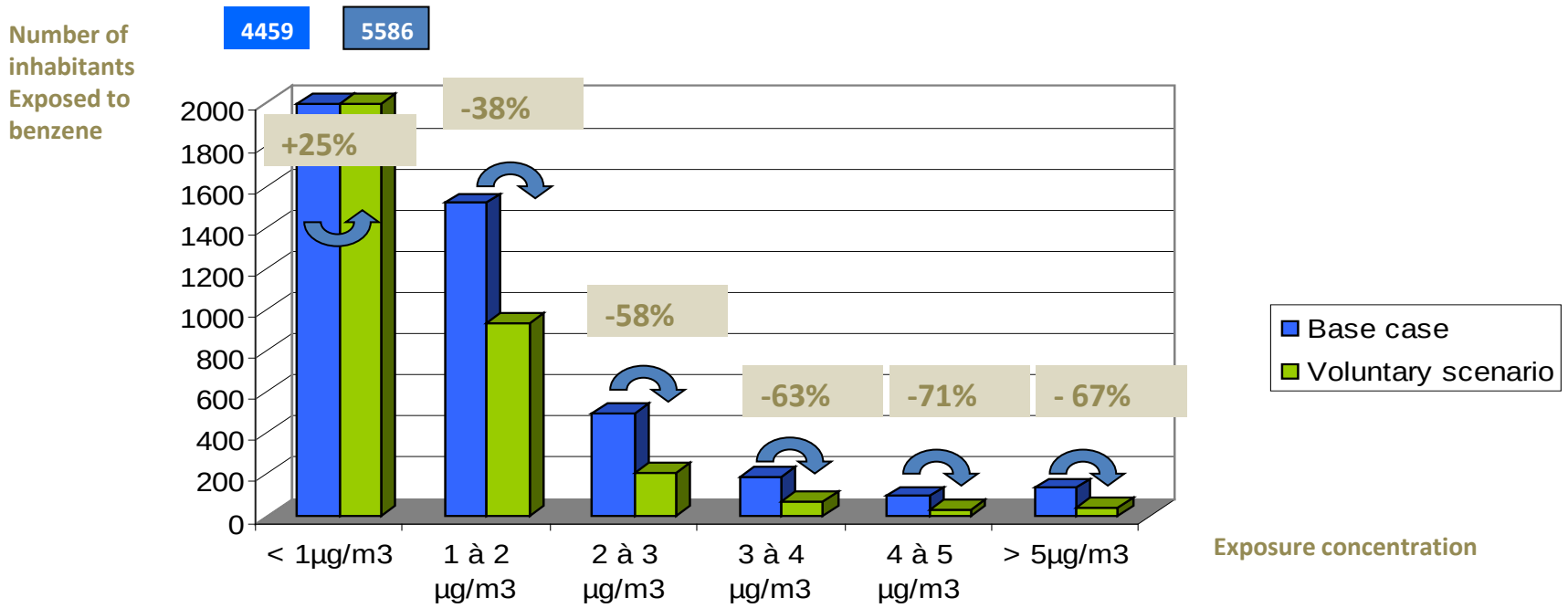
Reductions for voluntary Scenario (maximum level at 8pm)

- 38% for Benzene
- 34% for NO_x
- 33% for CO
- 29% for PM10
- 22% for PM2,5

Impact on the population exposure

3 **Voluntary scenario very effective for population exposure reduction**

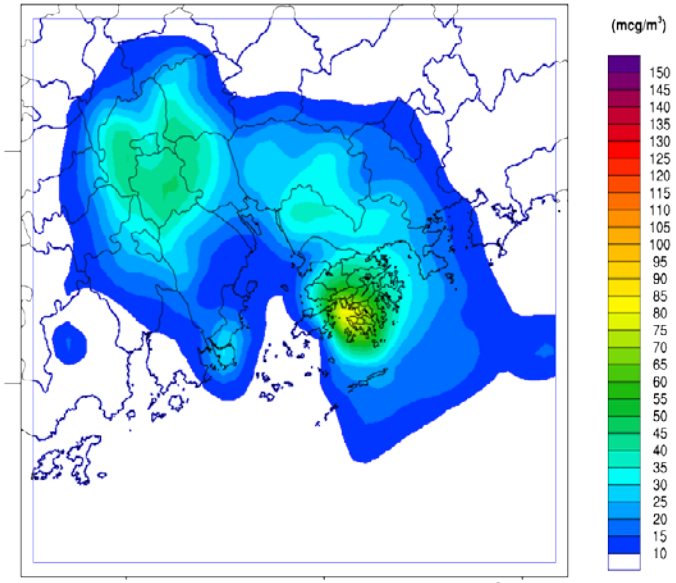
47% of the exposed population (inhabitants) and an additional 43% of tourists are preserved from concentrations above 2µg/m3



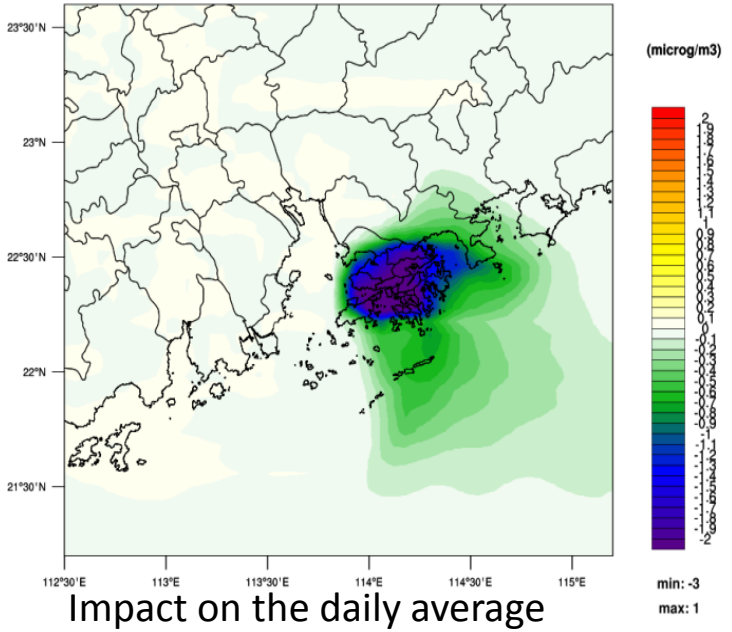
The electric vehicle is part of the very effective measures to reduce the exposure of the citizens

Electric Vehicles introduction in Hong Kong

Scenario 1: 20% of private cars are replaced by EV
Scenario 2: 20% of diesel Light Commercial Vehicles are replaced by EV
Scenario 3: 20% of current mono-fuel taxi and PLB replaced by bi-fuel LPG
Scenario 4: SC1+SC2+SC3



Average concentrations of NO2 for the 28/01/2010



Impact on the daily average concentrations (SC4)

Significant impacts on the emissions of CO, VOC and NOx with respectively 28%, 17% and 8% of traffic emission reduction.
In term of concentrations, about 20% of reduction for CO. Efforts need to be done for Nox and PM.

Merci de votre attention

Introduction massive de véhicules électriques à Rome

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