



Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

Integrated Model Assessment for National Air Pollution Control Programme for Italy under the NEC Directive

TFIAM

Berlin, 23-24 April 2019

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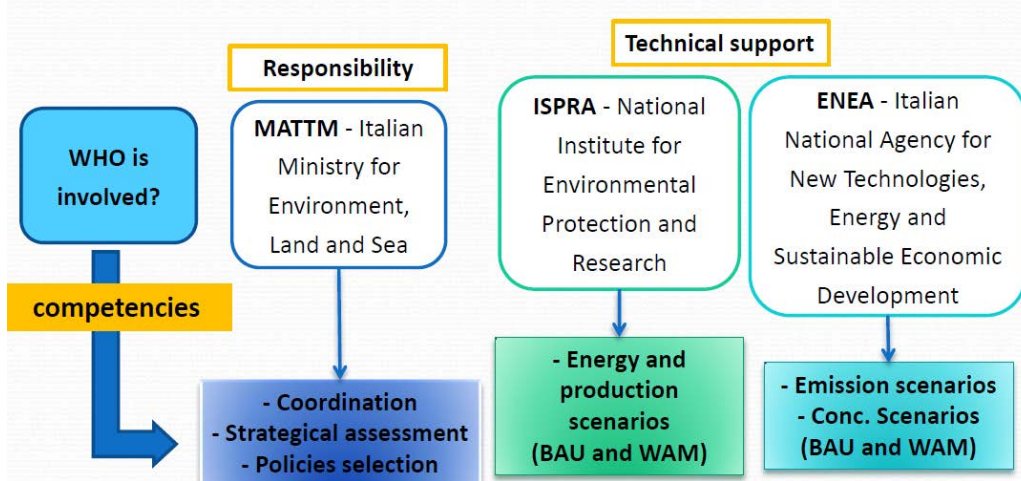


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The NEC DIRECTIVE in ITALY

- The new National Emission Ceilings (NEC) Directive entered into force in December 2016. Emission reduction commitments for the year 2020 and 2030 with respect to the base year 2005 for SO₂, NO_x, PM2.5, NMVOC and NH₃ implemented in Italy with Decree 81/2018
- Initial **National Air Pollution Control Programme (NAPCP)** due for 1 April 2019



Annex IV Part 2 of the Directive ('National emission projections') indicates that two emissions projection scenarios are required:

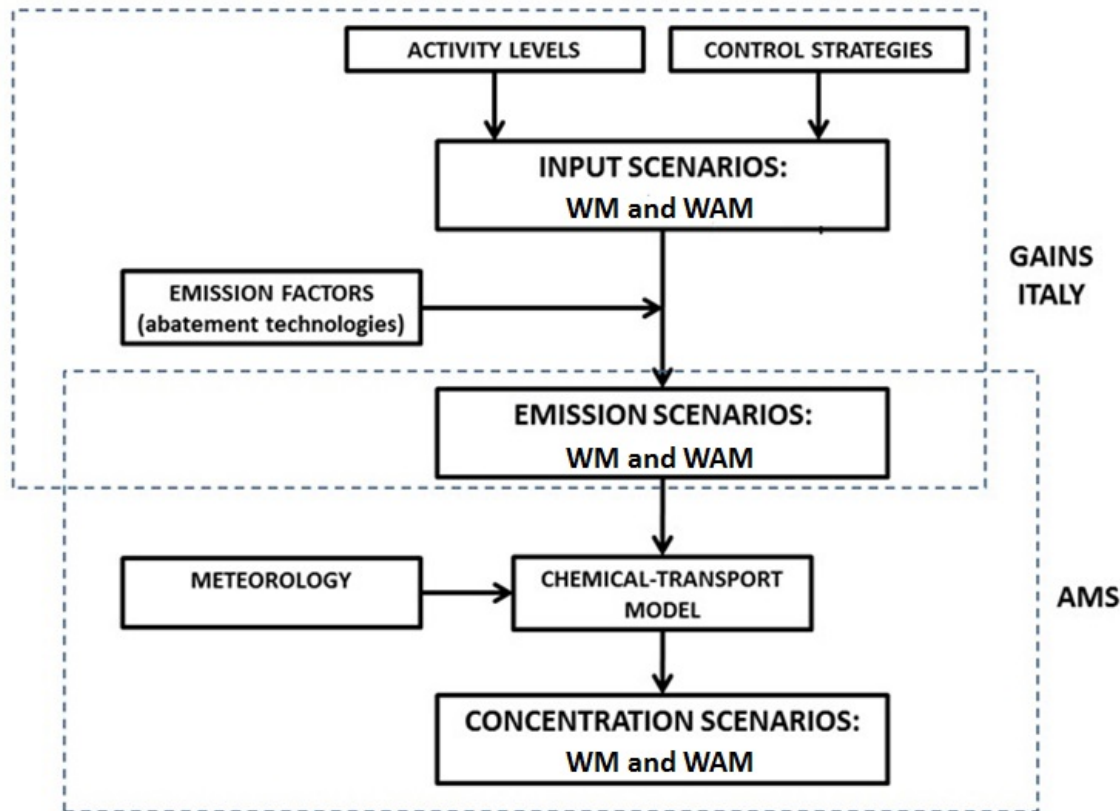
- Member States shall provide a **'with measures' (adopted measures) scenario (WM)**, and;
- Where relevant, a **'with additional measures' (planned measures) projection for each pollutant (WAM)**.

BAU = Business As Usual scenario = WM

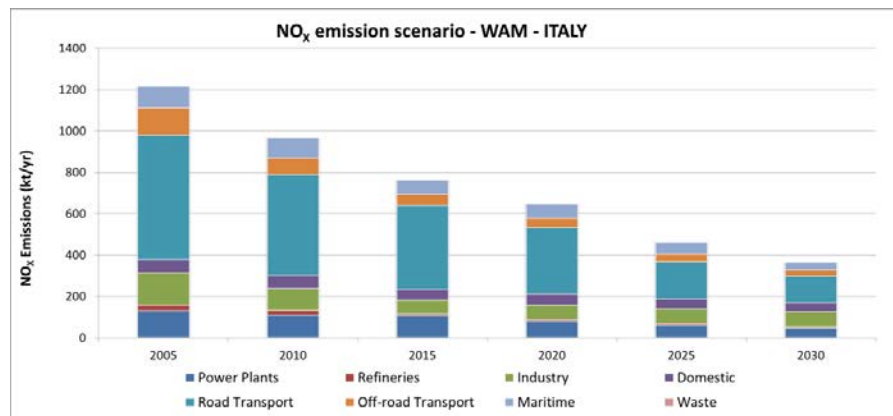
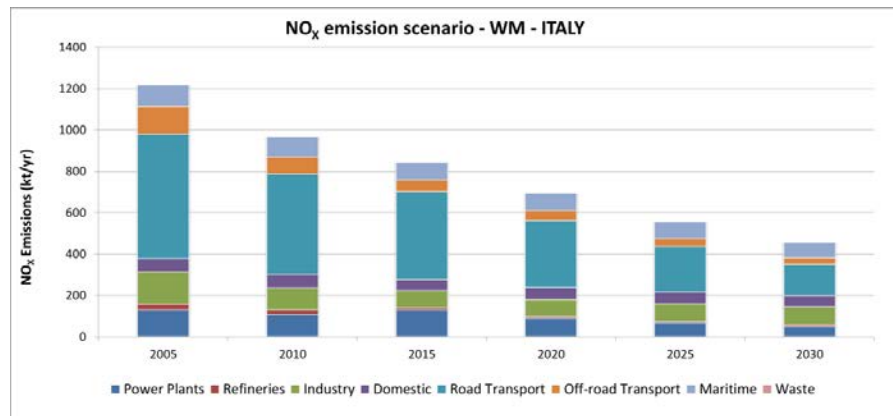
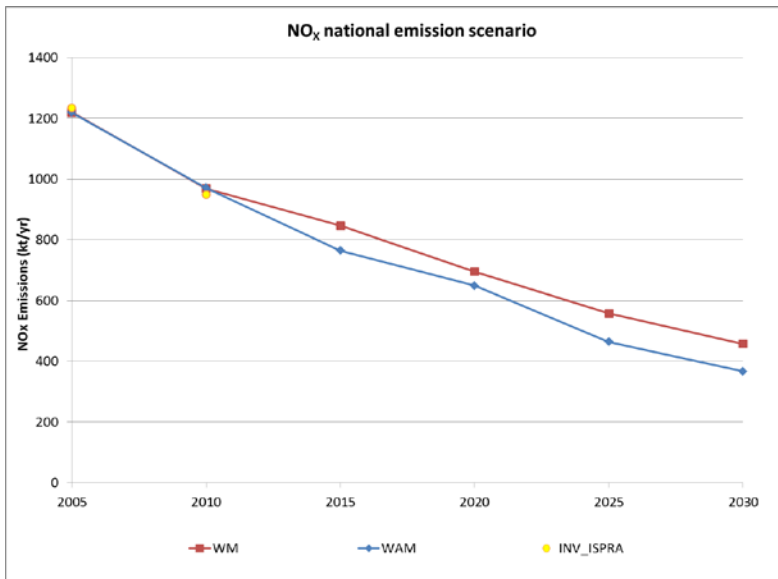
Emission and Air Quality Scenarios for the NEC Directive



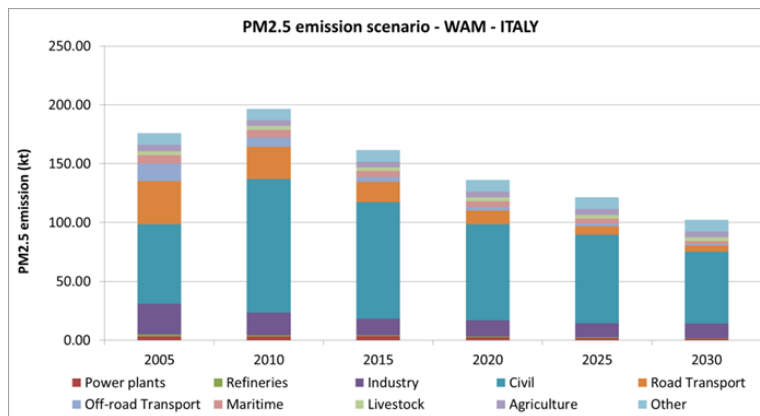
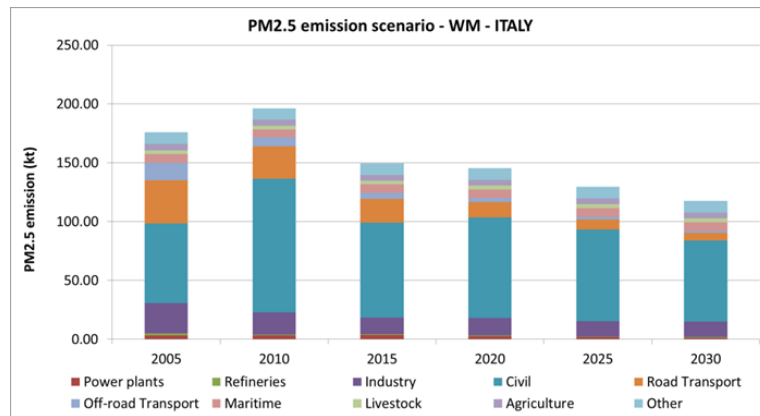
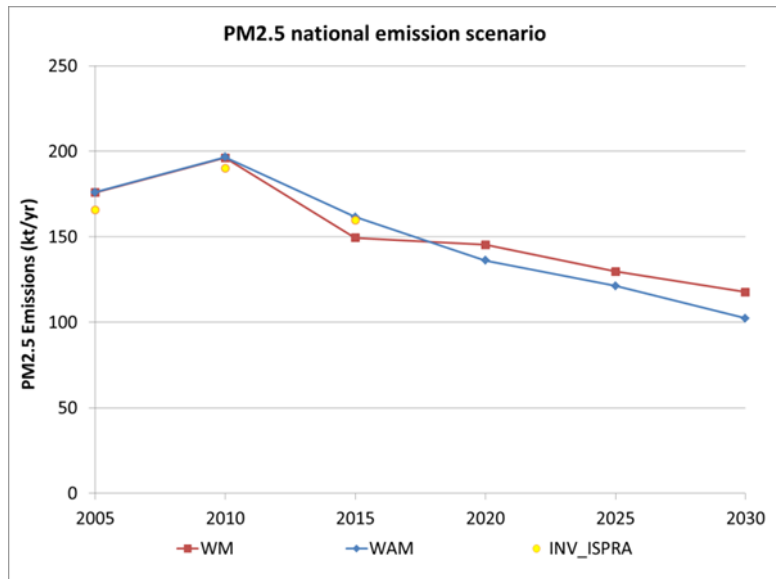
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The national air pollution emission scenarios: NO_x



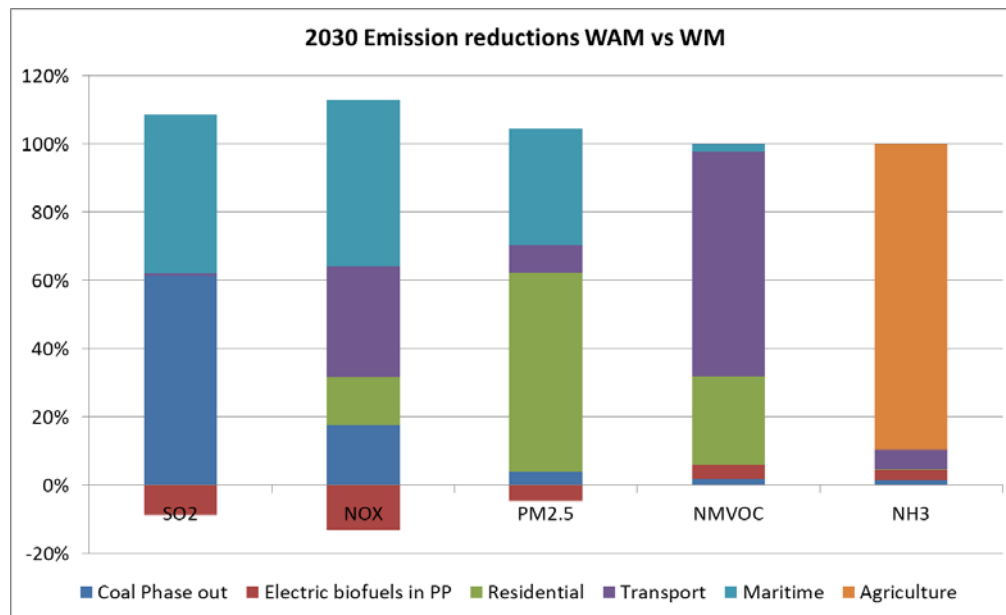
The national air pollution emission scenarios: PM2.5



The WAM scenarios

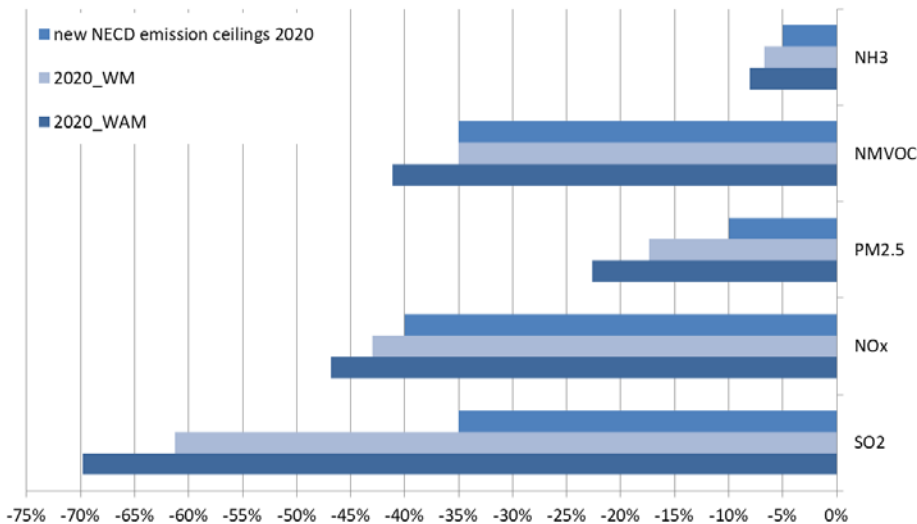
Main additional measures:

- Growth of energy efficiency in residential buildings, by increasing renewal rate, and industry
- Reduced fossil fuel consumption in road transport:
 1. Electrification (5 millions LEV/ZEV in 2030)
 2. Partial substitution of diesel with LPG
 3. Increased rate of shift from private to public transport
- Gas in maritime propulsion
- Increased use of biofuels and waste-derived fuels in industry
- Power generation: coal phase-out in 2025, increased share of renewable
- More efficient use of fertilizers in agriculture



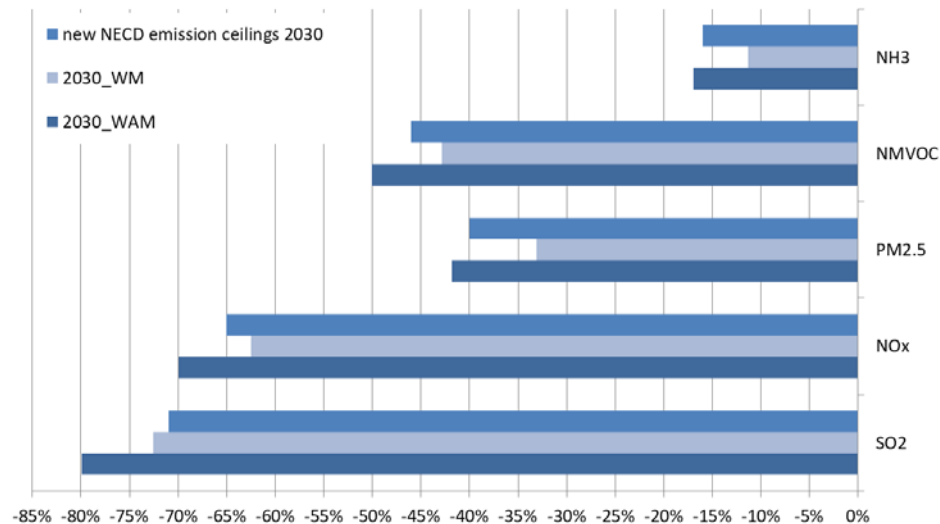
Compliance with IT Emission Ceilings (NECD)

2020 Emission reductions respect to the base year 2005



2020 Ceilings: compliance with WM

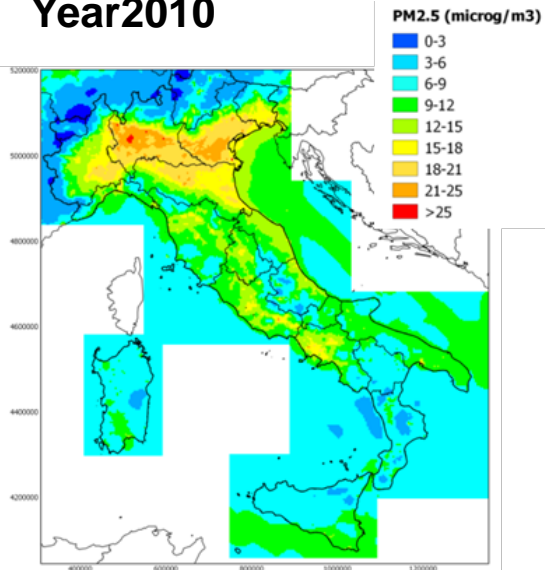
2030 Emission reductions respect to the base year 2005



2030 Ceilings: Additional measures needed

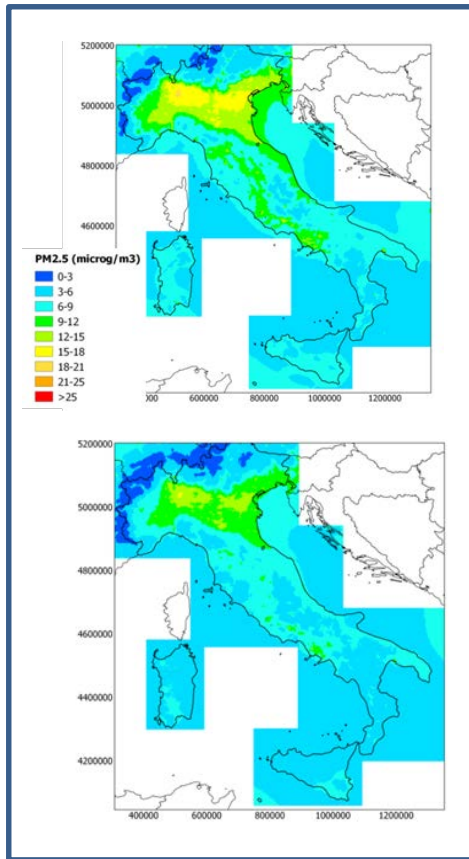
The Air quality scenarios: PM2.5 concentration

Year2010

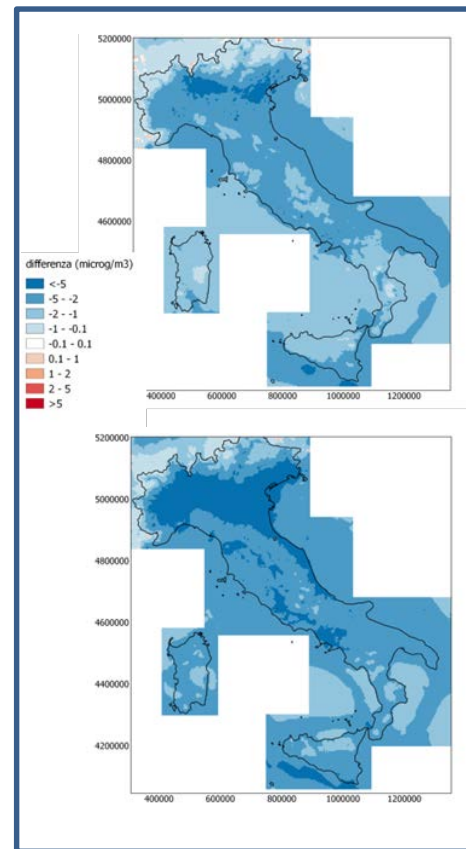


Year2020

WAM



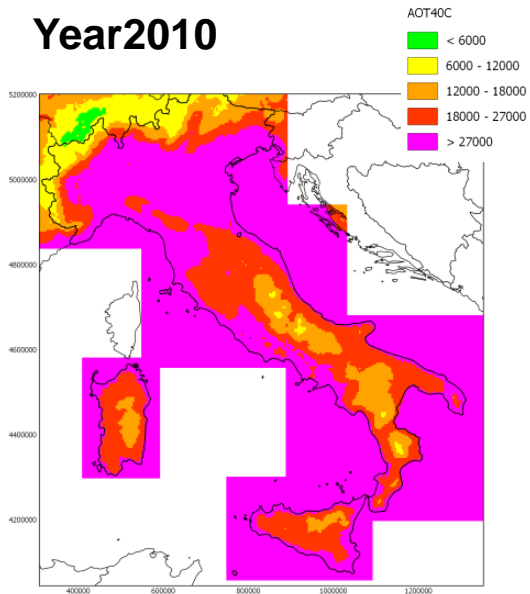
WAM - BASE



Year2030

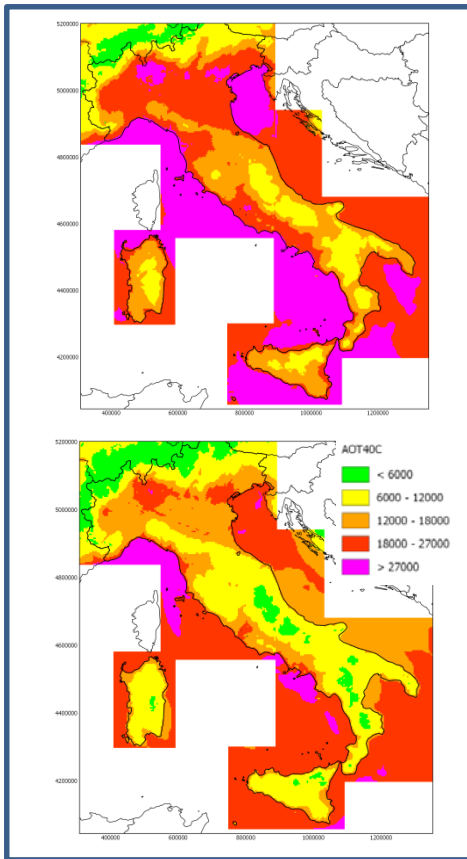
The Air quality scenarios: AOT40

Year2010

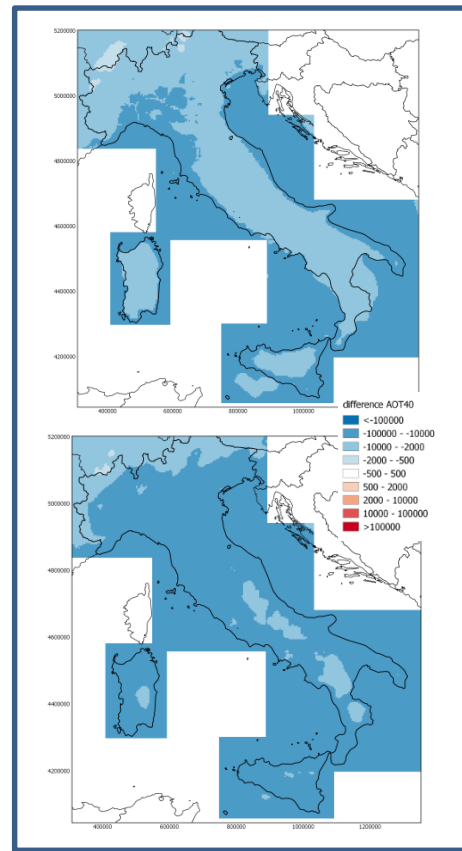


Year2020

WAM



WAM - BASE



May to July

Target value: 18 000 $\mu\text{g}/\text{m}^3$

Directive 2008/50/EC

Year2030



TFIAM – Berlin, 23-24/04/2019

The Air quality scenarios

The WAM scenario will allow partial compliance to AQD limits:

- Compliance: annual NO₂, annual PM₁₀, annual PM_{2.5}, hourly NO₂
- Non-compliance: daily PM₁₀ (about 12 over 82 zones), daily O₃ (about 18 over 66 zones)

(projection of measured exceedances in the future needs methodological discussion: how to apply model trends to measures? How to eliminate model underestimations in hourly/daily values? What meteorology is fit for purpose?...)

“In what way can the work you present contribute to the improvement of air pollution IAMs?”

- In the NAPCP, prioritisation of actions on key emission sources/sectors causing AQ exceedances should be based on source apportionment. CTMs can do SA in several ways!
 - MINNI planned to activate quantitative SA by early 2020
- The NAPCP requires projections of base-year AQ exceedances in the future: not a trivial task!
- Testing single or sets of measures was not possible with full CTM runs at 4km resolution → we are confirmed in using source-receptor relationships in GAINS-Italy (to be updated with higher spatial resolution in 2 years)

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