



Italian Ministry for Environment, Land and Sea

General Directorate for Waste and Pollution

Regulation 186/2017

environmental certification
of wood burning small plants

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Introduction

Country	Italy
Pollutants	Particulate matter, Volatile Organic Compounds, Polycyclic Aromatic Hydrocarbons
Protocols	<ul style="list-style-type: none">▪The 1998 Aarhus Protocol on Persistent Organic Pollutants (POPs)▪The 1991 Geneva Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes
Sector	Residential sector - Domestic heating
Type of measure	Regulation
Level of implementation	National



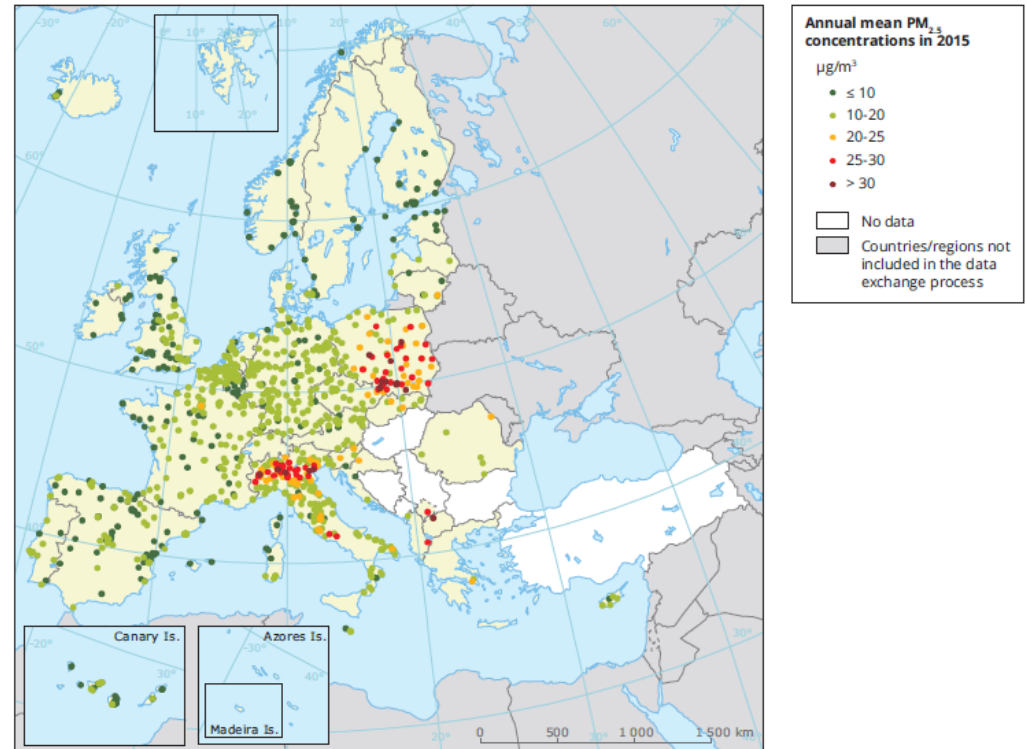
Rationale: PM_{2.5} concentrations



✓ PM in Italy is an issue and quite high concentrations are registered particularly in some areas of the Country

✓ In recent years some critical situations have been observed also for PAH: quite high concentrations of benzo(a)pyrene are often observed during the cold season in areas where there is a significant use of wood as fuel for domestic heating

Map 4.3 Concentrations of PM_{2.5}, 2015

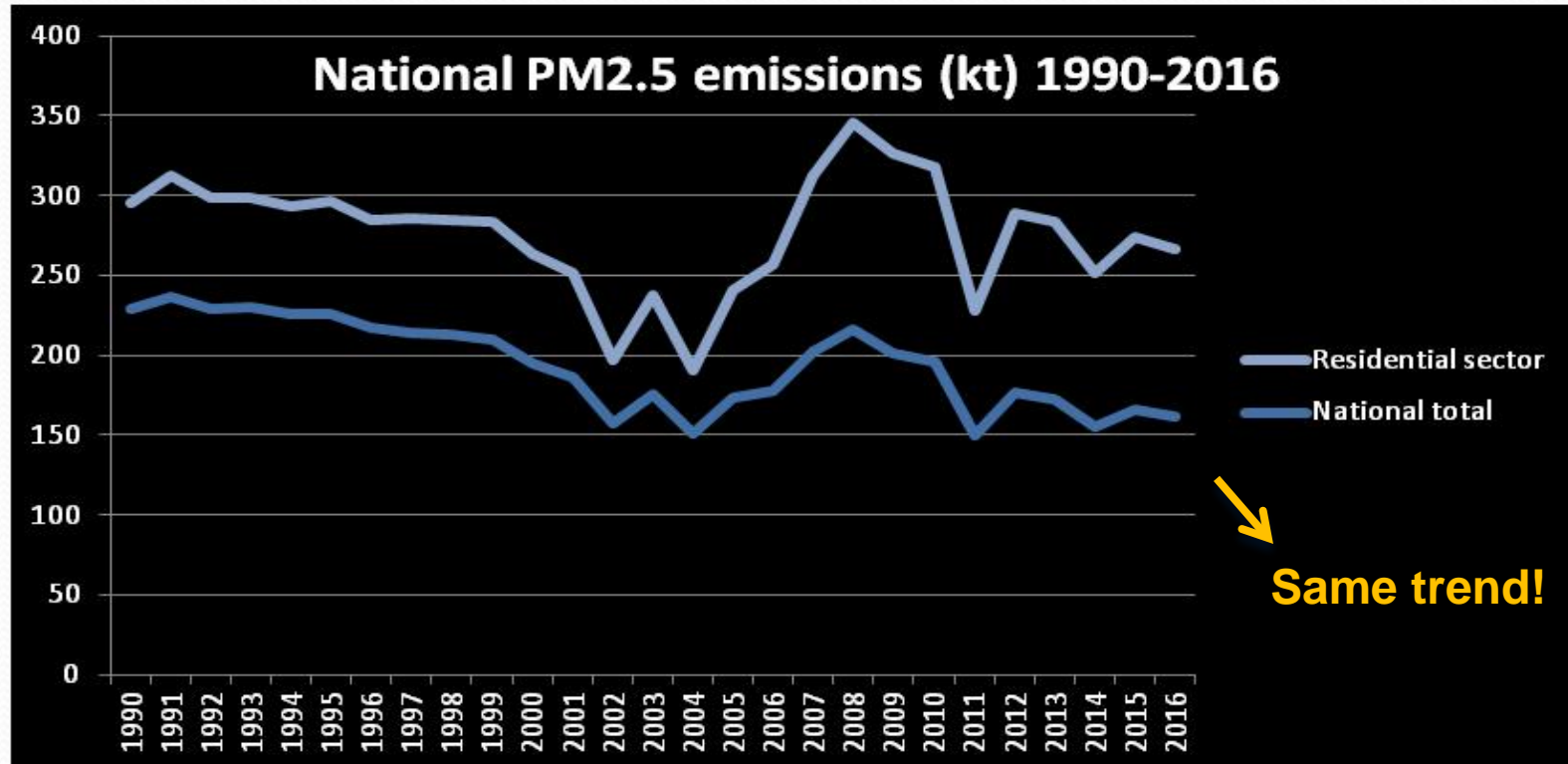


Notes: The dark red and red dots indicate stations reporting concentrations above the EU annual limit value (25 µg/m³). The dark green dots indicate stations reporting values below the WHO AQG for PM_{2.5} (10 µg/m³). Only stations with > 75% of valid data have been included in the map.

Source: EEA, 2017a.



Rationale: PM2.5 emissions



National air emission inventory produced by ISPRA - 2018

Emissions begin to grow up after 2005, even if not in a regular way, with the increase of biomass burning

In 2016, 65% of national emissions come from the residential sector, also responsible for 69% of PAH and 40% of dioxin/furans



Measure



→ the introduction of emission reduction measures in the domestic sector is a priority and reducing wood combustion or at least promoting the diffusion of lower emission domestic wood plants is essential

Regulatory measure: **DM n. 186, 7 November 2017**
anticipating the dispositions of Ecodesign directive

Objective: promoting the gradual replacement of old, wood burning, domestic plants with new appliances, more efficient in terms of environmental performance

Environmental certification is introduced for stoves, fireplaces, cooks and small boilers with a thermal input ≤ 500 kw, classified by the emission levels of PM, COT, NO_x, CO

The Regulation was an essential legal basis to introduce some National and local measures:

- Change in National incentives
- Regional bans and incentives



Details



The Regulation establishes:

- procedures and requirements for environmental authorization system and certification of wood, charcoal and biomass fuel in domestic heating plants
- the reference emission levels for each different quality class of plant
- the trial run and tests to be performed to obtain certification
- rules for correct installation and management procedures for certified heating plants

A quality classification in a range between 1 and 5 stars is provided based on the plant emission values, for the concerned pollutants

→ **National level**: incentives only for plants with minimum 3 stars

→ **Local level**: some Regions in the Po Valley have banned the use of the most polluting plants with a gradual approach: the ban is already in place for some categories and will be extended in the next two years.

Let's see something on impact assessment...



Assessment of Po Basin Agreement (2013)

Agreement for the coordinated and joint adoption of measures to improve air quality in the Po Basin.

December 19th, 2013.

- **5 Ministries** (Environment, Economic Development, Infrastructure and Transport, Agriculture, Health)
- **8 Regions/autonomous Provinces** (Lombardy, Emilia Romagna, Piedmont, Veneto, Valle d'Aosta, Friuli Venezia Giulia, Trento and Bolzano)



“The signatory organizations, **recognized the meteo-climatic and orographic specificity of the Po River basin**, agree to identify and implement, **in a homogeneous and coordinated way**, measures contrasting air pollution, in addition to those already in place.

The agreement will take to **short, medium and long-term interventions** in the main emission sectors:

biomass burning, freight transport, passenger transport, residential heating, industry and energy production, agriculture.”



Assessed measures

ENEA, supported by ISPRA-Rome and CRPA, made expert-judgement hypotheses to apply, on the whole of Italy, the measures identified in 2014-2015 thematic workgroups:

- **biomass-fuelwood heat generators: from 1/1/2017 (following existing law on incentives for heat generators) all the sold devices must be in class “3 stars”**
- biomass-fired (biogas, liquid fuels) industrial boilers: new emission limits values
- enhancing energy efficiency in buildings: annual rates of restoration (0.5% for existing buildings, 0.2% new buildings)
- new speed limit of 100 km/h (from 130 km/h) on motorways for passenger cars: COPERT 4 calculation of modified emissions (by fuel)
- increase of electrical mobility: share of hybrid + plug-in over total passenger cars = 3.5% in 2020 and 13.6% in 2030
- measures in the agriculture for cattle and urea consumption (low protein feeding strategy at the year 2030 for 13% of all the cattle, more efficient use of urea-based fertilisers so to reduce ammonia emissions by 50% compared with the reference method)



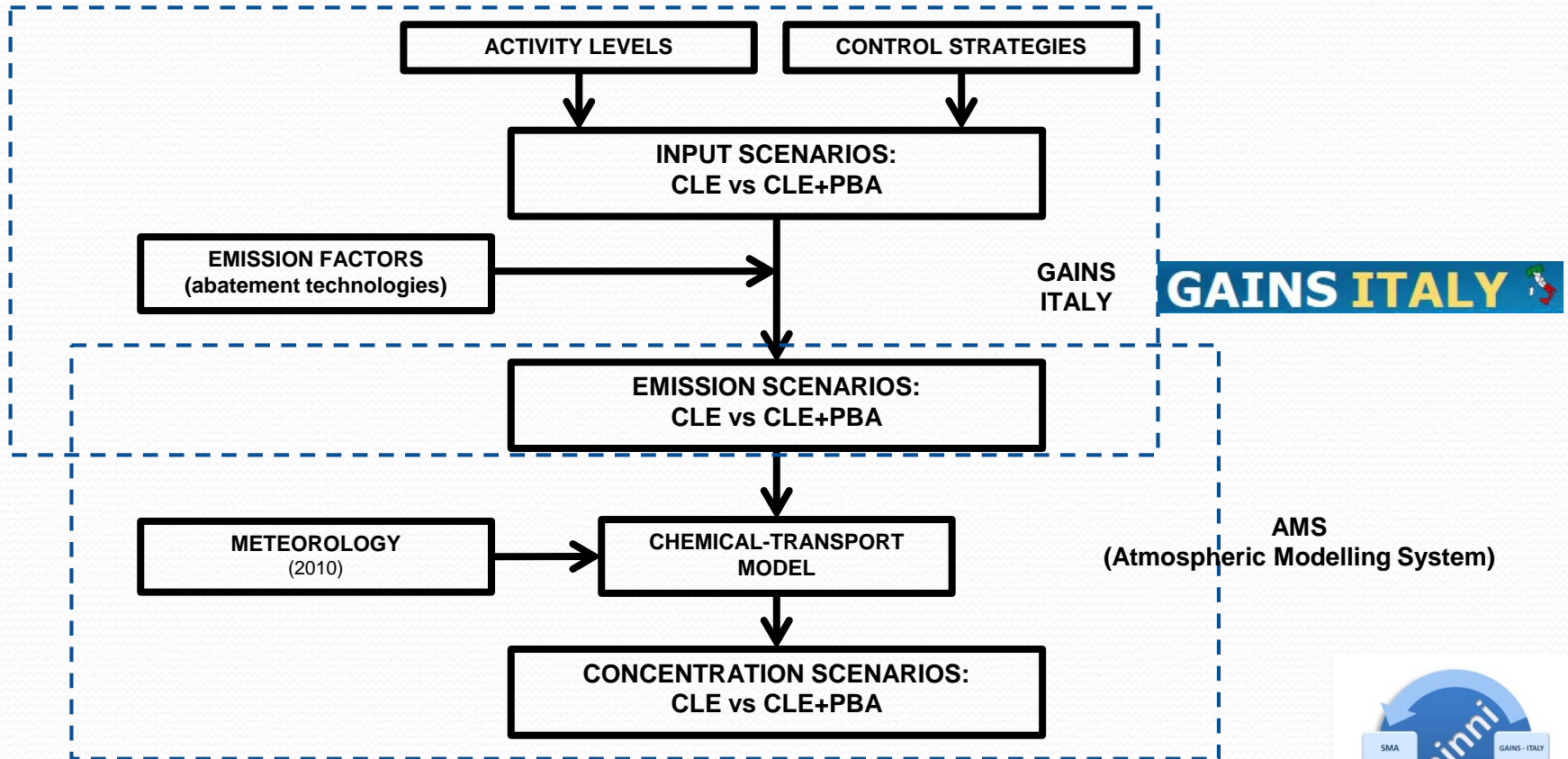
Measures – biomass fired heat generators

- **biomass-fuelwood heat generators: from 1/1/2017 (following existing law on incentives for heat generators) all the sold devices must be in class “3 Stars”**
- decree on incentivisation of energy efficiency and production from renewable sources
- decree on environmental certification of solid fuel local space heaters: applying European Regulation 2015/1185 (Ecodesign) whose implementation has been anticipated at the year 2018, instead of 2022 as stated by the Regulation

Class 3 Stars					
Type of generator	PP (mg/Nm ³)	COT (mg/Nm ³)	NOx (mg/Nm ³)	CO (mg/Nm ³)	η (%)
Open fireplace	40	100	200	1500	75
Closed fireplace	40	100	200	1500	75
Fuelwood stove	40	100	200	1500	75
Accumulation stove	40	100	200	1250	75
Pellet stove	30	50	200	364	85
Boiler	30	15	150	364	85
Pellet boilers	20	15	145	250	90



Integrated assessment modelling system: **MINNI**





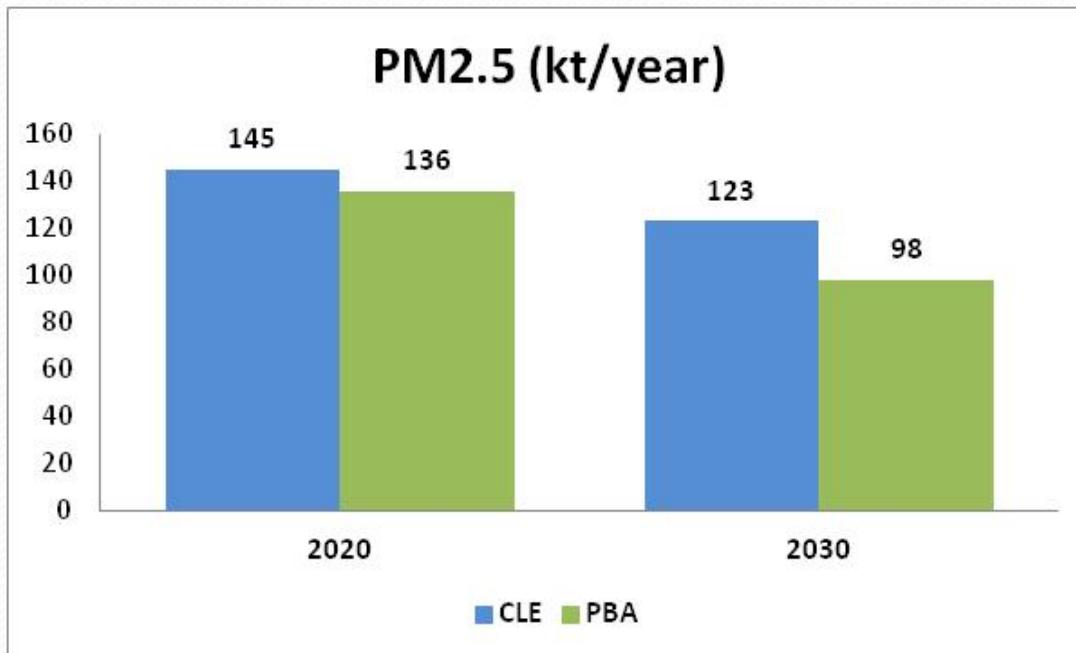
Measures – effect on emissions



IT 2020 (kt)	NOx	PM10	PM2.5	NH ₃	NMVOC	SO ₂	IT 2030 (kt)	NOx	PM10	PM2.5	NH ₃	NMVOC	SO ₂
CLE scenario	689.00	193.66	145.00	397.00	829.00	142.00	CLE scenario	447.00	167.46	123.00	377.00	731.00	104.00
<i>RH</i>	-5.95	-9.51	-9.21	-0.15	-15.69	-0.30	<i>RH</i>	-14.13	-26.06	-25.25	-0.17	-40.95	-0.36
<i>TRA - road</i>	-15.98	-0.28	-0.28	-0.23	0.24	-0.01	<i>TRA - road</i>	-6.99	-0.05	-0.05	-0.31	-0.36	-0.01
<i>TRA - pp</i>	1.41	0.08	0.05	0.00	0.96	0.30	<i>TRA - pp</i>	1.12	0.02	0.02	0.01	0.10	-0.07
<i>AGR</i>	-	-	-	-6.66	-	-	<i>AGR</i>	-	-	-	-24.55	-	-
PBA scenario	668.47	183.95	135.56	389.96	814.51	141.98	PBA scenario	427.00	141.37	97.73	351.98	689.79	103.56
variation PBA-CLE %	-2.98	-5.01	-6.51	-1.77	-1.75	-0.01	variation PBA-CLE %	-4.47	-15.58	-20.55	-6.64	-5.64	-0.42



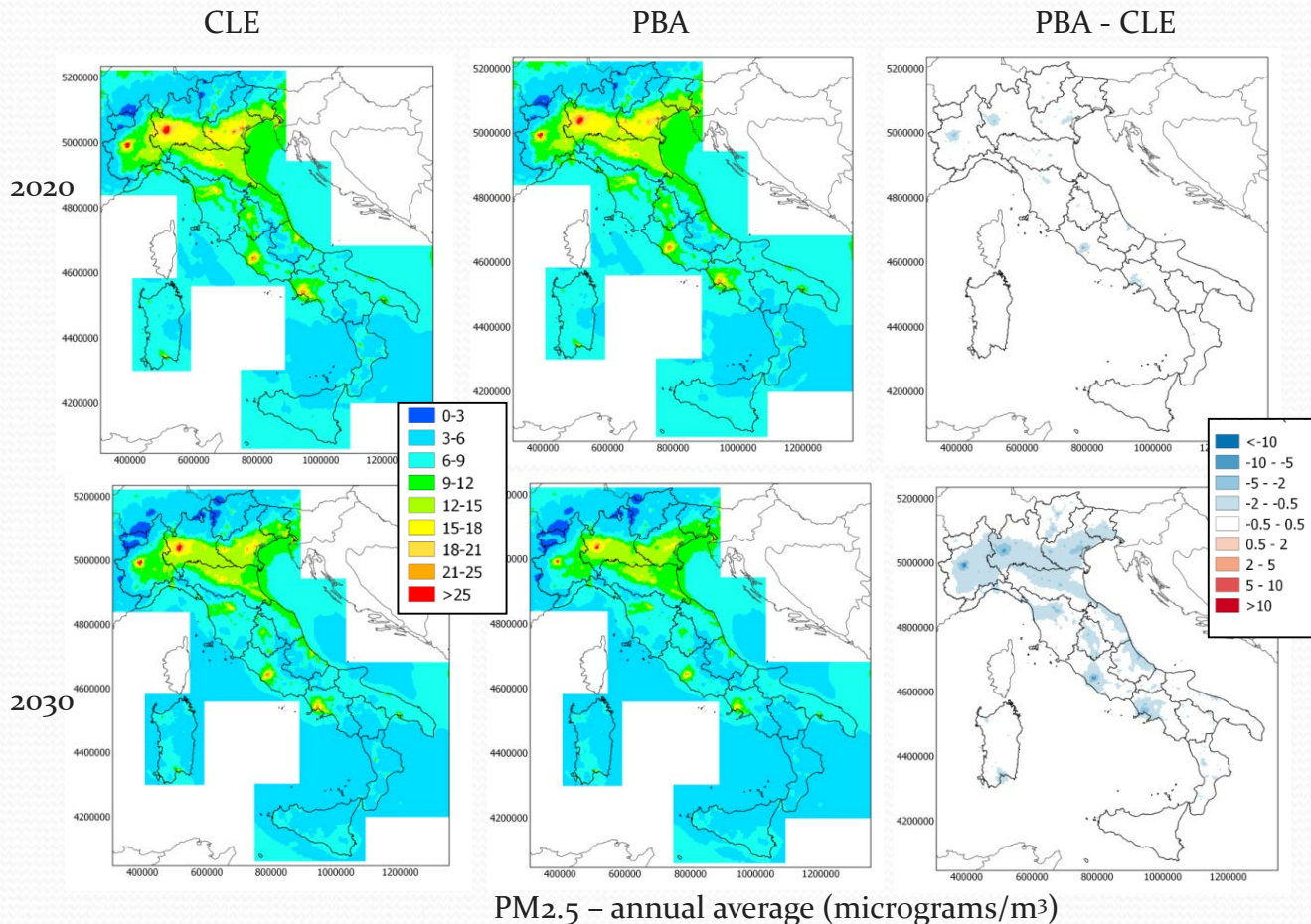
Measures – effect on emissions



The main changes are visible in 2030 for PM2.5:
the residential sector (02) is still the main source, but it is not dominating the distribution anymore, as its share is comparable to that of road transport (07).



Measures – effect on air quality



PM_{2.5} – annual average (micrograms/m³)

Several areas of potential exceedance of the limit value (25 µg/m³) are present in 2020 CLE, including major cities of the Po Valley.

The PBA measures lead to up to 5 µg/m³ decreases, with respect to CLE, in above-mentioned urban areas, but exceedance areas are not eliminated.

In 2030, PBA reductions are more relevant, but exceedances remain in major urban areas.



Assessment of Po Basin Agreement (2013)

ARTICLE IN PRESS

Atmospheric Pollution Research xxx (xxxx) xxx-xxx

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ELSEVIER

Contents lists available at ScienceDirect

Atmospheric Pollution Research

journal homepage: www.elsevier.com/locate/apr



Evaluation of mitigation measures for air quality in Italy in 2020 and 2030

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ARTICLE INFO

Keywords:

Air pollution
Integrated assessment modelling
Emission scenarios
Po Valley
NEC directive

ABSTRACT

A large portion of the Italian population is exposed to high air pollution levels exceeding both European and WHO standards. To face this serious environmental risk, several efforts have been undertaken at policy-administration level in Italy and a national-regional cooperation act (the Po Basin Agreement, PBA) was adopted in 2013 in Northern Italy. The signatory parties agreed to identify and implement concerted actions contrasting air pollution, in addition to measures already in place. In this paper, a first evaluation of the identified measures has been carried out using the MINNI model, an integrated assessment model that allows the impact evaluation of emission variations. Assuming that PBA measures are applied in the whole Italian territory and focusing on residential heating, road transport and agriculture, the consequent impact on air quality was assessed for the scenario years 2020 and 2030. The Current Legislation scenario for the year 2030 shows that neither the national emission ceilings (NEC) nor the European air quality standards would be reached with the measures already in place and that additional actions are needed. The PBA 2030 scenario shows the attainment of the NEC targets, but non-compliance for daily PM10, daily maxima of 8 h running means of O₃ and annual PM2.5 concentrations still remains.

D'Elia I., Piersanti, A.,
Briganti, G., Cappelletti,
A., Ciancarella, L.,
Peschi, E. (2018)
Evaluation of mitigation
measures for air quality
in Italy in 2020 and 2030.

Atmospheric Pollution
Research, in press. DOI:
0.1016/j.apr.2018.03.002



Thank you!

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