

9 May 2018



TFIAM – 8 to 9 May 2018, Brescia, Italy

# French Plan to Reduce Emissions of Air Pollutants (PREPA)

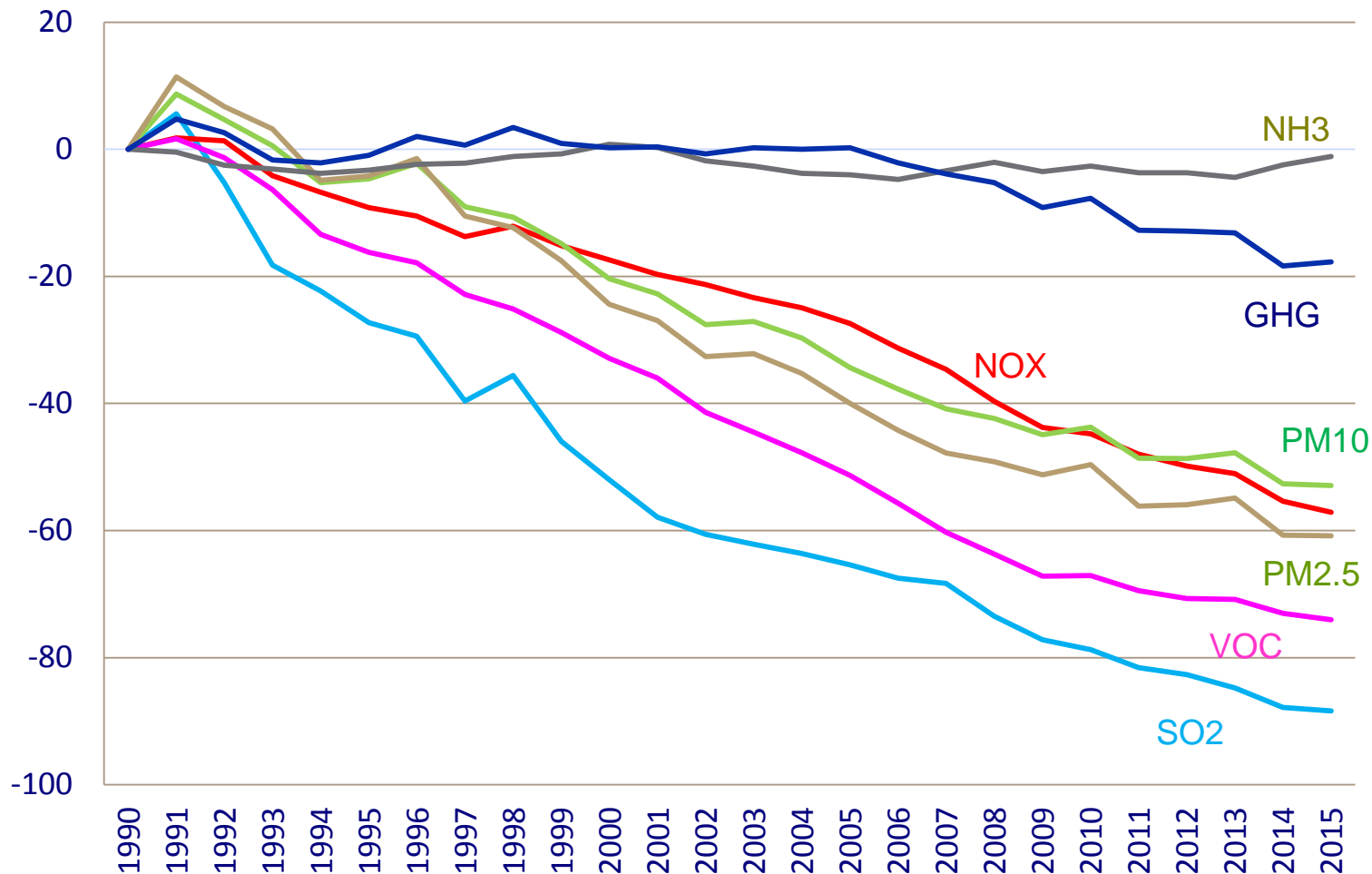
Nadine Allemand  
Deputy director  
CITEPA

# OUTLINE

- ❑ Current situation in terms of emissions and air quality
- ❑ Key measures of the national plan
- ❑ Other measures implemented at different geographical levels

# CURRENT SITUATION IN TERMS OF EMISSIONS OF POLLUTANTS AND GHG

Trends in emissions in France from 1990 (%)



**Significant reduction of emissions except for NH<sub>3</sub>. NOx emission ceiling exceedance still observed**

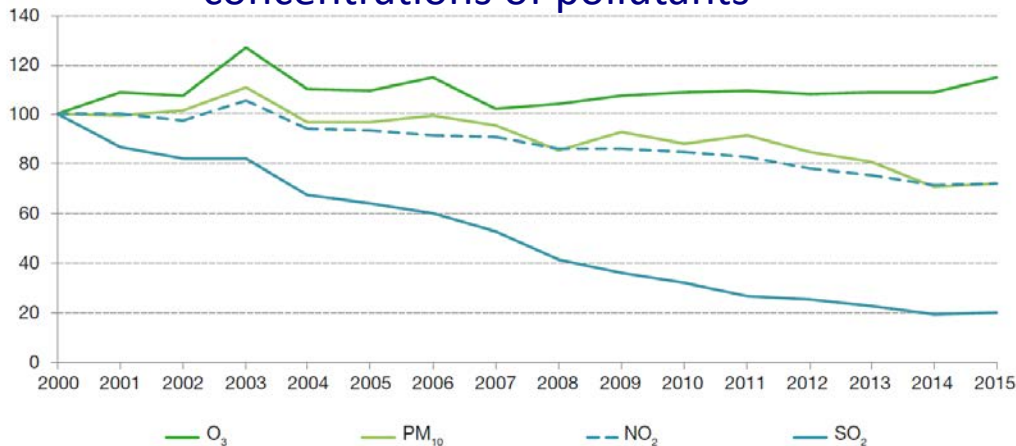
EU directive 2001/81 emission ceilings for 2010 reached for all pollutants in 2010 except for NOx.

Source CITEPA 2017

# CURRENT SITUATION IN TERMS OF CONCENTRATIONS

**Air quality improvement but exceedances of limit values still observed**

Trends of annual average concentrations of pollutants

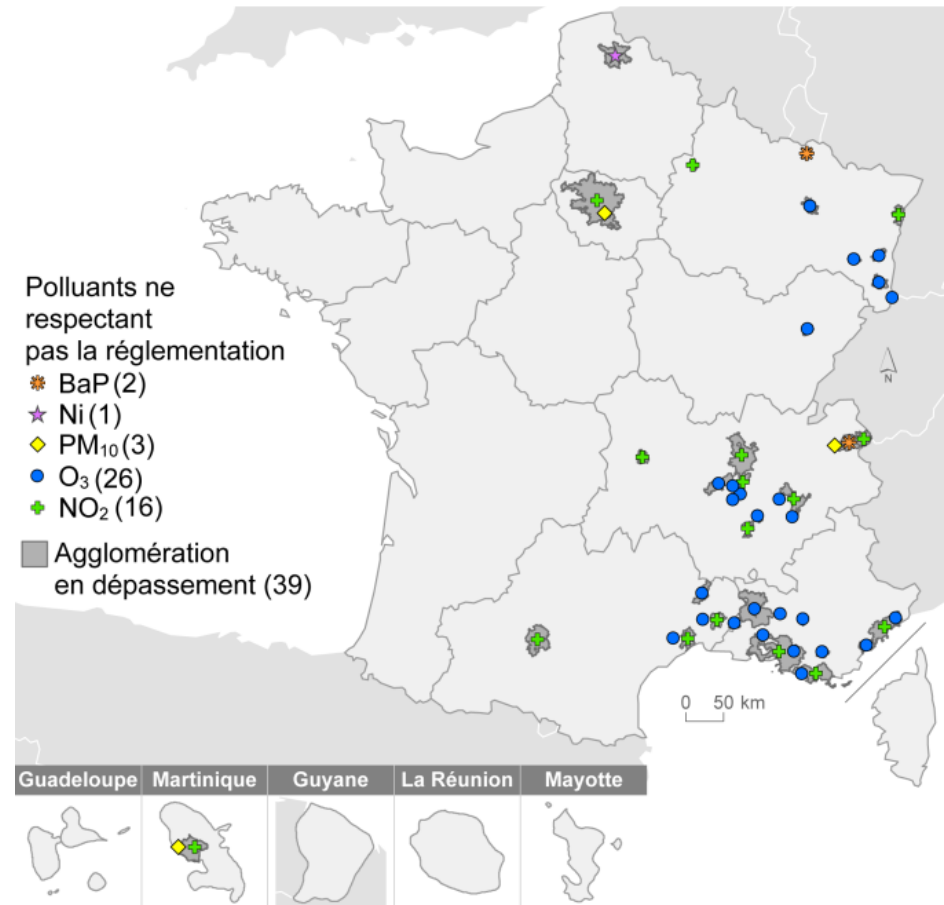


Notes : For O<sub>3</sub> only concentrations from 1st April to 30th September considered,

For PM<sub>10</sub> the monitoring method changed in 2007 to be coherent with EU requirement. A special treatment has been carried out to provide an indicator

Source : Géod'Air, juillet 2016. Traitements : SOeS, 2016

Zones with exceedances of air quality limit values for health protection in 2016



Source : Géod'air, juillet 2017.  
Traitements : SDES, 2017

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# NATIONAL AIR POLLUTANT EMISSION REDUCTION PLAN RATIONALE AND OBJECTIVES

- ✓ The National Air Pollutant Emission Reduction Plan is defined by the Act of August 2015 on Energy Transition and Green Growth (art. 64 of the Act, and codification in art. L. 222-9 of the Environment Code)
- ✓ Revision of previous action plans:
- ✓ The PREPA plan complies:
  - The objectives of the Gothenburg Protocol and European Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants
  - Air quality (AQ) concentration requirements

# NATIONAL AIR POLLUTANT EMISSION REDUCTION PLAN

It is composed of

- ✓ A decree of 2017/05/10 signed by 8 ministers: targeted emission reductions for major pollutants by 2020, 2025 and 2030
- ✓ A decree signed by the minister in charge of environment for 2017-2021 period: priority actions to reduce emissions to be strengthened and implemented + modalities

4 sectors covered: *industry, transport, residential and agriculture*  
and 3 specific axes: *actions to improve knowledge, mobilise local authorities, and insure the sustainability of funding for air quality*

With different types of measures:

- ✓ Consolidation measures of existing regulations to insure their total efficiency
- ✓ New measures in favour of air quality
- ✓ Research and development projects when the identification of appropriate measures is not yet evident

# NATIONAL AIR POLLUTANT EMISSION REDUCTION PLAN

- ✓ To ensure no exceedance of air quality limit values in a near future and compliance with EU directive (2284/2016) for air pollutant emission reductions
- ✓ Mobilise and engage regional and local authorities
- ✓ Important role of territorial planning, urban planning, clean mobility
- ✓ Promotion of good practices in terms of emission reduction and reduction of population exposure

| %/2005 | SO <sub>2</sub> | NO <sub>x</sub> | NM <sub>VOC</sub> | PM <sub>2.5</sub> | NH <sub>3</sub> |
|--------|-----------------|-----------------|-------------------|-------------------|-----------------|
| 2020   | -55             | -50             | -43               | -27               | -4              |
| 2025   | -66             | -60             | -47               | -42               | -8              |
| 2030   | -77             | -69             | -52               | -56               | -13             |



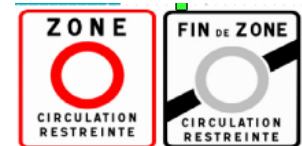
# PREPA: ROAD TRANSPORT AND OTHER TRANSPORT

## □ Promote and support behaviour changes

- Mobility plan mandatory for all enterprises and public administrations with more than 100 employees
- Car sharing, public transports and active mobility,

## □ Reduce emissions and promote lowest emitting vehicles

- Speed reduction on large road in urban areas
- Grants for conversion of old vehicles, allowance for electric vehicles
- Grants for electric charging point development
- **CRIT'AIR labels for cars**, characterising their emissions, to be used in case of episodes of pollution and in **low emission zones (ZCR)**
  - Promote implementation of **low emission zones** (existing one ZCR in Paris, other being assessed: Grenoble, Lille, Bordeaux, Strasbourg, Saint-Étienne...) (ZCR guide, specific technical meetings)



## □ Reduce emissions from trains, planes, boats...

- Development of electric charging at port and use of natural gas for inland water way transport and maritime transport
- Assessment study of a low emission zone for NOx and SO<sub>2</sub> in the Mediterranean Sea

# PREPA: HOUSING

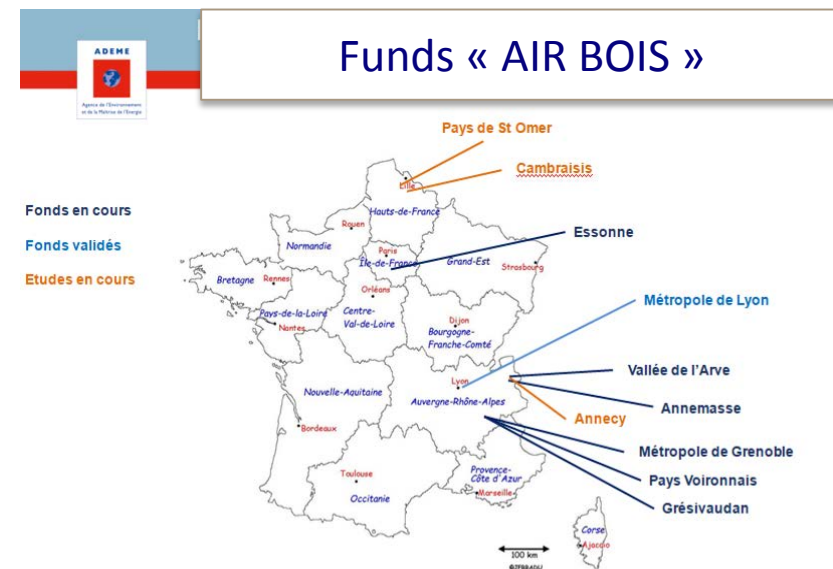
## ❑ Reduce emission from wood combustion in small domestic appliances

- Renew old appliances with highest emissions and replace them with new modern appliances less polluting or used other energy sources
- Specific funds to promote the renewal
- Encourage the use of good quality wood and best practices
- Inform on this unknown source of pollution by public

## ❑ Building energy saving programmes

## ❑ Green waste combustion forbidden

- Better communication on the issue
- Develop collection of green wastes
- Increase awareness of city level authorities to apply this interdiction



# PREPA: INDUSTRY

## ❑ **Industrial emission directive**

- Strict application of the requirements and delays for application
- **Prescription of BAT and BAT AELs**
- **Limitation of derogations to BAT AELs**

❑ **Focus inspection programmes on air issues** (IED and SEVESO plants have one inspection every year, other plants one inspection every 3 years)

## ❑ **Energy saving**

❑ **Financial support** for industry engaged in higher reduction than strictly required by regulation

# PREPA: AGRICULTURE

## □ **Change in practices**

- Promote good practices and raise farmers' awareness: rapid incorporation of fertilizers after spreading, slurry tank covers, low emission N fertilisers...
- European regulation for large farms
- Limit burning of crop residues to situations without alternatives (sanitary impacts...)
- Synergy with regional programmes for nitrate emissions

## □ **Accompany farmers**

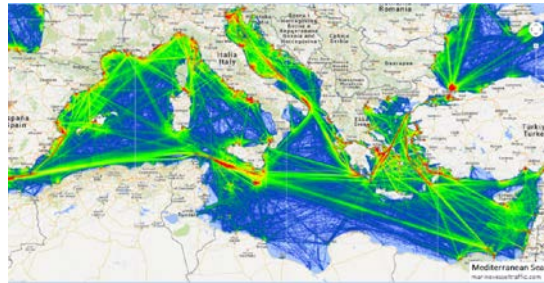
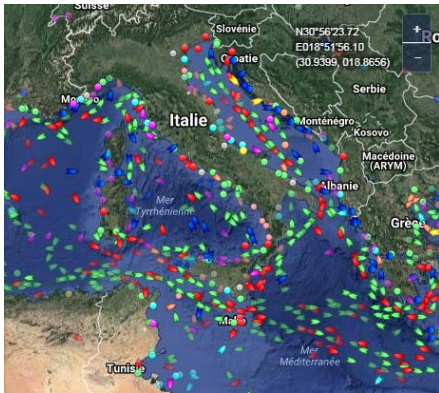
- 10 M€ funds allocated to research on good practices, programme of pilot actions
- Integrate air quality in the Common Agricultural Policy in Regions
- Mobilise European funds and regional funds to help investment in low NH<sub>3</sub> emission techniques or practices

## MEASURES: OTHER AXES

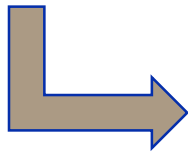
- ❑ **Increase awareness of local actors:** communication (National day for air quality the 1st Wednesday in September) and sharing of good practices (network of cities, platforms...)
- ❑ **Improve knowledge and promote innovation:** to prepare the next actions!  
Identification of reduction technologies, research on emission sources not well characterised, knowledge of pollution origins and the impacts, improvement of modelling, consideration of unregulated pollutants (nanoparticles...), research
- ❑ **Mobilise financing for air quality:** mobilisation of the financing fund for energy transition and future investment programs,
- ❑ **Promote integrated approach:** consideration for air quality in other state policies

# A feasibility study for the implementation of a SECA and NECA in the Mediterranean sea

## Detailed description of the shipping traffic



Emissions maps (source fim)



Current status : 2015-2016

Projections :

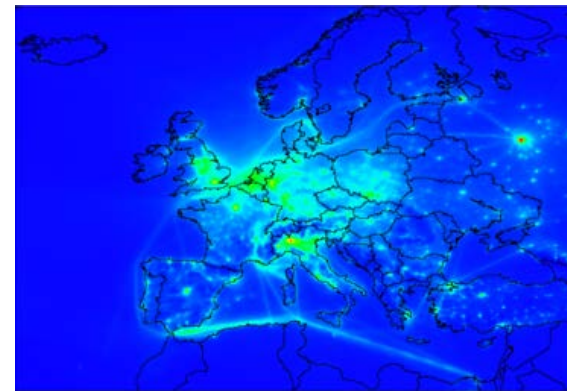
- S content reduced to 0.1% in fuel
- Cleaner engines (Tier3) to reduce NOx emissions



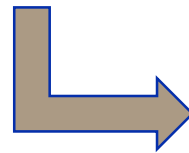
CITEPA

Cost benefits analysis

Concentration maps



Communication and concertation with interested stakeholders to harmonize practices, share results and analyse opportunities



maîtriser le risque pour un développement durable



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# ENGAGEMENT OF ALL AUTHORITIES TO COMBAT AIR POLLUTION

## FROM THE NATIONAL TO THE LOCAL LEVEL

National



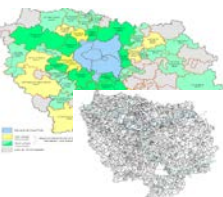
- ✓ National policies and regulations for industry, housing transports, wastes, agriculture, forestry...
- ✓ **National Plan for Reduction of Emissions of Air pollutants (PREPA)**
- ✓ **Emergency measures for air pollution episodes**
- ✓ Organisation of the air quality monitoring...

Regional

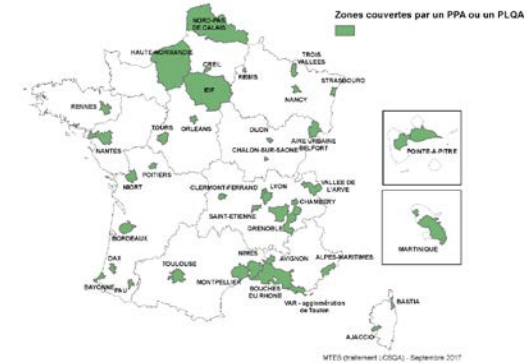


- Regional Scheme for Climate, Air and Energy (SRCAE)
- Air quality monitoring by Agreed Associations of Air Quality Monitoring (AASQA)
- Regional mobility, urban development
- ...

Local



- Territorial plans for Climate, Air and Energy (PCAET)
- Urban planning, traffic management (Low emission zone implementation (ZCR))
- ...



**Plan for Air Protection (PPA)** in all cities with more than 250 000 inhabitants and having a risk of exceedances of air quality limit values



# PLAN FOR AIR PROTECTION (PPA): EXAMPLE OF PARIS REGION

- 3rd version of the plan that aims to:
  - Focus on diffuse pollution in the Region
  - Improve air quality to ensure no exceedances of limit values of PM<sub>10</sub> and NO<sub>2</sub> in 2020
  - Reinforce measures, implementing the French energy transition act (2015) and PREPA (National Plan for Air Pollutant emissions Reduction)
  - Bringing together the scattered responsibilities (regional, local authorities)
- Calendar
  - 2016 : technical revision
  - 2018 : final plan adopted



From Marguerite Mulhaus, Nadine Allemand. Fairmode meeting, February 2017

# PLAN FOR AIR PROTECTION (PPA): EXAMPLE OF PARIS REGION

## ▣ Road transport



- Mobility plan in administration and business
- Reduction of the maximum speed on certain roads
- Local urban mobility plan
- Low emissions zones (Paris and Paris + area inside A86 limits)
- Car sharing promotion
- Promotion of the use of low emission vehicles
- Modal shift
- Active travel promotion

## ▣ Industry

- Better control of smaller combustion plants
- Stricter ELVs for solid waste co combustion plants (specific fuels) than at national level
- Stricter ELV for NOx emissions from waste incineration plants than at national level
- Stricter ELV for NOx emissions from new biomass combustion plants than at national level



## ▣ Residential and tertiary activities and works sites

- Promote the renewal of the oldest biomass domestic appliances (funds AIR WOOD assessed)
- Wood energy charter
- Charter for public works and works sites

From Marguerite Mulhaus, Nadine Allemand.  
Fairmode meeting, February 2017

# PARIS CITY PLAN

2015 – 2020 action plan for air quality announced by the Mayor of Paris, in March 2015 :

- ❑ Go further in the reduction of place of cars
- ❑ Help Parisians choosing clean mobility
- ❑ First low emission zone (in France)
- ❑ Accompany urban projects



1750 stations  
in Paris and  
outskirts  
24 000 bikes



AUTOLIB : a public  
electric car sharing  
program :  
90 stations in 70  
cities, 3000 cars



New tramway lines and cleaner  
buses (hybrid, natural gas)

## CONCLUSIONS

- ❑ Policies currently well established
- ❑ Focus on all sectors to reduce emissions
- ❑ Engagement of all authorities from national to local level
- ❑ Indicators established to follow the progress and orientate the plans in case of derive
- ❑ Continuous decrease of concentrations expected but slow improvement

# Thank you very much

## Questions?

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<https://www.ecologique-solidaire.gouv.fr/politiques-publiques-reduire-pollution-lair#e3>

Nadine Allemand-Simone Schulht: Decision aid for elaborating the National Air Pollutant Emission Reduction Plan (PREPA)

[http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/17\\_Allemand\\_Schuchert\\_TFIAM-45.pdf](http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/17_Allemand_Schuchert_TFIAM-45.pdf)

Simone Schulht, Nadine Allemand

Ex-ante evaluation of the French National Air Pollutant Emission Reduction Plan (PREPA)

[http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/27\\_TFIAM-46\\_France\\_INERIS\\_CITEPA\\_vf.pdf](http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/27_TFIAM-46_France_INERIS_CITEPA_vf.pdf)

# CITEPA

- ✓ CITEPA, non-profit scientific association, 26 employees, budget 2017: 2.6 M€
- ✓ CITEPA the French National Emission Inventory Agency
- ✓ More broadly, we are experts in air pollutant and greenhouse gas (GHG) emission inventories, projections, helping decision-making as well as in assessing the cost-efficiency of policies and measures
- ✓ Abroad, we develop capacity building initiatives, we answer to calls for tenders, apply to French Bodies (AFD), international funds (GEF, World Bank, EU...) and collaborate directly with the Nations or cities themselves (Serbia, Croatia, Mexico, China, Cali...)...
- ✓ [citepa.org](http://citepa.org)



**Mexico**  
2013-2016  
Development of a single platform (web application) to report air pollutants and GHG emission inventories

**Colombia**  
2017-2021  
Memorandum of Understanding between National University of Colombia (UNAL) and CITEPA

**Cali, Medellin and other cities in emerging countries in South America, Asia & Africa**  
2017-2021  
"Green City Big Data" tool

**France, Croatia, Tunisia, Morocco**  
2018-2020  
Cluster MED Climate Transparency Initiative CMCTI

**Morocco**  
2015-2016/17  
Capacity building of a national GHG emissions inventory system in Morocco

**Tunisia**  
2013-2015  
Capacity building of a national GHG emissions inventory system in Tunisia

**French speaking countries**  
From 2014  
Cluster francophone (Part of the Partnership on Transparency)

**France**  
1961-2017  
Producing the French national emission inventories on air pollutants and greenhouse gases

**2015-2016**  
CO<sub>2</sub> and pollutant charter in the transport sector

**Croatia**  
2016-2017  
Improvement of Croatian Environment Pollutant Register and its integration into Croatian Environmental Information System

**Russia**  
From 2017  
CIS Center Cost of BAT implementation in Russian industry

**Kazakhstan**  
2016-2018  
Support to the development of CO<sub>2</sub> e-reporting in Kazakhstan by the industry in the framework of the PMR

**Serbia**  
2015-2017  
Establishment of a mechanism for implementation of the AMR

**France, New Caledonia**  
2013-2017  
Spatialised regional inventory of air pollutant and GES emissions

**China**  
2016-2017  
Integration of air pollution and climate issues in France and China: MoU with CRAES in Beijing

**China**  
2015-2017  
Academic and expertise cooperation between the Beijing Environmental Protection Bureau and CITEPA on air pollution

**2015-2016**  
PREPA. National Plan for Reducing Air Pollutant Emissions

**2016-2017**  
Paris Region Air Protection Plan (PPA)

**From 2017**  
Local Climate-Air-Energy Plans (PCAET)

**From 2017**  
Benchmarks, carbon footprints, solvent emission reduction plans, training sessions

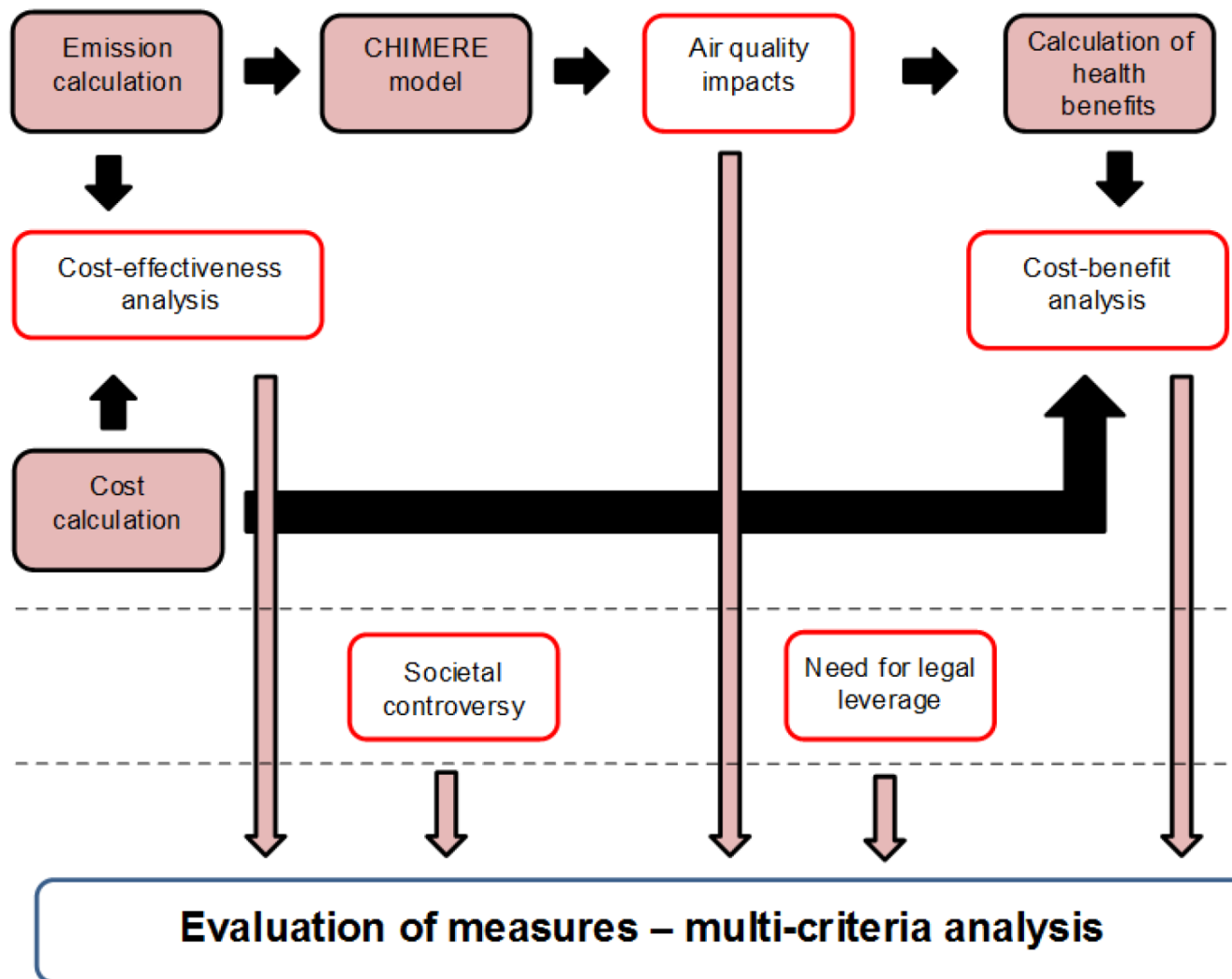




For information if necessary



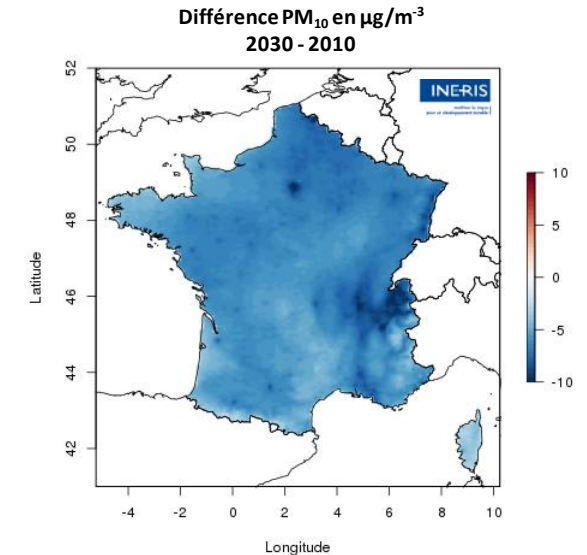
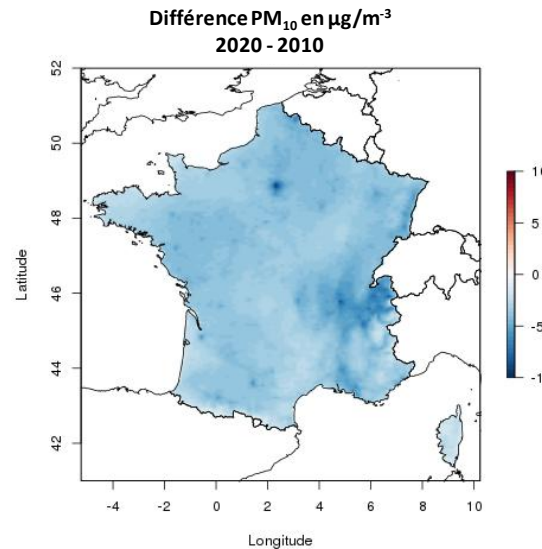
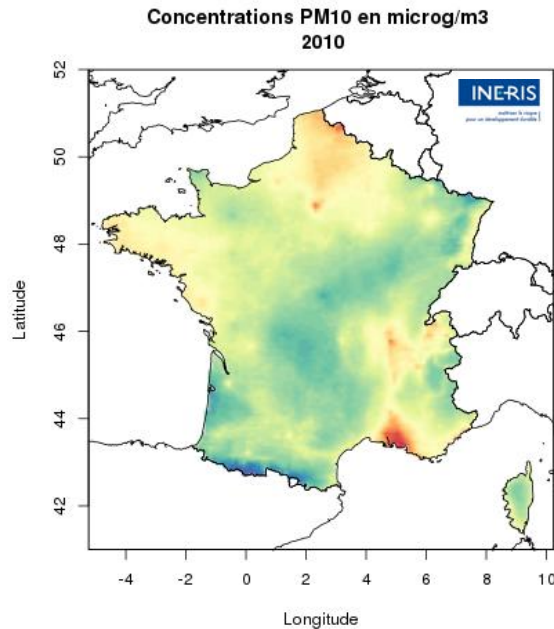
# ASSESSMENT OF PREPA (2015/2016)



# IMPROVEMENT EXPECTED FOR PM<sub>10</sub>

PM<sub>10</sub> annual average concentrations in 2010

Difference in PM<sub>10</sub> annual average concentrations in 2020/2010 and 2030/2010

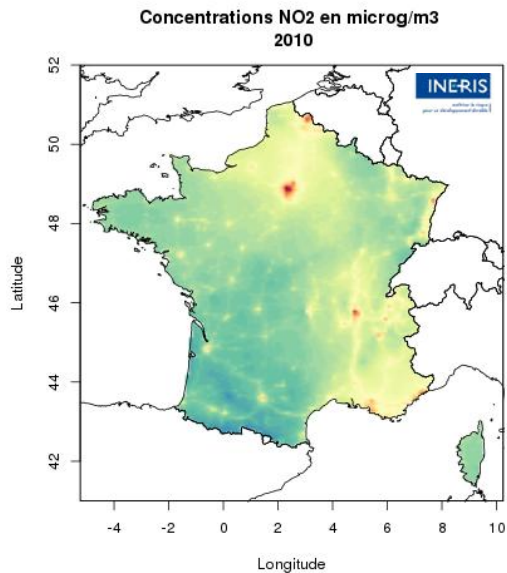


Decrease of PM<sub>10</sub> concentrations in 2020 and 2030. Decrease is more significant in regions with large traffic and residential (wood) emissions: Île-de-France, Auvergne Rhône-Alpes, North.

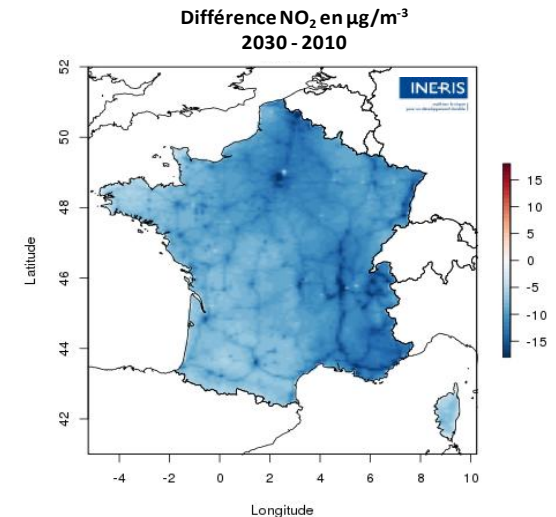
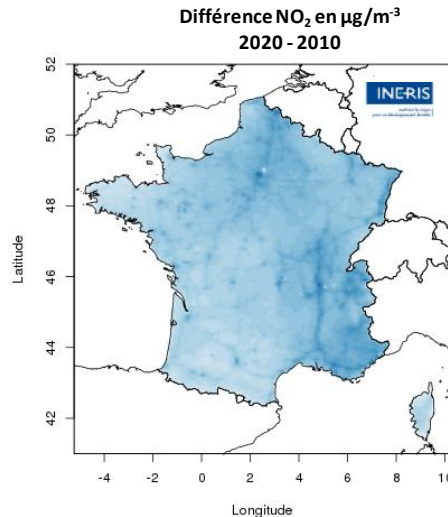
From PREPA, ex ante assessment, 2017  
CITEPA, INERIS for the Ministry of Ecological and Solidary Transition (MTES)

# IMPROVEMENT EXPECTED FOR NO<sub>2</sub>

NO<sub>2</sub> annual average concentrations in 2010



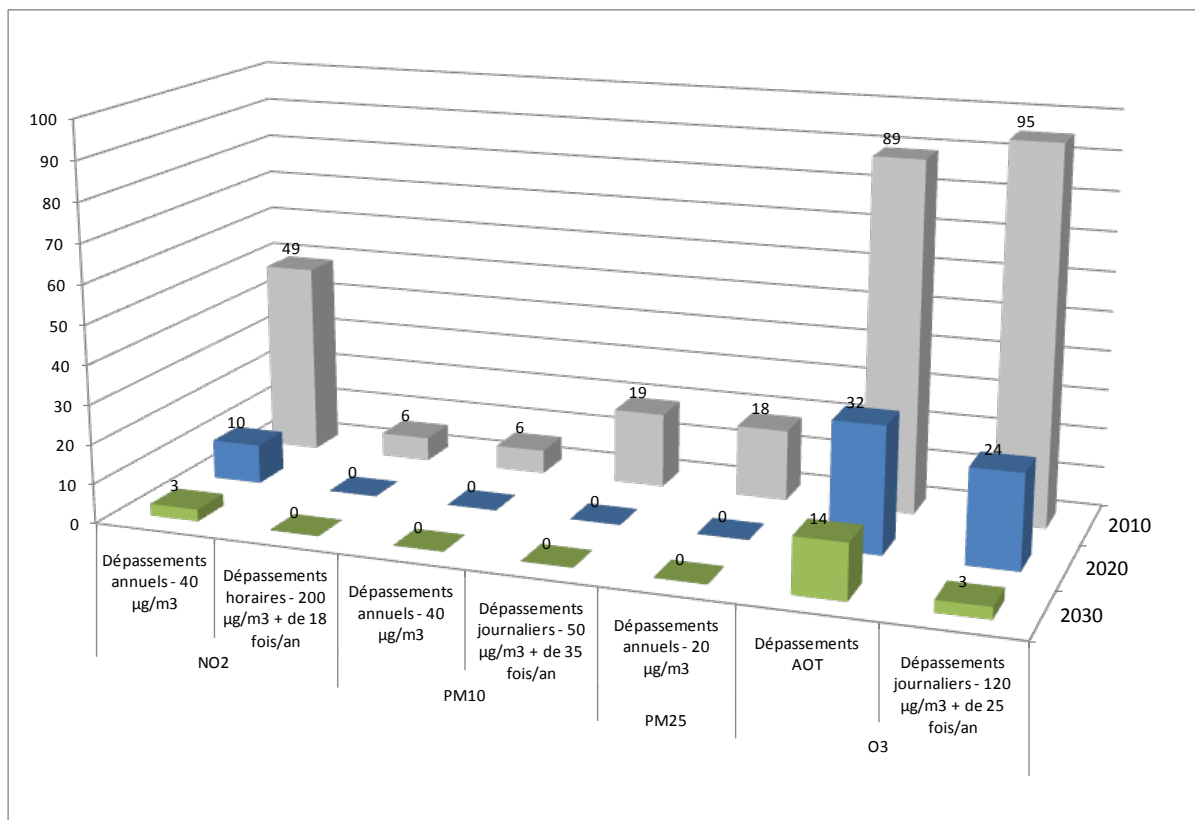
Difference in NO<sub>2</sub> annual average concentrations in 2020/2010 and 2030/2010



NO<sub>2</sub> concentrations are significantly reduced near traffic all over France. In 2030 this reduction is larger than 50 % along major roads and in large cities

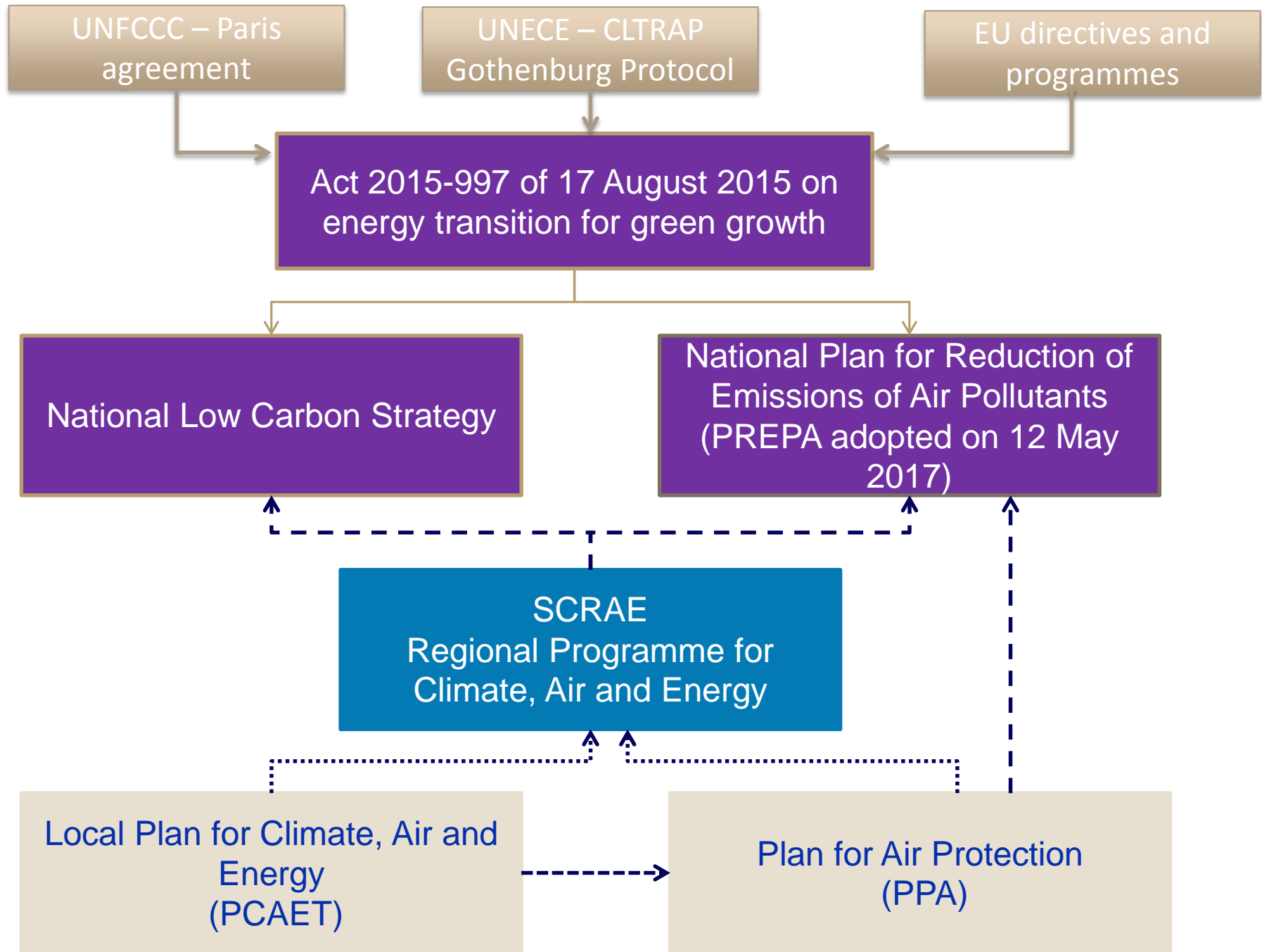
From PREPA, ex ante assessment, 2017  
CITEPA, INERIS for the Ministry of Ecological and Solidary Transition (MTES)

# EXPECTED IMPROVEMENT FOR THE NUMBER OF EXCEEDANCES



From PREPA, ex ante assessment, 2017  
 CITEPA, INERIS for the Ministry of Ecological and Solidary Transition (MTES)

International  
National level  
Regional level  
Local level



# THE NATIONAL LEVEL

## ACT ON ENERGY TRANSITION FOR THE GREEN GROWTH

### GHG reduction

- Divide by four GHG emissions in 2050 / 1990
- Reduce the final energy consumption by 20 % in 2030 and by 50 % in 2050 compared to 2012
- Reduce emissions of GHG by 40% compared to 1990
- At least 23% of energy share from renewable energy in 2020 and at least 32% in 2030
- Reduce the nuclear energy share in electricity production to 50 % in 2025

### ✓ Strategy

- Low national carbon strategy: **SNBC**

### Pollutants

- Defined in the Plan for the reduction of Emissions of Air pollutants (SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>2,5</sub>, NMVOC, NH<sub>3</sub>)

### ✓ Strategy

- National plan for reduction of atmospheric pollutants








### PREPA

# THRESHOLDS FOR EPISODE OF POLLUTION

|                    | NO2                            | O3  | SO2  | PM10                  |
|--------------------|--------------------------------|---|--|-----------------------|
| Information levels | 200<br>(hourly average)        | 180<br>(hourly average)   | 300<br>(hourly average)                      | 50<br>(daily average) |
| Alert levels       | 400 or 200<br>(hourly average) | 1st level<br>240<br>(hourly average)<br>2 <sup>nd</sup> level<br>300<br>(hourly average exceeded for 3 hours)<br>3rd level<br>360<br>(hourly average) | 500<br>(hourly average exceeded for 3 hours) | 80<br>(daily average) |



# CRIT'AIR LABELS

|   | Petrol  | diesel                                  |
|---|---|---|
|    | All 100% electric or hydrogen vehicles        |   |
|    | All gas vehicles and hybrid vehicles          |   |
|    | Euro 5 and 6<br>from 01/01/2011               |   |
|    | Euro 4<br>from 01/01/2006 to 31/12/2010       | Euro 5 and 6<br>from 01/01/2011         |
|   | Euro 2 and 3<br>from 01/01/1997 to 31/12/2005 | Euro 4<br>from 01/01/2006 to 31/12/2010 |
|  |   | Euro 3<br>From 01/01/2011 tp 31/12/2015 |
|  |   | Euro 2<br>From 01/01/1997 to 31/12/2000 |



# CRIT'Air

