FRENCH PLAN TO REDUCE EMISSIONS OF AIR POLLUTANTS

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And emissions of pollutants are clearly down except for NH$_3$. Annual average air quality at national level improves.
RATIONALE AND OBJECTIVES

- The National Air Pollutant Emission Reduction Plan is defined by the law of August 2015 on energy transition and green growth (art. 64 of the law, and codification in art. L. 222-9 of the environment Code)

- Revision of previous action plans:
  - PREPA 2003
  - Plan Particules 2010
  - Emergency Plan for Air Quality (Plan d’Urgence pour la Qualité de l’Air PUQA 2013)

- The plan complies:
  - The objectives of the Gothenburg Protocol and European Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutant
  - Air quality (AQ) concentration requirements
# RATIONALE AND OBJECTIVES

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<tbody>
<tr>
<td>SO$_2$</td>
<td>- 55 %</td>
<td>- 66 %</td>
<td>- 77 %</td>
<td>- 63 %</td>
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<tr>
<td>NOx</td>
<td>- 50 %</td>
<td>- 60 %</td>
<td>- 69 %</td>
<td>- 38 %</td>
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<td>COVNM</td>
<td>- 43 %</td>
<td>- 47 %</td>
<td>- 52 %</td>
<td>- 46 %</td>
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<tr>
<td>PM$_{2.5}$</td>
<td>- 27 %</td>
<td>- 42 %</td>
<td>- 57 %</td>
<td>- 33 %</td>
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<tr>
<td>NH$_3$</td>
<td>- 4 %</td>
<td>- 8 %</td>
<td>- 13 %</td>
<td>+ 3 %</td>
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RATIONALE AND OBJECTIVES

Emission reduction observed in 2010: **blue bar**
Emission reduction observed in 2014: **red bar**
Commitment required by the amended Goteborg protocol in 2020: **green line**
Commitment required by the 2016/2284 Directive in 2030: **purple line**
PRÉPA: ELABORATION PROCESS

Considering all sources of emissions

- Taking into account the reduction potentials of measures as well as the associated economic, health, legal and societal challenges
- Evaluating measures in consultation with stakeholders
- Measures to be assessed with the multi-criteria analysis:
  - Existing measures (ME), very recent measures whose effects are not yet visible but will be effective from today
  - Additional measures (MA), for which there is sufficient data to carry out the evaluation
  - « Knowledge improvement » measures, to better know the challenges (efficiency, costs, constraints...) of some measures assumed interesting
  - Incentive measures to explain to and engage the population
  - Additional measures with EU or international character to mobilize supranational leverage
METHOD FOR THE MEASURES EVALUATION

1. Emission calculation
2. CHIMERE model
3. Air quality impacts
4. Calculation of health benefits

- Cost-effectiveness analysis
- Cost calculation
- Societal controversy
- Need for legal leverage

Evaluation of measures – multi-criteria analysis

Source: N. Allemand, S. Schucht, TFIAM 2016
WHAT IS PRÉPA?

It is composed of

- a decree of 2017/05/10 signed by 8 ministers: Targeted emission reduction for major pollutants by 2020, 2025 and 2030

- a decree signed by the minister in charge of environnement for 2017-2021 period: priority actions to reduce emissions to be strengthened and implemented + modalities
  Annual review by the National Air Council

4 sectors covered: *industry, transport, residential and agriculture*

et 3 specific axes: *actions to improve knowledge, mobilize local actors and territories, and 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 favor of air quality

- **Research and development projects** when the identification of appropriate measures is not yet evident
PRÉPA – Measures by sectors

**Industry**: reinforcement of controls specifically in the field of air emissions and application of BAT (cement works, refineries, combustion plants, etc.)

**Transports**: continuing petrol-diesel convergence, active mobility, generalization of bicycle mileage allowance, implementation of traffic restriction zones, renewal of fleets by low-emission vehicles, verification of actual vehicle emissions, initiative with Mediterranean countries to set up a low-emission zone in the Mediterranean area

**Residential-tertiary**: incentives for energy renovation, lower sulfur content in domestic heating oil, co-financing with local authorities to help renewal of poorly performing heating equipment, support for the development of alternatives to the burning of green waste, raising of awareness of public

**Agriculture**: reduction of emissions of ammonia and particulates, alternatives to burning of agricultural residues, study of plant protection products in the air, update of current French code of good practices (1990) and dissemination, financing Pilot projects and mobilization of European funds
Mobilisation of local actors: communication (National day for air quality the 1\textsuperscript{st} wednesday of september) and sharing of good practices (network of cities, platform...)

Improving knowledge and innovation: to prepare next actions! Identification of reduction technologies, improvement of emission inventories, knowledge of the pollution origin and its impacts and improvement of modelling, consideration of unregulated pollutants (nanoparticles)

Mobilizing financing for air quality: mobilization of the financing fund for energy transition and future investment programs, consideration for air quality in other state policies
PRÉPA - Impacts

Implementation of PRÉPA will permit:

- To meet the emission reduction targets of 2020 and 2030. PRÉPA measures are especially needed to achieve the goals of reducing ammonia emissions.

AND ALSO

- To limit the number of exceedances of air quality limit values: there are well reduced from 2020 and almost eliminated by 2030. The average fine-particle concentration will decrease by about 20 % by 2030.

- Reduce the number of premature deaths associated with chronic exposure to fine particulate matter by approximately 11 200 cases / year by 2030.
PRÉPA - Impacts

Exceedances numbers of limit values (PM$_{10}$, PM$_{2.5}$ et NO$_2$) and target values (O$_3$)

Source: Evaluation ex-ante du PREPA - Ineris
THANK YOU FOR YOUR ATTENTION!

СПАСИБО ЗА ВНИМАНИЕ!

MERCI DE VOTRE ATTENTION !

To go further:

http://www.developpement-durable.gouv.fr/politiques-publiques-reduire-pollution-lair#e5

http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/17_Allemand_Schucht_TFIAM-45.pdf