Air Quality Legal Framework

- The European Union establishes air quality limit values with the aim of avoiding, preventing or reducing harmful effects on human health and/or the environment as a whole.

- Air quality status should be maintained where it is already good, or improved. Where the air quality objectives are not met, competent organizations should take action in order to comply with the limit values.
According to the normative framework (Catalan Law 22/1983 & Decree 322/1987)

- Decree 226/2006, of 23 May:
  Establish Special Protected Zones of the Atmospheric Environment for the pollutants nitrogen dioxide (NO2) and particulate matter PM10

- Decree 152/2007, of 10 July:
  Approve the Air Quality Plan for improving air quality in several municipalities of the established Special Protection Zones

- Decree 203/2009, of 22 December:
  Extending the action plan for improving air quality in the Special Protection Areas until the approval of a new plan

Objectives

- Reduction of atmospheric pollutant emissions:
  Improvement of Air quality (health)

  Other objectives are:
  - Reduction of tropospheric ozone concentrations
  - Reduction of CO2 emissions (climate change)
  - Abatement of acoustic pollution
  - Reduction of energy consumption
Territorial delimitation of the Special Protection Zone against air pollution

The affected Area

Territorial delimitation of the Air Quality Plan: 40 municipalities of the Metropolitan Region of Barcelona (regions of Barcelonès, Baix Llobregat, Vallès Oriental and Vallès Occidental)

PM10 suspended particles
40 municipalities

Nitrogen dioxide NO₂
16 municipalities
Assessment of Air Quality concentrations for NO2 and PM10

- PM10 annual mean: 40 µg/m³
- PM10 daily mean: 50 µg/m³
- Maximum PM10 daily mean exceedances: 35
- NOx annual mean: 40 µg/m³

Assessment of Nitrogen Dioxide in Air Quality Zone 1
Assessment of Nitrogen Dioxide in Air Quality Zone 1

Traffic stations

Annual Mean NO2 (ug/m³)

Reduction (%)

Total stations: -2
Traffic stations: -4
Background stations: -10
Assessment of PM10 in Air Quality Zone 1

Evolution of annual average

<table>
<thead>
<tr>
<th>Year</th>
<th>PM10 (ug/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>30</td>
</tr>
<tr>
<td>2001</td>
<td>40</td>
</tr>
<tr>
<td>2002</td>
<td>50</td>
</tr>
<tr>
<td>2003</td>
<td>60</td>
</tr>
<tr>
<td>2004</td>
<td>70</td>
</tr>
<tr>
<td>2005</td>
<td>80</td>
</tr>
<tr>
<td>2006</td>
<td>90</td>
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<tr>
<td>2007</td>
<td>100</td>
</tr>
<tr>
<td>2008</td>
<td>110</td>
</tr>
<tr>
<td>2009</td>
<td>120</td>
</tr>
<tr>
<td>2010</td>
<td>130</td>
</tr>
</tbody>
</table>

PM10 reduction (%)

- Total stations: 6%
- Traffic stations: 4%
- Industrial stations: 17%
- Background stations: -6%
Assessment of PM10 in Air Quality Zone 2
Evolution of annual average

<table>
<thead>
<tr>
<th>Year</th>
<th>PM10</th>
<th>PM10</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>2001</td>
<td>50</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>2002</td>
<td>40</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>2003</td>
<td>30</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2004</td>
<td>20</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>2005</td>
<td>10</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Reduction (%)

- Total stations: 3%
- Transit stations: 7%
- Industrial stations: 3%
- Fons stations: 0%
THE CAUSE OF THE POLLUTION

Contribution of each sector to the total emissions:

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>ZONE 1</th>
<th>ZONE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM$_{10}$</td>
<td>NO$_2$</td>
</tr>
<tr>
<td>Industry</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Energy</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Mineral activities</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Road transport</td>
<td>52%</td>
<td>40%</td>
</tr>
<tr>
<td>Maritime transport</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Air transport</td>
<td>-</td>
<td>6%</td>
</tr>
<tr>
<td>Domestic</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Contributions are calculated according to the emissions inventory compiled by the approval of the action plan in 2007.

The measures of the Acting Plan are structured in the following areas:

- Prevention: 10
- Industrial: 27
- Energy: 4
- Road Transport: 6
- Maritime Transport: 8
- Air Transport: 3
- Domestic sector: 4
- Public awareness: 11

TOTAL: 73 measures
AIR QUALITY PLAN IN THE METROPOLITAN AREA OF BARCELONA

ROAD TRANSPORT MEASURES

Road transport - sustainable transport quote increasing:
- Barcelona Metropolitan Area Mobility Plan Environmental Objectives
- Urban Mobility Plans Environmental Objectives
- Workplaces Mobility Plans Environmental Objectives

Road transport - transport mode efficiency increasing:
- Euro 4 & 5 Vehicles Homologation Normative application
- Speed Management in fast roads
- Sustainable Heavy Duty Vehicles for Public Administration

AIR QUALITY PLAN IN THE METROPOLITAN AREA OF BARCELONA

INDUSTRIAL SECTOR MEASURES

Definition of concrete measures for 23 industrial establishments:
- Cement plants
- Steel plants
- Waste incineration
- Glass plants
- Ceramic plants

and establishment of specific requirements for 3 sectors:
- Mineral activities
- Asphalitic plants
- Concrete plants

Reduction: 30 %
ENERGY SECTOR MEASURES

– Specific measures for 3 Power Plants (combined cycle)
– and establishment of specific requirements for industrial combustion and cogeneration activities

Reduction: 30 %

PORT OF BARCELONA MEASURES

– Actions over the containers lorries fleet (environmental requirements)
– Promotion of rail transport of goods
– Electric supply for ships
– Inner float ships renewal
– Modification of Port taxes
– Renewal of auxiliary loading & unloading machinery
– Handling of dusty materials improvement
– Strategic plan for the reduction of the emissions in the port

Reduction: 20% NO2 / 10% PM10
AIR QUALITY PLAN IN THE METROPOLITAN AREA OF BARCELONA

BARCELONA AIRPORT MEASURES

- Minimization of time for Electric supply for planes
- Renewal of auxiliary road vehicles fleets
- Land operations improvement

Reduction: 20%

AIR QUALITY PLAN IN THE METROPOLITAN AREA OF BARCELONA

DOMESTIC SECTOR MEASURES

- Decree 21/2006 about ecoefficiency in buildings
- Technical Code for construction activities
- Renewal plan for domestic heaters and boilers
- Renewal plan for electrical appliance
Environmental Criteria for 10 sectors:

- Urban Planning figures
- Industrial or Energy activities (new/modification)
- Infrastructures (new/modification)
- Mineral Activities (modification)
- Public Works
- Temporal Plants handling with dusty materials
- Construction, rehabilitation and demolition of Buildings & Structures
- Minimization of dust resuspension from paved roads
- Minimization of dust resuspension from unpaved roads
- Development of Vehicular Natural Gas distribution network

11 measures for raising citizens awareness and education
Thank you for your attention

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xavier.guinart@gencat.cat

More information about the Air Quality Plan in the Metropolitan Area of Barcelona at: www.airemes.net