WASTE MANAGEMENT and ENVIRONMENTAL PROTECTION ACTIVITIES IN ISTANBUL

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Istanbul Metropolitan Municipality (I.M.M.)

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Content of Presentation

• Integrated Solid Waste Management
• Legal Status
• Waste Management in Istanbul
• Marine Pollution Control in Istanbul
• Air Pollution Control in Istanbul
• Noise Pollution Control in Istanbul
INTEGRATED SOLID WASTE MANAGEMENT
Most preferable

Less preferable

Integrated Solid Waste Management - Hierarchy

Minimization at source
Recovery
Energy Recovery
Disposal

Prevention
Minimization
Reuse
Recycle
Energy Recovery
Disposal
Integrated Solid Waste Management - Properties

1) It must be an integrated system
   It must contain all types of wastes and production sources

2) It must obtain an economic value
   There must be material and energy recovery

3) It must be flexible
   It must be open to the changes occurring in time

4) It must rely on the basis of regional planning
   The understanding of regional management must be internalized for the usage of sources efficiently
Integrated Solid Waste Management

Production of Waste

Storage, Classification and Handling at the Source

Collection

Transport and Transfer

Separation, Handling and Recycling / Recovery

Ultimate Disposal
LEGAL STATUS
## Legal Status - 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>Law on Municipal Revenues (No 2464)</td>
</tr>
<tr>
<td>1983 - (2006)</td>
<td>Environmental Law (No 2872) (Amendment with the law numbered 5491)</td>
</tr>
<tr>
<td>2003</td>
<td>Foundation Law of Ministry of Environment and Forestry (No:4856)</td>
</tr>
<tr>
<td>2004</td>
<td>Metropolitan Municipal Law (No 5216)</td>
</tr>
<tr>
<td>2004</td>
<td>Turkish Criminal Law (No 5237)</td>
</tr>
<tr>
<td>2005</td>
<td>Municipal Law (No 5393)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Uluslar arası sözleşme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>Basel Convention</td>
</tr>
</tbody>
</table>
Regulations on Control of Air Quality (1986)
- Regulations on Control of Environmental Noise Pollution (2010)
- Regulations on Control of Water Pollution (2004)

Regulations on the Control of Solid Waste (1991)

Regulations on the Control of Medical Waste (2005)

Regulations on Landfill of Waste (2010)
- Regulations on Incineration of Waste (2010)
  - Regulations on the Control of Packaging Waste (2007)
  - Regulations on the Control of Waste Battery and Accumulator (2004)

Environmental Law (2872-1983)
- 5491-2006

Regulations on General Principles of Waste Management (2008)
WASTE MANAGEMENT IN ISTANBUL
Waste Management Facilities in Istanbul

- 4 Transfer Stations
- 1 Landfill Site
- 1 Recovery and Composting Plant
- 1 Leachate Treatment Plant

Map showing the locations of various waste management facilities in Istanbul.
Transfer Stations

The wastes collected from houses and working places by district municipalities are then transported to seven transfer stations belonging to Istanbul Metropolitan Municipality.

14,000 tons waste produced daily in Istanbul requires 1,900 runs to transport to landfill sites however 500 runs are enough owing to transfer stations.

Transfer stations provide;

• To decrease traffic load,
• To retrench fuel, manpower and time,
• To decrease environmental pollution,
• To decrease transfer costs in the ratio of 65%.
## Transfer Stations and Waste Amounts

<table>
<thead>
<tr>
<th>Transfer Stations in European Side</th>
<th>Actual Capacity (ton/day)</th>
<th>Distance from Landfill Site (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baruthane Transfer Station</td>
<td>2.000</td>
<td>25</td>
</tr>
<tr>
<td>Yenibosna Transfer Station</td>
<td>2.650</td>
<td>40</td>
</tr>
<tr>
<td>Halkali Transfer Station</td>
<td>3.300</td>
<td>40</td>
</tr>
<tr>
<td>Silivri Transfer Station</td>
<td>300</td>
<td>99</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8.250</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transfer Stations in Asian Side</th>
<th>Actual Capacity (ton/day)</th>
<th>Distance from Landfill Site (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hekimbası Transfer Station</td>
<td>1.700</td>
<td>44</td>
</tr>
<tr>
<td>K.Bakkalköy Transfer Station</td>
<td>1.500</td>
<td>46</td>
</tr>
<tr>
<td>Aydınli Transfer Station</td>
<td>1.500</td>
<td>53</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4.700</strong></td>
<td></td>
</tr>
</tbody>
</table>
Landfilling

Landfill areas are isolated from groundwater by using clay, geomembrane, geotextile and gravel for filtration. By the way waste can not harm to the environment.

Landfilling:

• The most economic method used in waste treatment,
• Acceptable and safe method in terms of environment,
• No energy need,
• Possible to produce electric energy from methane gas.
Landfill Sites

**Landfill Site in European Side**
**Odayeri - EYÜP**

- Odayeri/Göktürk
- Area: 112 ha
- Amount of Waste Landfilled Daily: 9,800 tons.
- Amount of Waste Landfilled Wherefrom 15 years; about 38 million tons.

**Landfill Site in Asian Side**
**Kömürçüoda - ŞİLE**

- Kömürçüoda/ Karakiraz Köyü
- Area: 89 ha
- Amount of Landfilled Waste Daily: 4,500 tons
- Amount of Landfilled Waste Wherefrom 15 years; about 17 million tons.
## Landfill Sites

<table>
<thead>
<tr>
<th></th>
<th>ODAYERİ (European Side)</th>
<th>KÖMÜRCÜODA (Anatolian Side)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Area</strong></td>
<td>112 ha</td>
<td>89 ha</td>
</tr>
<tr>
<td><strong>Laid Area</strong></td>
<td>88 ha</td>
<td>47 ha</td>
</tr>
<tr>
<td><strong>Total Storage</strong></td>
<td>38 megaton</td>
<td>17 megaton</td>
</tr>
<tr>
<td><strong>Predicted Life Span</strong></td>
<td>2011</td>
<td>2030</td>
</tr>
</tbody>
</table>
Landfill Site - Zone Cross Section

- Geotextile layer
- New hole for wastes
- Clay layer
- Geomembrane layer
- Gas collection pond
- Leachate pond
- Leachate collection pipe

**DOMESTIC SOLID WASTE**

- 50 cm Drainage and Gravel Layer
- 25 cm CLAY
- Geotextile
- 25 cm CLAY
- 2 mm HDPE (High Density Polyethylene)
Wastes coming to the landfill sites;

- 75% from transfer stations,
- 16% from household wastes from districts
- 5% from treatment sludge,
- 3% from annihilation process and special household wastes.

### Landfill Sites – Waste Amounts

<table>
<thead>
<tr>
<th>Year</th>
<th>ASIAN SIDE (ton/day)</th>
<th>EUROPEAN SIDE (ton/day)</th>
<th>TOTAL (ton/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>4.850</td>
<td>8.740</td>
<td>13.590</td>
</tr>
<tr>
<td>2010</td>
<td>5.136</td>
<td>9.300</td>
<td>14.436</td>
</tr>
</tbody>
</table>

![Graph showing waste amounts](image-url)
Composting and Recovery Plant

Composting plant which is situated in Kemerburgaz is the **second largest** plant of the Europe. Capacity of the plant is **1,000 tons/day**. Wastes are transformed into economic value in the plant.

**Aerobic Compost**
- Area: 32.000 m²
- Capacity: 1,000 tons/day
- Product: Minimum 20,000 tons/year
- Place of Use: Parks and gardens of Istanbul
Composting and Recovery Plant Flow Diagram
RDF (Refused Derived Fuel) ve Granule Plant

This Project is supported by TUBITAK. The wastes originated from Composting and Recovery Plant are processed in these plants.

- **In Granule Plant;** recyclable plastics are transformed into granule and the capacity of the plant is **5 tons/day.**

- **In RDF Plant;** non-recyclable wastes are used in cement factories as alternative fuel and the capacity of the plant is **20-25 tons/hour.**
Leachate Treatment Plants

Landfilling is an economic method but the cost of treatment of leachate is high. The units of the plant;

- Collecting basin – equalisation basin
- Biological treatment (nitrification-denitrification)
- Ultrafiltration Membranes
- Nanofiltration Membranes
- Discharge to creek or channel according to discharging standards.

There are two leachate treatment plants in Istanbul.
Capacity of Odayeri Leachate Treatment Plant : 2.000 m³/day
Capacity of Kömürküda Leachate Treatment Plant : 1.200 m³/day
Leachate Data (m³)

<table>
<thead>
<tr>
<th>Plant</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odayeri (m³)</td>
<td>101.326</td>
<td>220.772</td>
<td>507.550</td>
<td>829.648</td>
</tr>
<tr>
<td>Kömürücüoda (m³)</td>
<td>39.628</td>
<td>260.045</td>
<td>257.651</td>
<td>557.324</td>
</tr>
</tbody>
</table>

Leachate is then sent to I.S.K.I Treatment Facility by tankers for further treatment in European Side and to receiving media in Asian Side.
Leachate Treatment Plant Flow Diagram

- Equalization Tank
- Nitrification
  - Denitrification
  - 90-95% COD Removal
- Ultra-filtration
- Nano-filtration
  - 98.5% COD Removal
- Discharge
- Landfill site
  - Concentrated

Materials and Processes:
- HCl
- Antifoam
- Methanol
- Biological Sludge
- Sludge Dewatering
- 95% COD Removal
Leachate Treatment Plant – Plant Outlet

Bioreactor Outlet

Ultrafiltration Outlet

Nanofiltration Outlet
Landfill Gas (LFG) Plant

To transform the landfill gas into heat energy in Odayeri and Kömürcüoda Landfill Sites, systems with an actual capacity of 24 MW are installed. These systems will produce 2,800 GWh electrical energy until 2030.

By this project nearly 1,000,000 tons of carbon dioxide is prevented from emitting to atmosphere.

This project is in the first 10 of United Nations (UN) Climate Change Projects.
117 million kwh electric energy was produced in 2010.

This amount equals approximately 15,250,000 TL economically.

Monthly energy need of 775,000 houses was provided by this energy.
Medical Waste Incineration Plant

- Since 1995, IMM has collected and transferred medical waste of approximately 245 medical entities that have 20 and more beds. Medical wastes of healthcare entities are collected by means of 16 special-equipped vehicles on a daily basis.

- Medical wastes are incinerated at 1,200 °C at the plant that has a capacity of 24 tons/day in Istanbul.

- Volume and weight of wastes are reduced by 95% and 75%, respectively, while generating electric power by means of a generator turbine with approx. 0,5 MW output.

- There is a treatment system to decrease pollutant gaseous emissions from the chimney of incineration plant. Emissions are given to the atmosphere after acid neutralization. There is also Carbon Filter System that is eligible to EU Standards.

- Ash of the wastes are disposed in sanitary landfills separately.
Amount of Medical Wastes

Annual amount of medical waste is approximately **17,300 tons**, 

It is thought that amount of medical waste will exceed **24,000 tons in 2025**.

<table>
<thead>
<tr>
<th></th>
<th>Asian Side (ton/day)</th>
<th>European Side (ton/day)</th>
<th>Total (ton/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>16</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td>2010</td>
<td>17</td>
<td>30</td>
<td>47</td>
</tr>
</tbody>
</table>
# Urban Cleaning

<table>
<thead>
<tr>
<th>Number of Sweeping Vehicles</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Cleaning Vehicles</td>
<td>63</td>
</tr>
<tr>
<td>Number of Workers in Mobile Team</td>
<td>498</td>
</tr>
</tbody>
</table>

4 million m² area is daily cleaned by sweeping in Istanbul.
Management of Packaging Wastes

According to “Regulations on Control of Packaging Wastes”, packaging wastes are collected separately.

- **26** district municipalities work together with ISTAC Inc. Co.,

- **13** district municipalities work themselves or together with CEVKO.

<table>
<thead>
<tr>
<th>Districts That Signed Protocol With ISTAC</th>
<th>Districts That Didn’t Sign Protocol With ISTAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts That Started Implementation</td>
<td>Districts That Are Working Themselves</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>1 Silivri</td>
<td>Beşiktaş</td>
</tr>
<tr>
<td>2 Kağıthane</td>
<td>Zeytinburnu</td>
</tr>
<tr>
<td>3 Tuzla</td>
<td>Bakırköy</td>
</tr>
<tr>
<td>4 Bayrampaşa</td>
<td>Kadıköy</td>
</tr>
<tr>
<td>5 Beykoz</td>
<td>Pendik</td>
</tr>
<tr>
<td>6 Sultanbeyli</td>
<td>Şile</td>
</tr>
<tr>
<td>7 Bağcılar</td>
<td>Avcılar</td>
</tr>
<tr>
<td>8 Üsküdar</td>
<td>Adalar</td>
</tr>
<tr>
<td>9 Küçükçekmece</td>
<td>Ataşehir</td>
</tr>
<tr>
<td>10 Şişli</td>
<td>Arnavutköy</td>
</tr>
<tr>
<td>11 Sanyer</td>
<td>Esenyurt</td>
</tr>
<tr>
<td>12 Büyükçekmece</td>
<td>Maltepe</td>
</tr>
<tr>
<td>13 Gaziosmanpaşa</td>
<td>Kartal</td>
</tr>
<tr>
<td>14 Beyoğlu</td>
<td></td>
</tr>
<tr>
<td>15 Fatih</td>
<td></td>
</tr>
<tr>
<td>16 Güngören</td>
<td></td>
</tr>
<tr>
<td>17 Çatalca</td>
<td></td>
</tr>
<tr>
<td>18 Esenler</td>
<td></td>
</tr>
<tr>
<td>19 Beylikdüzü</td>
<td></td>
</tr>
<tr>
<td>20 Bahçelievler</td>
<td></td>
</tr>
<tr>
<td>21 Ümraniye</td>
<td></td>
</tr>
<tr>
<td>22 Çekmeköy</td>
<td></td>
</tr>
<tr>
<td>23 Başakşehir</td>
<td></td>
</tr>
<tr>
<td>24 Sultangazi</td>
<td></td>
</tr>
<tr>
<td>25 Sancaktepe</td>
<td></td>
</tr>
<tr>
<td>26 Eyüp</td>
<td></td>
</tr>
</tbody>
</table>
Amount of packaging wastes collected separately in 2010 is about **8.000 tons/month.**

In 2010, the amount of packaging wastes collected separately is **91.090 tons/year.**
General Waste Characterization in Istanbul

Percentage by weight:

54.09 % Organic waste
15.57 % Paper and Cardboard

9.96 % Pochette
5.45 % Nappy
Management of Wastes Batteries

The responsibility of collection of waste batteries was given to **TAP Association** by Ministry of Environment and Forestry.

The association works in cooperation with Istanbul Metropolitan Municipality and collects waste batteries, carries out awareness activities.

Waste batteries collected separately are stored in specially built and impermeable waste battery storages in **Kemerburgaz**.
• **10,000 tons** batteries were put on the market in 2009 throughout Turkey.

• Amount of waste batteries that have to be collected according to related law is; **3,000 tons**

• Amount of waste batteries collected; **251 tons**
Management of Istanbul Local E-waste Project (SMILE)

Project Code: LIFE 06 TCY/TR/282
Beneficiary: Istanbul Metropolitan Municipality
Project Partners: Environmental and Cultural Heritage Conservation Association (ÇEVKU) from Turkey and Ecological Recycling Society Association from Greece.
Total Project Budget: €739,899
EU Funding: €495,092

The formal duration of the Project has ended but it is being continued by the support of IMM.

Within the Project,
- Unusable computers are collected and decomposed as usable, recyclable and unrecoverable.
- The ones that can be used again are repaired and delivered to the public institutions that are in need.
- The ones that can not be used again are purified from toxic materials and sent to recycling plants.
- The rest of the computers are disposed.
AIR POLLUTION CONTROL IN ISTANBUL
Air Pollution History

In Istanbul, air pollution started to manifest itself as of the year 1985 due to the;

- rapid population increase,
- the use of low quality fuel,
- dense immigration,
- wrong place selection for industry,
- not giving importance enough to heat isolation,
- not enough workings on reducing traffic sourced emissions and
- lack of information on environmental issues.
Air Pollution in Istanbul

Thanks to spreading natural gas consumption in settlements and industry, qualified fuel obtaining (qualified coal, qualified fuel-oil, etc.), afforestation, controlling and inspection of industrial sourced emissions, putting in action of heat isolation, improving of public transportation, etc. remarkable improvements recorded on Istanbul’s air quality.
Change in $\text{SO}_2$ and Particulate Matter (PM)

<table>
<thead>
<tr>
<th>Year</th>
<th>$\text{SO}_2$ (EU Standard 20 mg/m$^3$)</th>
<th>PM (EU Standard 40 µg/m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td>2002</td>
<td>67</td>
<td>17</td>
</tr>
<tr>
<td>2003</td>
<td>58</td>
<td>16</td>
</tr>
<tr>
<td>2004</td>
<td>47</td>
<td>14</td>
</tr>
<tr>
<td>2005</td>
<td>48</td>
<td>15</td>
</tr>
<tr>
<td>2006</td>
<td>58</td>
<td>13</td>
</tr>
<tr>
<td>2007</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td>2008</td>
<td>58</td>
<td>10</td>
</tr>
<tr>
<td>2009</td>
<td>54</td>
<td>7</td>
</tr>
<tr>
<td>2010</td>
<td>51</td>
<td>7</td>
</tr>
</tbody>
</table>
PM$_{10}$ in Metropolis

PM$_{10}$ (ug/m$^3$)

- Tokyo: 25
- Newyork: 26
- Paris: 30
- London: 34
- Istanbul: 50
- Seoul: 54

WHO Recommendation (20 ug/m$^3$)
Decision-Making Support System Project for air quality management was funded by EU Commission between the years 2007-2009 in the framework of LIFE-III grant program with 9 Eylül University.

- Total Budget of the Project: **314,535 €**.

- Scenario analyses were performed about air quality in the framework of this project.
# Air Pollutant Emissions

<table>
<thead>
<tr>
<th>Source Type</th>
<th>$PM_{10}$</th>
<th>$SO_2$</th>
<th>$NO_x$</th>
<th>NMVOC</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>7,630</td>
<td>58,468</td>
<td>9,394</td>
<td>117</td>
<td>1,714</td>
</tr>
<tr>
<td>Residential heating</td>
<td>13,631</td>
<td>10,983</td>
<td>7,014</td>
<td>18,351</td>
<td>123,510</td>
</tr>
<tr>
<td>Traffic</td>
<td>5,200</td>
<td>1,016</td>
<td>138,000</td>
<td>38,500</td>
<td>270,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>26,461</td>
<td>70,467</td>
<td>154,408</td>
<td>56,968</td>
<td>395,224</td>
</tr>
</tbody>
</table>

*Figure 3.8 Contribution of each source type to total pollutant emissions*
Air Quality Monitoring

- 10 fixed +1 mobile monitoring stations
- Online automatic measurement
- SO₂, CO, PM10, NOx, Ozone
- Publicly available

http://www.ibb.gov.tr/tr-TR/HavaKalitesi/
http://www.havaizleme.com
MARINE POLLUTION CONTROL IN ISTANBUL
Wastes Received From Ships

According to Metropolitan Municipality Law numbered 5216, IMM receives wastes from ships.

It collects products derived from petrol (bilge water, mud, polluted ballast, waste oil etc) (Annex-I), chemicals (Annex II), polluted water (Annex –IV) and solid wastes (Annex V) in the content of MARPOL Agreement.

IMM has 15 ships in total.

- 4 75-150 DWT (Dead Weight Ton)
- 4 150-300 DWT
- 3 300-500 DWT
- 1 500-750 DWT
## Total Amount of Waste Received From Ships

### TOTAL AMOUNT OF WASTE RECEIVED FROM SHIPS (2007-2009)

<table>
<thead>
<tr>
<th>TYPE OF THE WASTE ACCORDING TO MARPOL 73/78 AGREEMENT</th>
<th>TYPE OF WASTE</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NUMBER OF SHIPS</td>
<td>AMOUNT OF WASTE (m³)</td>
<td>NUMBER OF SHIPS</td>
<td>AMOUNT OF WASTE (m³)</td>
<td>NUMBER OF SHIPS</td>
</tr>
<tr>
<td>ANNEX-I PETROL LIKE PRODUCTS</td>
<td>3.502</td>
<td>74.225</td>
<td>4.469</td>
<td>107.073</td>
<td>4.239</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4.585</td>
<td>92.229</td>
<td>5.978</td>
<td>134.487</td>
<td>5.470</td>
</tr>
</tbody>
</table>
The Service of Receiving Waste From Ships

![Chart showing the amount of waste received from ships and the number of ships from 2005 to 2010.](chart)

- **2005**: 9,557 m³, 180 ships
- **2006**: 120,728 m³, 3,529 ships
- **2007**: 2,922 m³, 4,585 ships
- **2008**: 134,487 m³, 5,978 ships
- **2009**: 119,437 m³, 5,470 ships
- **2010**: 117,052 m³, 4,361 ships

- **Legend**:
  - Blue bar: Amount of waste receiving from ships (m³)
  - Red bar: Number of ships
Recycling/Refining Wastes Received From Ships

- Haydarpasa Waste Plant was established in 2008 as the first model in its field.

- This plant was established on an area of 1,550 m² in Haydarpasa Harbour Area.

- In this plant, petrol and petrol like contaminated wastes (bilge water, mud, polluted ballast, waste oil etc) in all harbours and pier lands of Istanbul are refined.
Recycling/Refining Wastes Received From Ships

- By controlling the wastes in the plant, marine pollution will be under control and petrol and petrol like products acquired as a result of refinement will be used in industry as secondary fuel.

- In 2010, **117.052 m³** waste were collected in accordance with the content of MARPOL Annex I (bilge water, mud, polluted ballast, waste oil etc), Annex IV (polluted water) and Annex V (garbage); **96.693 m³** waste collected in the content of MARPOL Annex-I was sent to Haydarpasa Waste Plant and **19.060 m³** of it was refined and transformed into fuel.
Haydarpaşa Waste Receiving Plant

![Bar chart showing data from 2005 to 2010 for Haydarpaşa Waste Receiving Plant. The chart compares petrol-like products collected within the framework of MARPOL Annex - I (m³) and the amount gained into the economy (m³).]
Marine Pollution Control

Local Authority Area of IMM

- 7/24 Control
- 3 Control boats
- Helicopter Control (3 Days, 2 Hours)
- 38,572 sea vessels were controlled in 2010
Marine Pollution Control
NOISE POLLUTION CONTROL IN ISTANBUL
Noise Pollution

- **Environmental Noise Directive (2002/49/EC)** were adopted to national legislation by MoEF.

- **13** District Municipalities and Istanbul Metropolitan Municipality have the authority on noise pollution control within their authority area.

- With these regulations, noise pollution in constructed areas, parks, residential areas, areas sensitive to noise (hospital, school etc.) and other buildings and areas are controlled.
Noise Pollution Implementations

- **Noise/Acoustics Laboratory** established by IMM was accredited by Turkish Accreditation Institution.
- As a pilot area, Ataturk Airport’s noise map has been developed.
- Preparation of noise maps and action plans is still at an early stage in Turkey, but IMM have already started to prepare the draft noise maps in the basis of districts.
Example of Draft Noise Map
THANK YOU...