National Emission Reduction plan for LCPs

REPUBLIC OF MACEDONIA
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- Party to the all protocols under CLRTAP - 2010
- Party to the Gothenburg protocol - 2014
- Non compliance with 1985 Sulfur protocol WHY?

<table>
<thead>
<tr>
<th>1980 SOx emissions [Gg]</th>
<th>2018 SOx emissions [Gg]</th>
<th>Emission reduction for 2016 [%]</th>
<th>Reduction target (70% of emission level base year) [Gg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.33</td>
<td>58.67</td>
<td>24</td>
<td>47.13</td>
</tr>
</tbody>
</table>

- Energy sector key source in emissions of the following pollutants covered by the protocols (SOx, NOx, PM2.5, Cd, Pb and Hg)
SOx emissions in 2018

- Energy Production and distribution: 86.28%
- Commercial, institutional, and households: 1.06%
- Industry (combustion): 6.51%
- Road transport: 1.29%
- Non-Road transport: 4.84%
- Industry (production): 0.02%
- Agriculture: 0.00%
- Waste: 0.00%
- Use of solvents and products: 0.00%
- Fugitive emissions: 0.00%
SOx emission trends

The graph shows the annual SOx emissions from various sectors from 1990 to 2016. The emissions are categorized into different sectors:

- 1A1 Energy Industries
- 1A2 Manufacturing Industries and Construction
- 1A3 Transport
- 1A4 Other Sectors
- 1A5 Other
- 1B Fugitive emissions from fuels
- 3 Agriculture
- 2 Industrial processes
- 5 Waste
NOx emissions in 2018

- Road transport: 28.71%
- Energy Production and Distribution: 41.06%
- Industry (combustion): 12.24%
- Industry (production): 0.10%
- Use of solvents and products: 0.04%
- Non-Road transport: 11.65%
- Waste: 0.20%
- Agriculture: 1.81%
- Fugitive emissions: 0.00%
- Commercial, institutional, and households: 4.19%
NOx emission trends
HM emissions in 2018

- Energy Production and distribution: 20.12%
- Commercial, institutional, and households: 21.23%
- Industry (combustion): 22.54%
- Industry (production): 11.83%
- Road transport: 2.06%
- Non-Road transport: 19.40%
- Waste: 2.81%
HM emissions trends

The chart shows the trends in HM emissions from various sources over the years 1990 to 2016. The emissions are categorized into different sectors:

- **5 Waste**
- **3 Agriculture**
- **2 Industrial processes**
- **1B Fugitive emissions from fuels**
- **1A5 Other**
- **1A4 Other Sectors**
- **1A3 Transport**
- **1A2 Manufacturing Industries and Construction**
- **1A1 Energy Industries**

The data indicates a significant reduction in emissions over time, particularly in the industrial processes and energy industries.
### NERP (national regulatory measure) - Background

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar-Oct 2015</td>
<td>Prepared within 2 Taeix expert missions</td>
</tr>
<tr>
<td>Dec 2015</td>
<td>Draft NERP Adopted by the government</td>
</tr>
<tr>
<td>Jan-Sep 2016</td>
<td>Draft NERP Reviewed by Energy community</td>
</tr>
<tr>
<td>Nov 2016</td>
<td>Formation of coordination group</td>
</tr>
<tr>
<td>Apr 2017</td>
<td>Revised NERP adopted by the government</td>
</tr>
<tr>
<td>March 2019</td>
<td>LCP Data and status of measures reporting</td>
</tr>
</tbody>
</table>
NERP Content

Introduction
Tables of emissions (individual and total)
Measures and emission projections with timetables
Monitoring mechanisms and requirements (operators and ministry)
Reporting obligations
Annexes

Pollutants

NOx
1988 NOx protocol
Gothenburg protocol

TSP-HM
1998 HM Protocol

SO2
1985 SOx Protocol
1994 SOx Protocol
1999 Gothenburg protocol
### NERP National emission projections - Energy sector

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>2018</th>
<th>2023</th>
<th>2027</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>15 855 t</td>
<td>15 855 t</td>
<td>6 191 t</td>
</tr>
<tr>
<td>SOx</td>
<td>15 505 t</td>
<td>8 422 t</td>
<td>6 179 t</td>
</tr>
<tr>
<td>Dust</td>
<td>1 738 t</td>
<td>1 738 t</td>
<td>608 t</td>
</tr>
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</table>
NERP - Defined measures

- Preparation of comparative analysis, Feasibility study and installation of Desulphurization plant in REK Bitola;
- Preparation of Feasibility Study, Analysis of options (imported coal / gas) and launch of the project Modernization of REK Oslomej;
- Application of natural gas as fuel. TEC Negotino is one of the larger planned consumers of natural gas;
- Measures according to the best available techniques in OKTA refinery and two heating production plants.
Supporting factors in implementation of the measures:

- International agreement with Energy community and National legislation as binding instruments;
- Monitoring of the NERP implementation – (Inter-sectorial group consist of relevant governmental bodies and operators);
- Strong political commitment;
- Public awareness is rapidly raising (transparency and available air quality information in real time);

Air.moepp.gov.mk
Main Challenges

Potential risk of fully implementation of the measures according to the planned time table

WHY?

- High financial cost for their implementation - cost for modernization and compliance of the two major power plants REK Bitola and REK Oslomej with LCP Directive is around 223 mil. €
- Long tendering procedures
- Serious constraints are also posed by the different interests of the stakeholders
CONCLUSIONS

• The Public electricity and heat production sector has major contribution in SOx national emissions and it is a key sector in NOx, Cd and Hg emissions. Therefore implementation of abatement technics in LCPs will have heavy impact of emission reduction of these pollutants.

• Implementation of NERP will lead to compliance with 1985 protocol.

• The projections of NOx, SOx and dust from the NERP will be taken into account in the process of calculation of 2030 national projections for SOx, NOx and PM2.5 (planned in Technical project to be started in June 2019). We will be able to meet reporting obligation concerning projections.
THANK YOU FOR YOUR ATTENTION