Clean Air Plan

Donor coordination meeting - AIR POLLUTION

10.12.2018

Deputy minister
Jani Makraduli, MSc.
"It is not rhetoric. It's reality. It is not politics. It's science. And it is not a suggestion. It's a warning."

+ ACT NOW

Patricia Espinosa
Executive Secretary, UN Climate Change

COP24-KATOWICE
POLAND 2018
Експозиција PM2.5 и PM10 која је приказана на овом графику показује патен у вредностима према периодима. Изгледа што су оба варијабила, PM2.5 и PM10, имали сличан утисак у првим два првих месеца, слично како се види својеврстан спад у првим четири месеца. На другој половини је било високо уланетно у прво половине периода, али потом је било смањење у прво четири месеца. Април и мај су били периоди чврстих спада и спада, али у летњој периоди се видело промењено. У самом току лета, вредности PM2.5 и PM10 су биле високе, али су се вратиле у свој првоначалан спад у прво четири месеца. У познатим периодима, вредности PM2.5 и PM10 су биле високе, али су се смањиле у прво четири месеца. Ово може бити узроковано вирусом екстремних температура и другим факторима.
Science

Sources of pollution
Science - Sources of pollution

Skopje

Particulate Matter PM$_{10}$
Emissions by sector in Skopje Region

- Mobile sources - Traffic
- Stationary sources - Industrial production
- Stationary sources - Energy plants
- Diffuse sources - Non industrial combustion
- Diffuse sources - Waste management
- Diffuse sources - Agriculture activities
- Diffuse sources - Construction sites

How Skopje residents heat their homes?

- Biomass: 45%
- Electricity: 31%
- Central heating: 21%
- Pellets: 3%
- Oil: 1%
- Coal: 0%
- Other: 0%
Science - Scenario

Doing nothing

Clean Air Plan

<table>
<thead>
<tr>
<th>Year</th>
<th>PM10 (kt)</th>
<th>PM2.5 (kt)</th>
<th>NOX</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2.8</td>
<td>2.7</td>
<td>1.98</td>
<td>2.44</td>
</tr>
<tr>
<td>2025</td>
<td>3.59</td>
<td>3.46</td>
<td>14.78</td>
<td></td>
</tr>
</tbody>
</table>

PM10 (kt)

Doing nothing

Clean Air Plan

2025

3.59 (kt)

2015

2.80 (kt)

2020

2.07 (kt)

-35%

1.36 (kt)
- Increase Energy efficiency
- Increase Renewables
- Decrease GHG
The commitment

- Strategic priority of the Government
- First National Programme and Clean Air Plan

- Systemic and coordinated approach
- Focus: To reduce the polluting emissions from all sectors

- Initial budget for 2019
  - 1,6 M EUR - Clean Air Plan
  - Over 22 M EUR - other institutions
  - Municipal budgets
  - Donor support
  - Business sector
The different way forward - Clean air plan -

- Reducing emissions from:
  - Household heating
  - Transport
  - Industry
  - Construction (buildings, roads)
  - Abandoned urban areas (green spaces)
  - Waste (and waste burning)

- In parallel with:
  - Legislation changes
  - Public campaign
  - Monitoring improvements
  - Inspection strengthening

Why it is different?
Heating
user-driven approach

Government:

1. Clean air plan - Skopje, Tetovo and Bitola (2019) - 1 M EUR
   1. Changes of inefficient heating appliances
   2. Energy efficiency improvement
   3. Enhancing partnership with Private sector
   4. Central heating for ‘Kuzman’ Dormitory
   5. More ecological heating for 3 schools

2. Other ministries and municipalities (2019) - XXX EUR
   1. Subsidies (pellets, windows, solar systems)
   2. Energy efficiency improvement
   3. Subsidies of electricity bills of families in risk

Support needed:

- Knowledge and expertise in LOW-CARBON CITIES concept
- Transfer of knowledge (eg. Stockholm district heating transfer process, Belgrade...)
- Shuto Orizari district heating model - feasibility study
- Infrastructural projects (gasification process, small district heating systems) funding - loans and grants
- Energy efficiency improvement of residential and institutional buildings

City of Skopje, Ministries of Economy, Labor and Social Policy
EBRD loan/grant scheme for residential houses
Why focusing mainly on heating in 2019?

Current heating approaches are not only unsustainable and polluting, but also very expensive for the state budget!!!

E.g. Kindergarten with 5 classrooms and 1 larger playroom

<table>
<thead>
<tr>
<th>Energy consumption</th>
<th>0.9kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working time 14 h/day</td>
<td></td>
</tr>
<tr>
<td>One months consumption</td>
<td>378 kWh</td>
</tr>
<tr>
<td>Average energy price</td>
<td>4.45 mkd/kWh</td>
</tr>
<tr>
<td>Total (VAT inclusive) per month</td>
<td>1.984 mkd</td>
</tr>
<tr>
<td>For the whole heating season</td>
<td>7.936 mkd/129 EUR</td>
</tr>
<tr>
<td>In EUR</td>
<td>129</td>
</tr>
<tr>
<td>For 10 AC inverters</td>
<td>1.290 EUR</td>
</tr>
<tr>
<td>Initial investment</td>
<td>2.500 EUR</td>
</tr>
<tr>
<td>TOTAL (for the first heating season):</td>
<td>3.790 EUR</td>
</tr>
</tbody>
</table>

Heating Oil

<table>
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<tr>
<th>Unit price</th>
<th>49.5 mkd/liter</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 months</td>
<td>20 tones</td>
</tr>
<tr>
<td>Total</td>
<td>990.000 mkd</td>
</tr>
<tr>
<td>EUR</td>
<td>16.019</td>
</tr>
</tbody>
</table>
Transport

Government:

Ministries and municipal budgets (2019)

1. Subsidies for bike purchase
2. Infrastructure projects - bike lanes, streets
3. Special traffic regime in the central area
4. Color eco-stickers
5. Goods transport
6. Subsidies (New cars, New device fuel)
8. Park & Ride
9. Eco-busses (EBRD)

Institutions: City of Skopje, other municipalities

Support needed:

- Implementation of the law on vehicles
- Bikeshare Skopje system
- Promote e-taxi concept
- Park & Ride
Industry

- Government:
  - New Law on industrial emission
  - REK Bitola / A -license
  - Inspections
    - Transparent reports

- Support needed:
  - Foreign companies to become eco- lieders
  - Circular economy
    - Recycling
Urban Spaces

Government 200.000 EUR

- Plant trees
  - „Зелен лист-Воздух чист“
    - 1700 trees Vs. 18 palms
- Green walls
  - Clinical center
- Vardar river sides
Waste

Government: 100,000 EUR
- Cleaning Landfills
- Stop Burning soil
- Net in the river (plastic collection)
- Mobile App A, B license

Support needed: Import Know-how
Monitoring, Campaign, Legislation

- Monitoring;
- Campaign & Plan Monitoring;
- Legislation;

Support needed:

- New instruments
- Mathematical model for 3 day prediction
- Law -> regulating the usage of solid fuels for heating

Government 200,000 EUR
<table>
<thead>
<tr>
<th>Name of the measure</th>
<th>Replacement of the non-ecological heating systems in the households with environmental devices:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>- air conditioners (inverters)</td>
</tr>
<tr>
<td></td>
<td>- pellets stoves</td>
</tr>
<tr>
<td></td>
<td>- more efficient wood stoves</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Aim of the measure</th>
<th>Reduction of the emissions from the pollutants arising from the heating of households</th>
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</table>

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<tr>
<th>Focus group</th>
<th>Households from Skopje, Tetovo and Bitola that heat homes with the use of non-organic energy (solid and liquid fossil fuels) and use inefficient devices</th>
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</thead>
</table>

| Consumers of the measure | 800 households in Skopje  
150 households in Tetovo  
150 households in Bitola |
|---------------------------|-------------------------------------------------|

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<thead>
<tr>
<th>Responsible institution</th>
<th>MOEPP &amp; …</th>
</tr>
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<tr>
<th>Overall budget</th>
<th>30,000,000.00 MKD</th>
</tr>
</thead>
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<tr>
<td>gov.mk budget</td>
<td>30,000,000.00 MKD</td>
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| Financial implementation | From 50% to 100% of the value of 1 inverter  
From 30% to 50% of the value of the pellet stove  
From 50% to 100% of the value of the wood stove |
Funding modalities

- Clean Air Plan - budget
- Institutional (central and local) budgets
- Donor co-funding (technical assistance and expertise and grants support)
- International Financial Institutions (IFIs) - loans
- Social Impact Bond(s) - if there are possibilities

Implementer?
In conclusion

- Air pollution in Macedonia’s urban centers is the most pressing developmental and health challenge.
- While the Government is fully committed to its immediate solving - the process is long and expensive - addressing the root causes require systemic approach with extraordinary human and financial resources.
- First step is made, this challenge is now Government’s strategic priority and budget allocated.
- However, this is a “large bite” and we need your support - not only financial but knowledge and experience transfer and expertise.
• The **key for successful** implementation of the plan and achieving the desired goals are:
  • **partnerships** with all key national stakeholders and international partners
  • **positive approach**
  • **unified messaging** towards the wider public are very important

• Due to the negative health consequences, citizens and wider public are **very sensitive**;

• Therefore it is very important that **all messages, analysis and facts**, released in the public will be unified, positive, informative and science based;
What is clear is that government action alone cannot bring success.

All levels of government, all sectors public and private, civil society, and yes, individuals, need to step up their action.

We need to act together, around the office and at home, where we work and where we live.
#earth2045

It’s up to us

Thank you