

"Gradual emission reduction in the energy sector - the National Emission Reduction plan"



Ministry of environment and physical planning
Republic of Macedonia

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REPUBLIC OF MACEDONIA
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WGSR 52nd session - 30.6-03.07.2014

Background

Party to the old NO_x protocol-2010

Emission level base year (1987)	Emissions in 2012	Compliance with the NO _x Protocol	Emission reduction (%)
40,7 Gg	35,1 Gg	YES	-14%

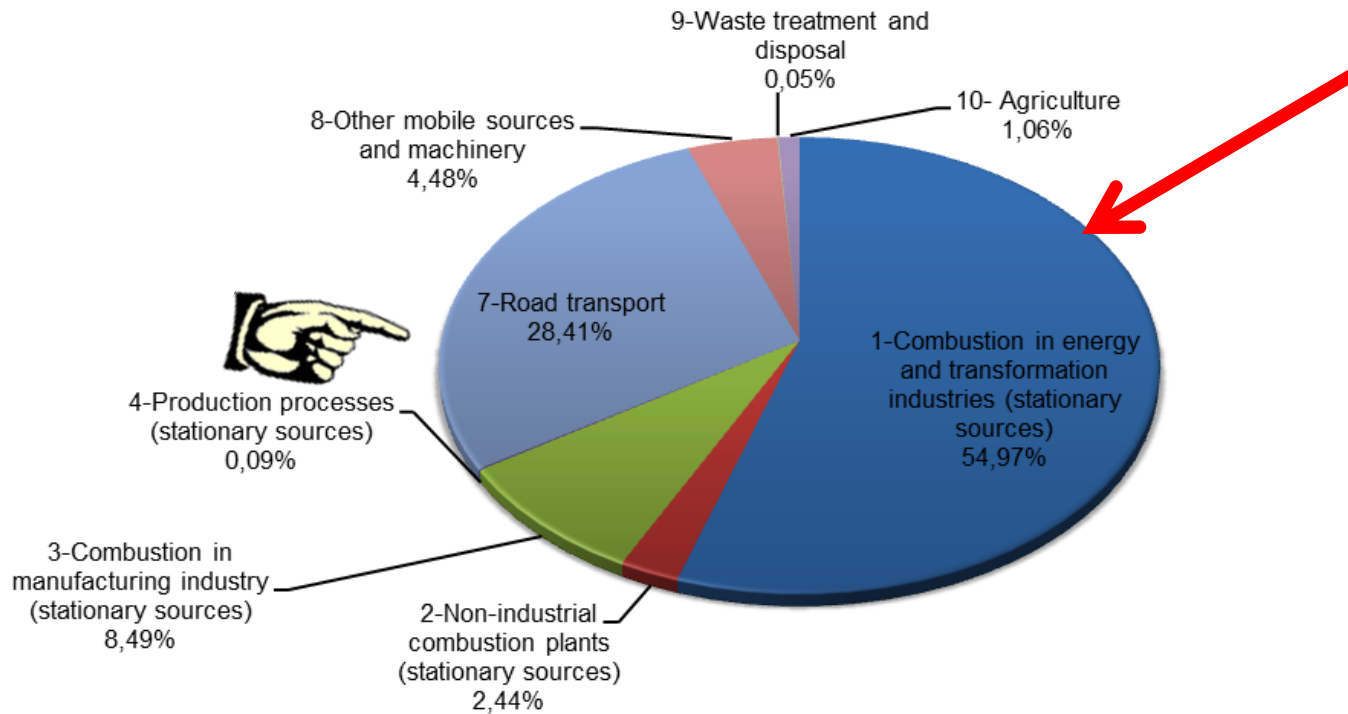
Party to the Gothenburg protocol

- Ratified by the parliament in 2010
- Annex II party in December 2013

National emission ceiling (2010)	Emissions in 2012	Compliance with the Gothenburg protocol	Emission reduction (%)
39 Gg	35,1Gg	YES	-10%

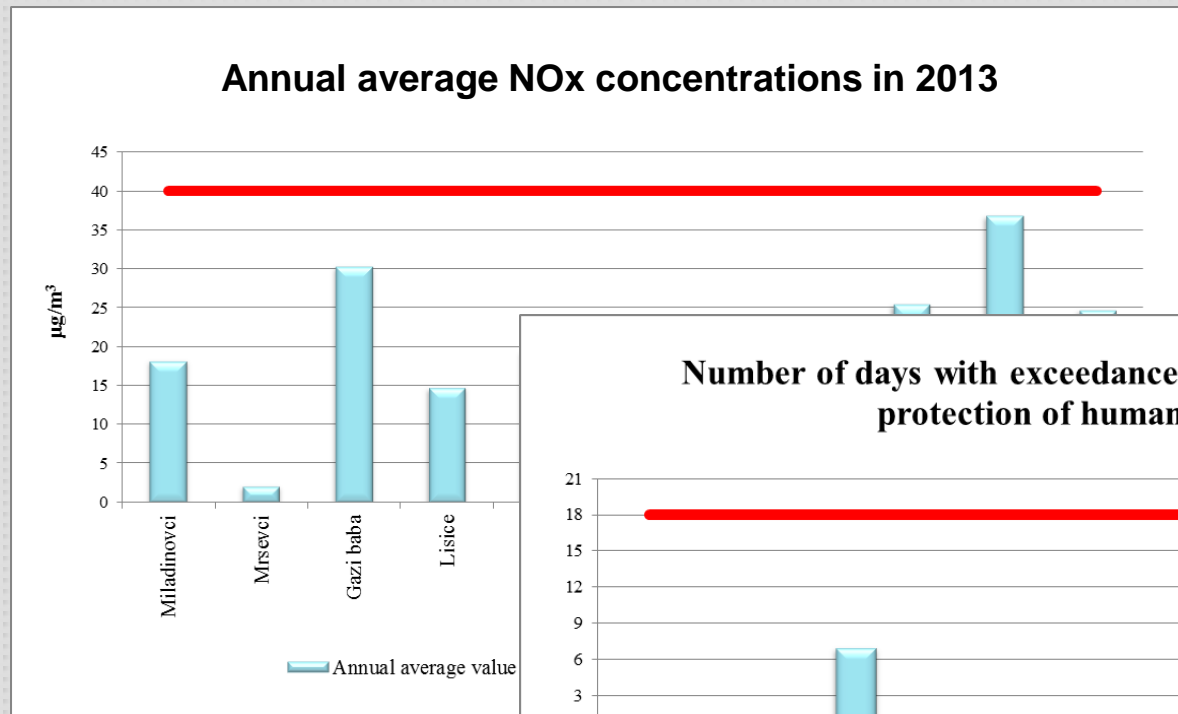
NOx emissions in 2012

NOx emissions in 2012 per SNAP sector

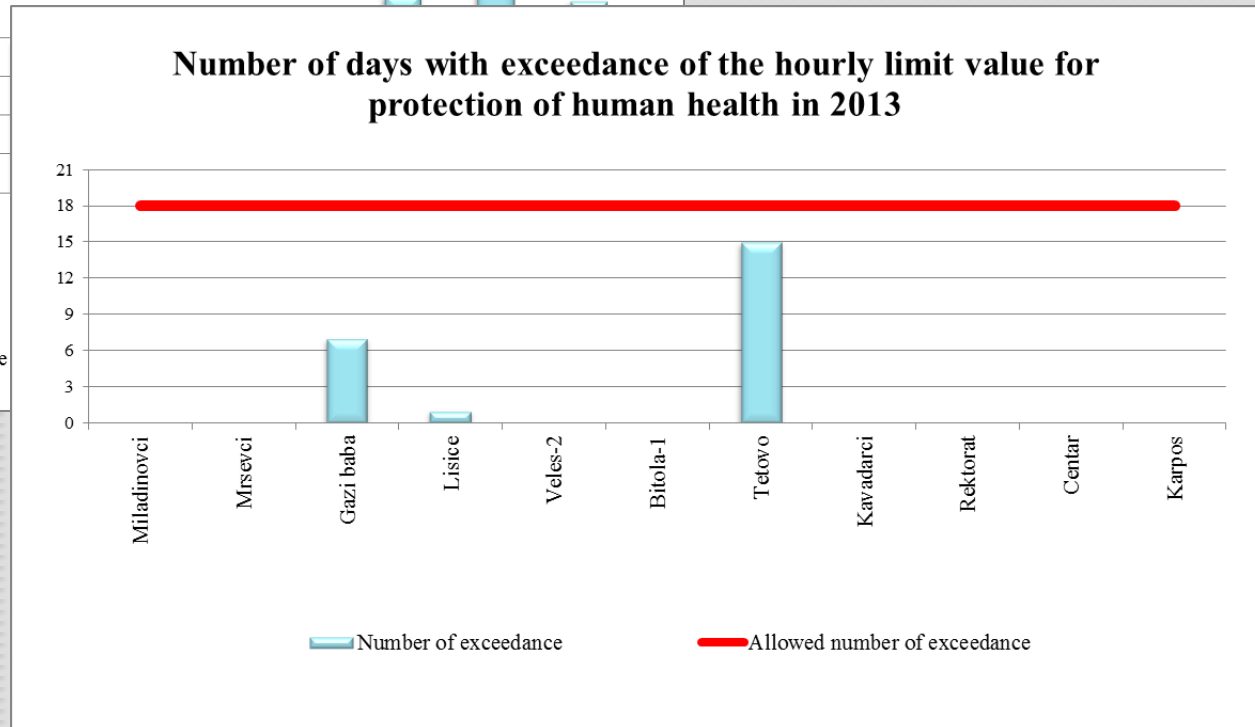


NOx concentrations in 2013

Annual average NOx concentrations in 2013



Number of days with exceedance of the hourly limit value for protection of human health in 2013



Legislation and national strategies on NO_x emission reduction

- Law on environment- IPPC licenses system
- Rulebook on ELV - Limit values on NO_x emissions
- Degree on limit value - Limit values on NO_x concentrations
- LCP plans - emission reduction measures per plant
- National plan for air quality protection and NERP- Measures for NO_x emission reduction
 - Strategy for Energy Development in the Republic of Macedonia by 2030
 - Strategy for Energy Efficiency Promotion in the Republic of Macedonia by 2020
 - National Strategy for Transport and others
- Energy community agreement - LCP

LCP plans

LCP Plans - preparation **financed** by Norwegian Government in **2012**

Time period - 2012-2017

How many?

13 identified - 7 of them prepared plans

Why?

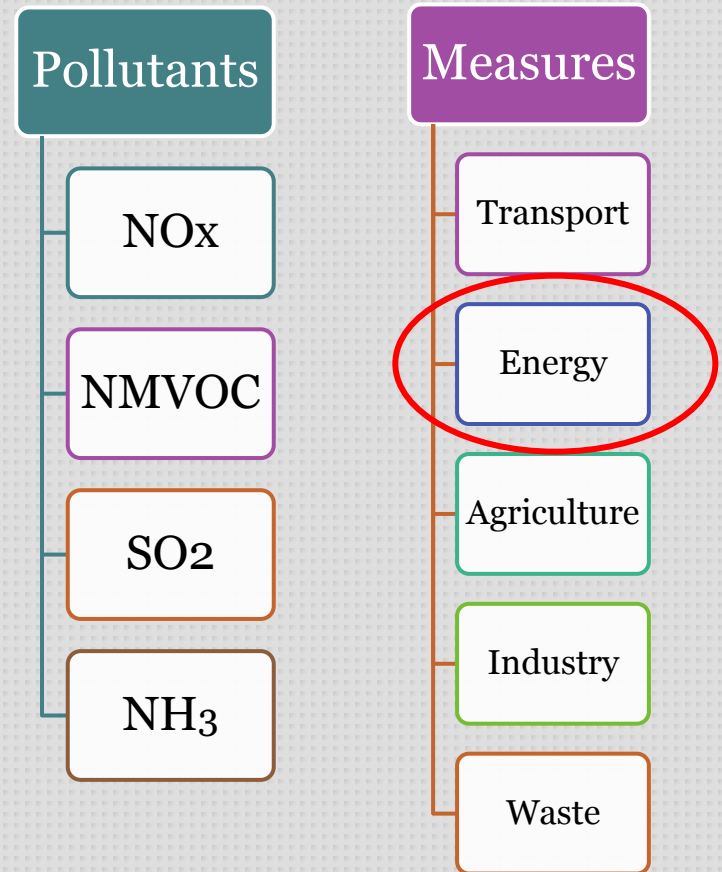
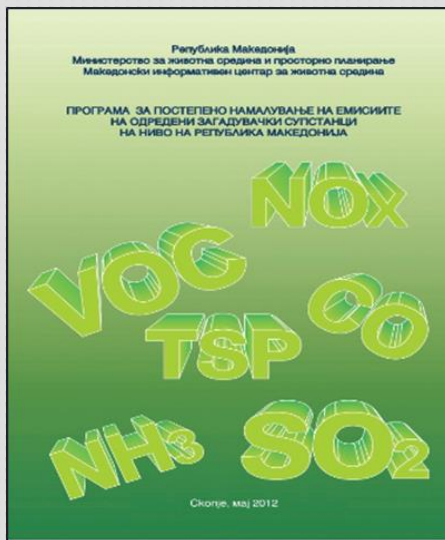
- Negotiations for IPPC licenses
- Needed for preparation of the projections

Update of the LCP plans in 2015 (2017-2022)
(Decision of the ministerial council of the energy community deadline for LCP end of 2017)



National emission reduction plan

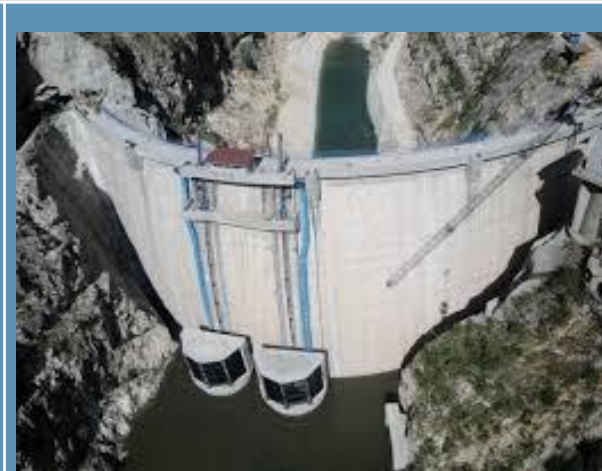
- Project Implementation and ratification of protocol on heavy metals, protocol on persistent organic pollutants and Gothenburg protocol;
- Financed by Netherlands and coordinated by UNECE;
- Time period 2012-2020;
- Adopted July 2012, Update 2015-2016;



Implemented measures-Energy sector

Project Sv.Petka

Increase of designed capacity of electricity production plants in the Republic of Macedonia by around 36.4MW.
Increase of electricity production from domestic sources and reduction of electricity import by around 66GWh per year. Reduction of environmental pollution by **114t/ per year less Nox, Finalized in 2012.**



Construction of wind power plants park - Bogdanci

Increase of designed capacity of electricity production plants by around 50MW;
Reduction of electricity import by around 100GWh per year;
Reduction of environmental pollution by **173t/per year less Nox. Finalized in 2014.**



Implemented measures - Energy sector

Gasification of Heating plant East
Replacement of heavy fuel oil with gas



2006

BAT in new power plant
Installed 72 low NOx burners, Stable combustion regime



2012

Gasification of Heating plant West
Replacement of heavy fuel oil with gas



2013

Ongoing measures - Energy sector

Modernization of Power plant REK Bitola

First phase - Revitalization and modernizations of turbines and generators has been finalized

Second phase - NO_x emission reduction due to modernization of block II is ongoing and should be finalized in October 2014



Project small hidroplants

Increase of designed capacity of electricity production plants in the Republic of Macedonia by around 250MW.

Less NO_x 4296t/per year.

Direct so called "Greenfield" investment.

It is expected that the project for 80 small hydro plants will be finalized by 2017



Future measures - Energy sector

<p>Project Lukovo Pole</p> <p>2013-2018</p>	<p>Increase of electricity production from domestic sources and reduction of electricity import by around 159GWh per year.</p> <p>275t/per year less NO_x</p>
<p>Project Boshkov Most</p> <p>2014-2018</p>	<p>Increase of designed capacity of electricity production plants by around 68MW.</p> <p>207t/per year less NO_x</p>
<p>Project solar power plant in the mine Suvodol near Bitola</p> <p>2020</p>	<p>Increase of designed capacity of electricity production plants by around 50MW. Increase of electricity production from domestic sources and reduction of electricity import by around 104GWh per year.</p> <p>179t/per year less NO_x</p>
<p>Project Chebren and Galishte</p> <p>2020</p>	<p>Increase of designed capacity of electricity production plants in the Republic of Macedonia by around 530MW. Increase of electricity production from domestic sources and reduction of electricity import by around 1100GWh per year.</p> <p>3938t/per year less NO_x</p>
<p>Project Modernization of TEC Oslomej power plant</p> <p>2014-2017</p>	<p>Automatization of the technological process, new boiler with the system to store and preparation of the fuel. Improvement of the controlling system. Emission reduction of CO₂, SO_x, NO_x and dust</p>



National emission projections

Basic scenario- policies and measures planned by the year selected as baseline year. Official documents, applicable legislation and year of fulfillment of individual emission reduction measures are used.

Scenario with measures- Strategy for Energy Development in the Republic of Macedonia by 2030 , Energy Balance of the Republic of Macedonia for the period 2012 to 2016, Environmental Assessment of Strategy , Strategy for Energy Efficiency Promotion in the Republic of Macedonia by 2020 , Baseline Study on Renewable Energy Sources in the Republic of Macedonia, National Strategy for Transport and others.

Scenario with additional measurements-Not done

Scenario with models-CIAM report

National emission projections

Total quantities of NO_x emissions - comparison of the three scenarios and

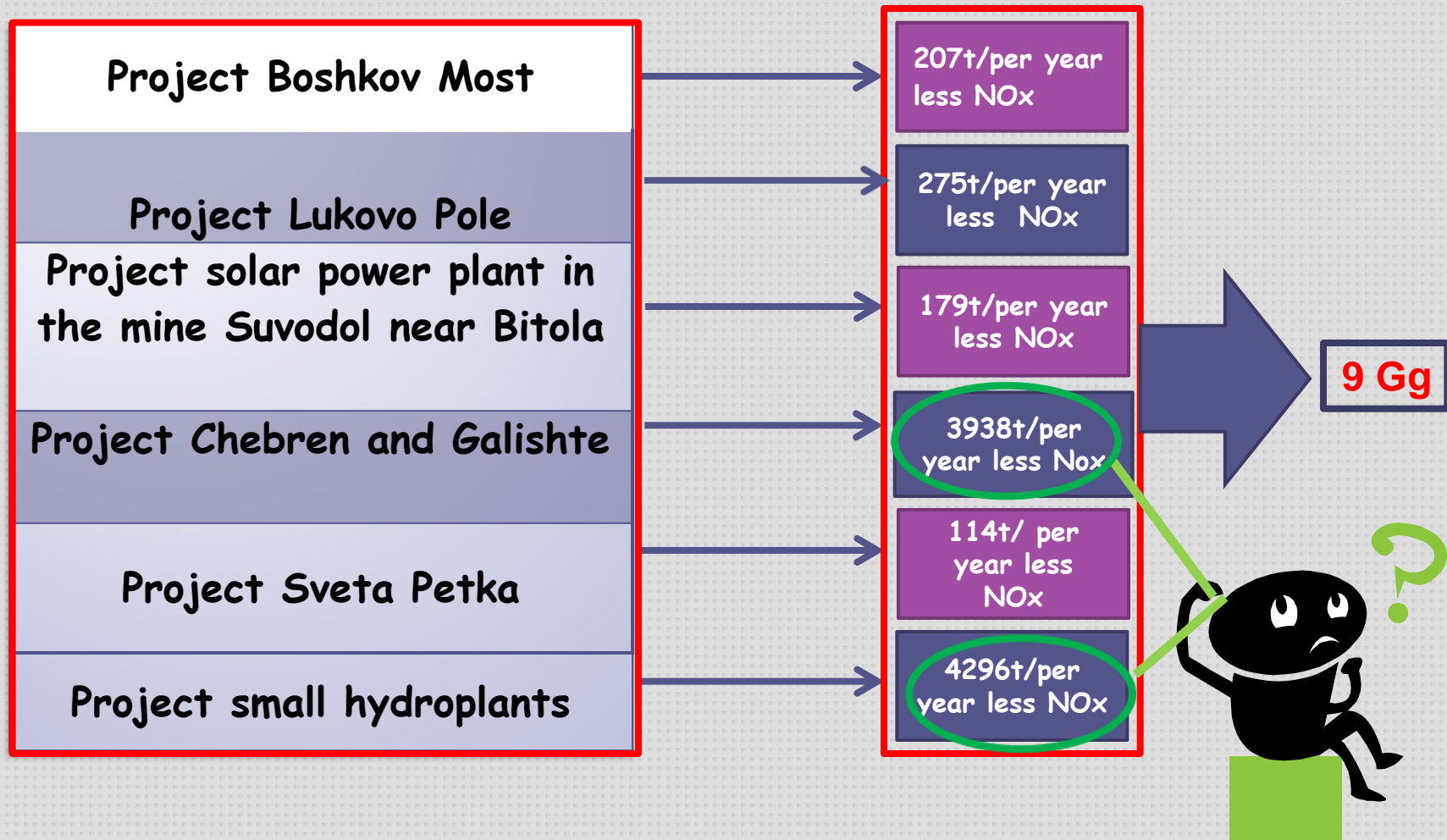
Year	2010	2015	2020	National emission ceiling
NO _x [kt] - BS	33.27	37.64	28.67	39
NO _x [kt] - SM	33.16	33.7	23.8	39
NO _x [kt] - Model	33.85	28.39	20.84	39

(t) - OC

(t) - CM

(t) - Model

Effects on emission reduction



Supporting factors in implementation of the measures



- ✓ International agreements and National legislation as **binding instruments**;
- ✓ Communication and participation of stakeholder during planning and implementation of the measures - (**Inter-sectorial group consist of relevant governmental bodies established in 2011**);
- ✓ Strong political commitment (**Committee on health and environment**);
- ✓ Public awareness raising (**transparency and available information**);

http://www.airquality.moepp.gov.mk/



Дома Новости Квалитет на воздух Загадувачки супстанции Мерења Надминувања Емисии Извештаи Проекти Моделирање Линкови Контакт

Веб портал за квалитет на воздух

Добредојдовте на Националниот портал за квалитет на воздух на Република Македонија. Овој портал содржи информации за моменталната состојба на амбиенталниот воздух во земјата, како и информации за загадувачките супстанции, здравствените ефекти и законодавството.

Според [Извештајот за оценка на квалитетот на воздухот](#), Македонија е поделена на две зони, Источна и Западна зона, и агломерацијата Скопски регион.

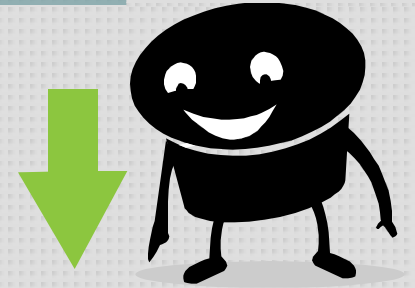
Измерените концентрации на шест загадувачки супстанции од 17 мониторинг места се прибираат на секој час. [Моменталната состојба на квалитетот на амбиенталниот воздух](#) се класифицира и визуелизира со едноставни кодови на бои и дополнително овие информации подетално се претставени како [временски серии од податоци од извршени мерења](#). Воедно овој портал обезбедува информации за јавноста во реално време за [надминувањата](#) на граничните вредности за квалитет на воздух.



Информациите се темелат на невалидирани часовни вредности на најлошите загадувачки супстанции



Main Challenges



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

WHY?

- High financial cost for their implementation
- Involvement of long tendering procedures
- Long time for shipment of equipment
- In some of the measures, serious constraints are also posed by the different interests of the stakeholders

CONCLUSIONS

- Legislation demands emissions reduction from energy industries; Measures in the energy sector are defined and partially implemented;
- There is political will to continue with the implementation of measures defined in the energy sector;
- Better communication across relevant groups is needed;
- Macedonian's NO_x projections have been compared against GAINS results and results showed similar trend;
- The projected value for NO_x emission reduction according scenario with measures in 2020 can be accomplish if all defined measures in energy sector are finalized on time;
- In order to reach the projected value for NO_x emission reduction in 2020, according scenario with models, measures defined in the transport sector should be also implemented.



THANK YOU FOR YOUR ATTENTION



Monument of nature - OHRID LAKE