



# **DIRECTORATE-GENERAL OF ENVIRONMENTAL MANAGEMENT**

## **DEPARTMENT OF AIR MANAGEMENT**

### **Improving Emissions Control Project**

**10 September 2012**

# International Responsibilities in Limiting National Emissions

Under the European Commission Directive numbered 2001/81/EC on National Emission Ceilings (NEC);

For SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub> pollutants;

- ❖ Annual reporting of the emissions following the date to be negotiated with the EU (December 31)
- ❖ Setting the 2025 Emission Ceilings through negotiation with the EU

The United Nations Economic Commission for Europe (UNECE) Convention on Long-range Transboundary Air Pollution (CLRTAP)

- ❖ Under the European Monitoring and Evaluation Programme (EMEP);  
annual reporting of the following emissions (February 15):

SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub>, PM, BC, CO, HMs, POPs

- ❖ Under the Gothenburg Protocol (Turkey is not part of the Protocol);

setting the 2020 emission reduction targets for the following pollutants:  
SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub>, PM, BC

# The Process of Limiting Emissions Total

**emissions inventory for the period between 1990 and 2010**



**emission projections for 2025 and reduction scenarios**



**Emission Ceilings for 2025 / Reduction Commitments**



**emissions inventory reporting**

# 2010 Emissions

	SO <sub>2</sub>	NO <sub>x</sub>	NMVOC	NH <sub>3</sub>
2010 Emissions (ktonne)	3.261	932	697	515

## Shares of Primary Emission Sources in 2010 Emissions

Primary Sources	Source Contributions to 2010 Emissions (%)			
	SO <sub>2</sub>	NO <sub>x</sub>	NMVOC	NH <sub>3</sub>
Electricity generation	60	34		
Industrial combustion plants	23	11		
Residential and commercial heating	17		38	
Transport		40		
Solvents use			36	
Agriculture – livestock				68
Agriculture – fertilizer				30

# Baseline Data for Emission Projections

- Results of emission inventories
- Population growth
- Economic growth
- National and international legislation
- Electricity generation/consumption scenarios
- Emission factors

# Interactions with Shareholders During the Projection Preparation Process

- Requested energy, transport and agriculture projections from relevant ministries through our letter dated **October 2011**.
- Stated the need for relevant ministries' official projections during the 1<sup>st</sup> Coordination Committee meeting on **16 December 2011**.
- Presented the methodology for the projection study to take place and received feedback during the Inventory Workshop on **31 January 2012**.
- Submitted the basic assumptions to be used in projections during the 2<sup>nd</sup> Coordination Committee meeting on **15 March 2012**.
- Opinion requested for basic assumptions through our letter dated **20 March 2012**.
- Submitted the 1<sup>st</sup> Draft Projections Report during the 3<sup>rd</sup> Coordination Committee meeting on **08 May 2012**.
- Opinion requested for the 1<sup>st</sup> Draft Projections Report through our letter dated **11 May 2012**.
- Exchanged opinions on the 1<sup>st</sup> Draft Projections Report during the Technical Study meeting on **30 May 2012**.
- The 2<sup>nd</sup> Draft Projections Report submitted to our Ministry by foreign experts on **20 July 2012**.

# Results of 1<sup>st</sup> Draft Projections Report

Pollutant	Turkey's Annual Emissions (ktonne)		
	2010 Inventory	2025 projection based on current planning	2025 projection with measures
NO <sub>x</sub>	932	1.192	918
SO <sub>2</sub>	3.261	5.395	2.324
NMVOC	697	1.010	802
NH <sub>3</sub>	515	590	538

## Source Documents Used in Projections

**2<sup>nd</sup> Draft Projection Report has been prepared using new information acquired from shareholders and by altering the planning framework. The following documents have been used as reference during the preparation process:**

Energy Balance Tables (1993-2010), Ministry of Energy and Natural Resources
Projection on Turkey's Electric Energy Generating Capacity (2011-2020), Turkish Electricity Transmission Company (TEİAŞ), November 2011
National Climate Change Action Plan of Turkey (2011-2023), Ministry of Environment and Urbanization, July 2011
Electricity Energy Market and Supply Security Strategy Paper Annex-1, Ministry of Development, May 2009
Medium Term Development Programme (2012-2014), Ministry of Development
Turkey's National Sectorial Analysis Tables Based on GDP at 1998 Prices (1998-2010), Ministry of Economy, June 2012
Minister of Energy and Natural Resources Mr. Taner Yildiz's speech on 2011 budget
Total Population Report, OECD 2010 Factbook, p 12-15
EMEP/EEA Air Pollution Inventory Guides



# Projection Scenarios Indicating the Change in Emissions Based on Population and Economic Growth

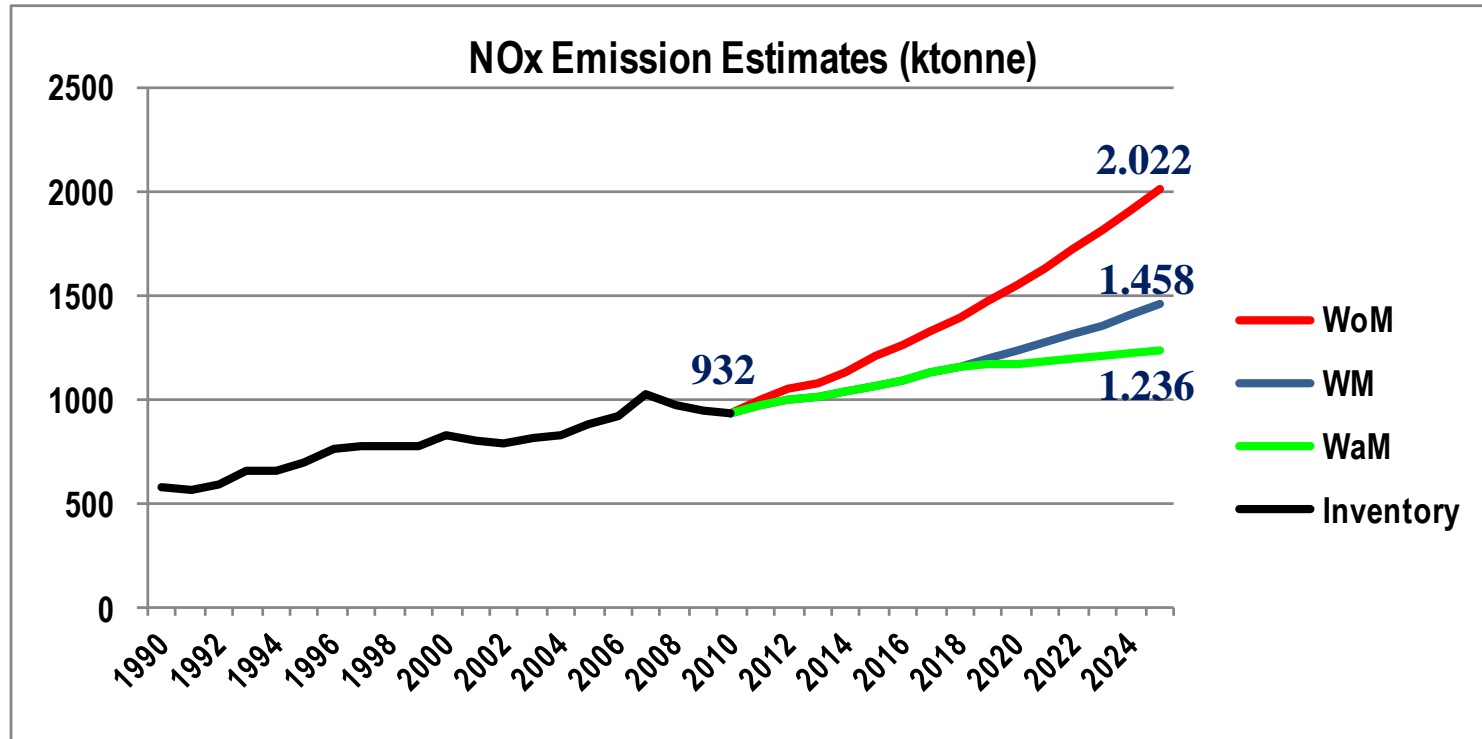
- **Without Measures (WoM):** drawn up considering the practice remains the same as in 2010.
- **With Measures (WM):** drawn up in view of the effect of national policies and legislation such as the Climate Change Action Plan on activities and that of the following by-laws transposed from EU Directives on emission factors: Euro Standards and Reduction in Sulphur Content of Certain Liquid Fuels for vehicles; Waste Landfill; and Large Combustion Plants put into force for new plants.
- **With Additional Measures (WaM):** drawn up in view of the effect on emission factors of transposing other EU directives such as the Reduction in Sulphur Content of Certain Liquid Fuels By-law, which is to be put into force for existing plants.
- **Emission Management Strategy (EMS):** The sum of all measures designed for each sector. Forms the basis of the emissions reduction roadmap.

# 2025 Emission Projections

The following projections have been drawn up in a cooperative manner, using the information acquired from shareholders. However, as projections determine the national ceilings to be negotiated, they need to be improved through activities to be conducted together with the shareholders before they are used in international reports and negotiations.

Pollutant	Turkey's Annual Emissions (ktonne)			
	2010 Inventory	2025 Projection Without Measures (WoM)	2025 Projection With Measures (WM)	2025 Projection With Additional Measures (WaM)
NO <sub>x</sub>	932	2.022	1.458	1.236
SO <sub>2</sub>	3.261	9.094	4.592	2.156
NMVOC	697	1.179	1.036	798
NH <sub>3</sub>	515	575	574	526

# NO<sub>x</sub> Emission Projections

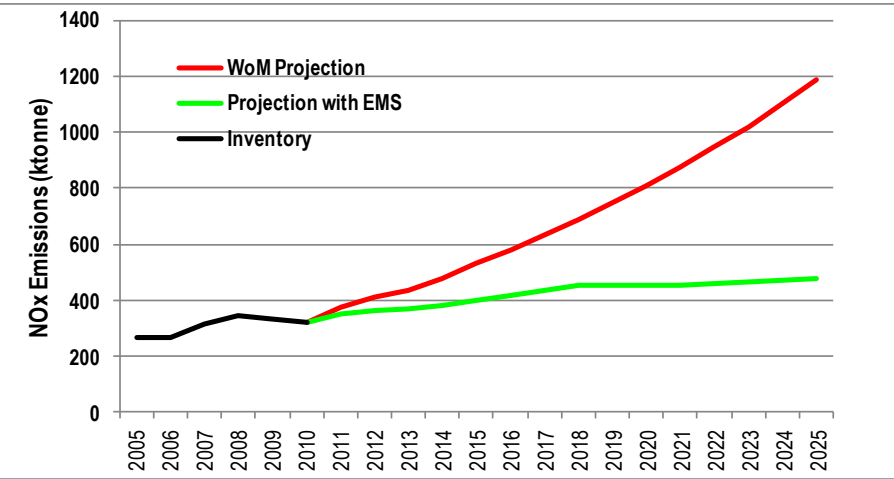


	NO <sub>x</sub> (ktonne)
Scenario With Additional Measures (WaM)	1236
Scenario With Additional Measures (WaM) (High GDP)	1308
<b>Possible National Emission Ceiling</b>	<b>1310</b>

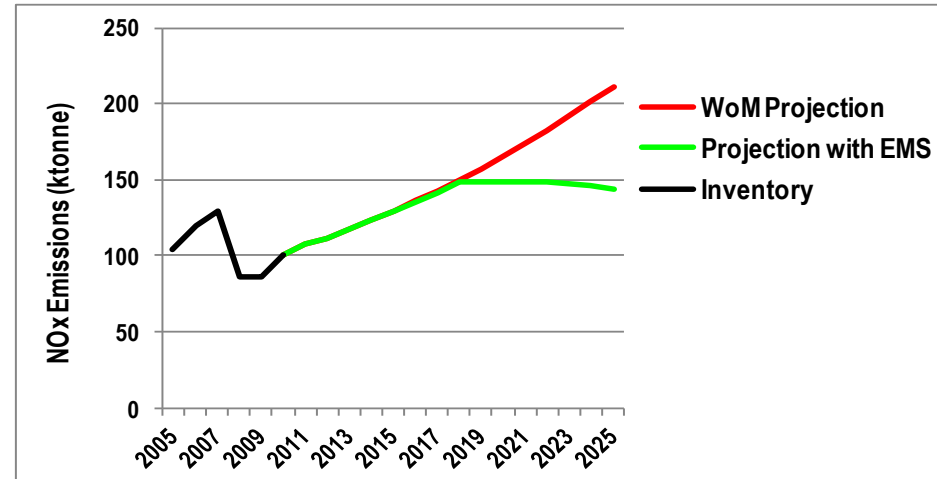
# Sectorial Emission Management Strategy (EMS)

## NO<sub>x</sub> Projections

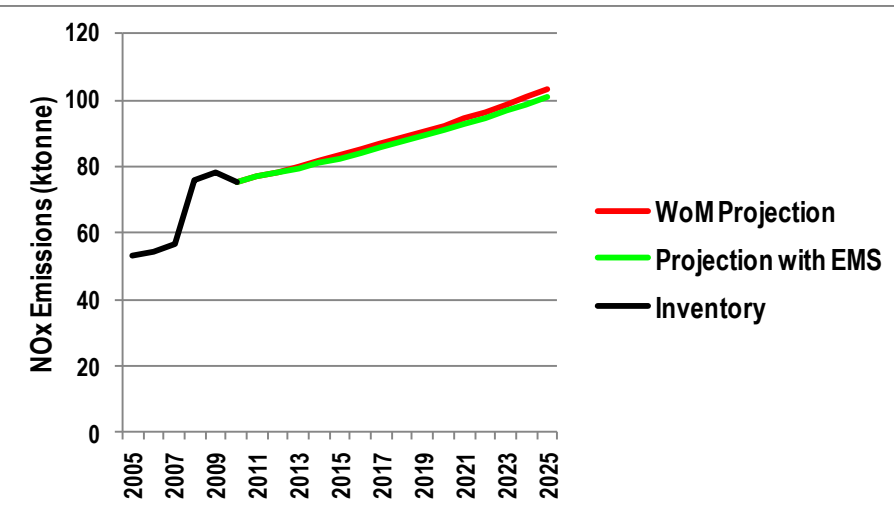
### Electricity Generation



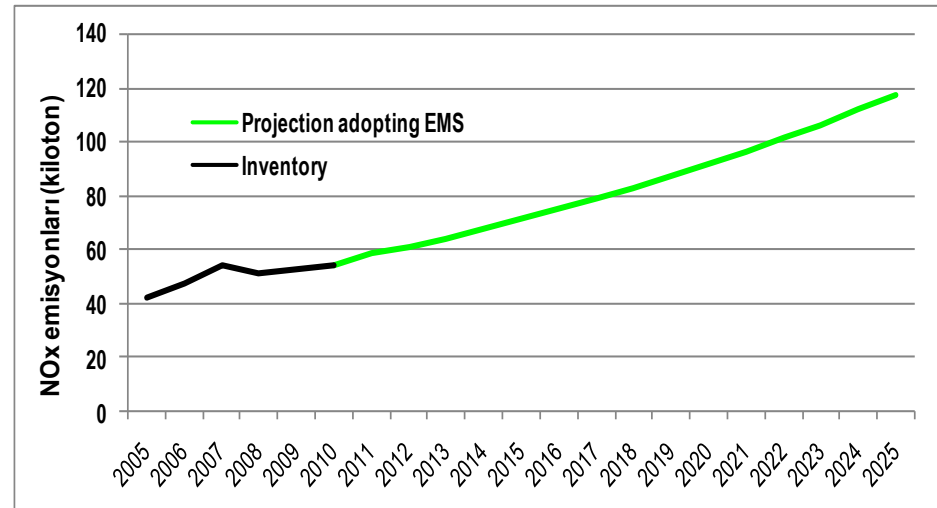
### Industrial Combustion



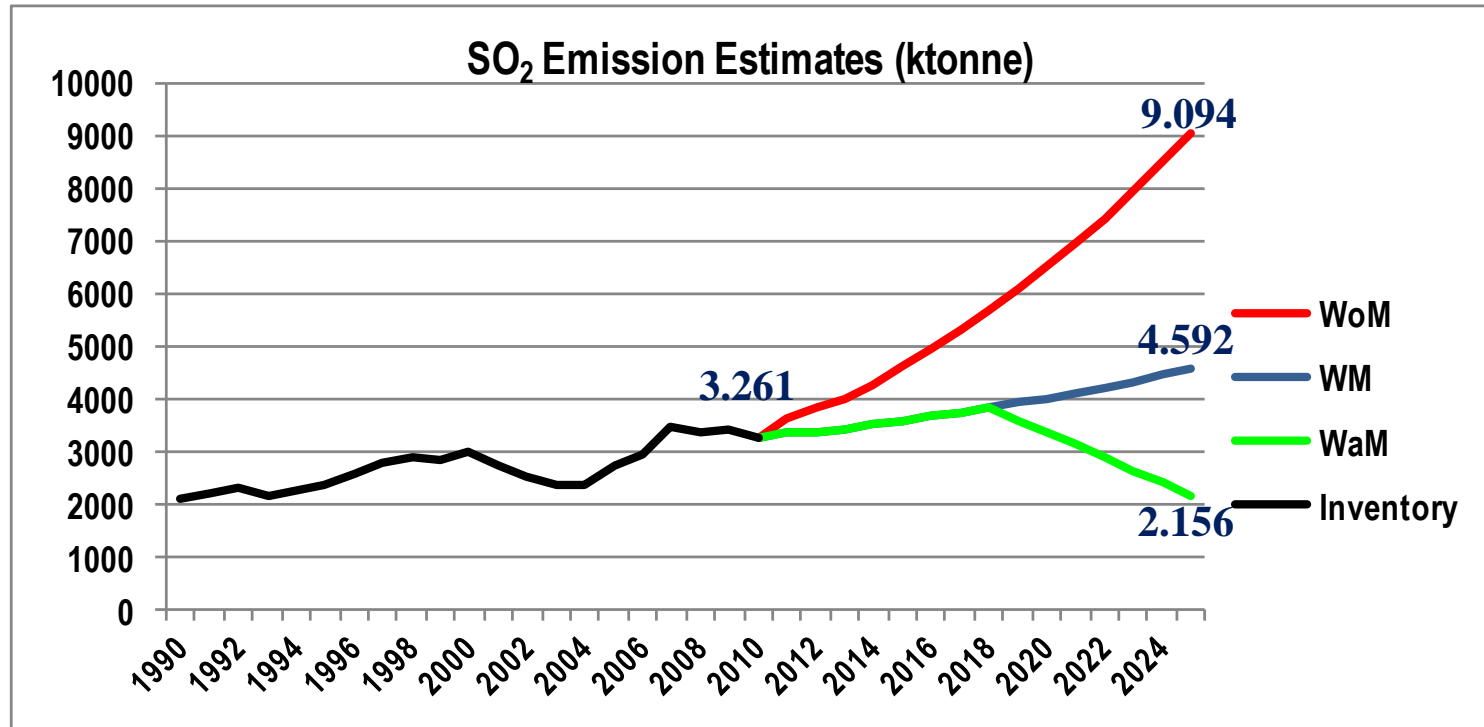
### Residential and Commercial Heating



### Transport



# SO<sub>2</sub> Emission Projections

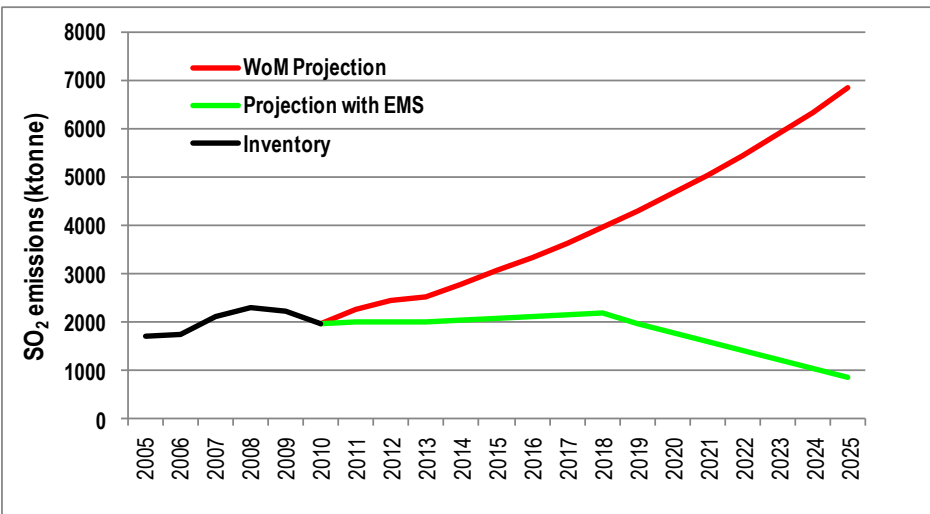


	SO <sub>2</sub> (ktonne)
Scenario With Additional Measures (WaM)	2156
Scenario With Additional Measures (WaM) (High GDP)	2334
<b>Possible National Emission Ceiling</b>	<b>2340</b>

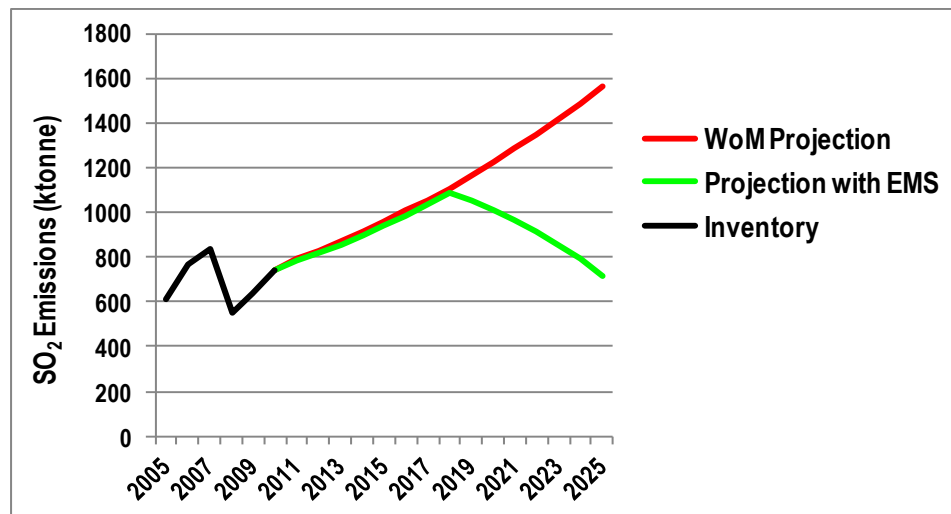
# Sectorial Emission Management Strategy (EMS)

## SO<sub>2</sub> Projections

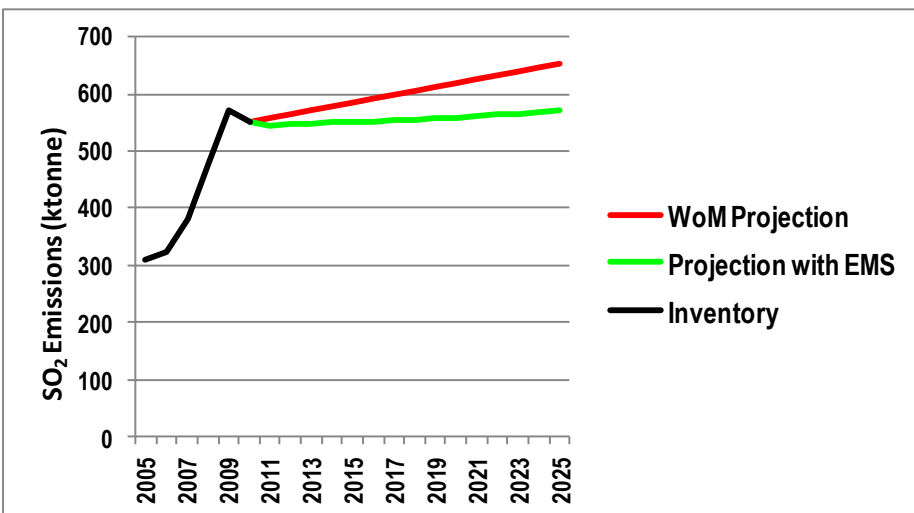
### Electricity Generation



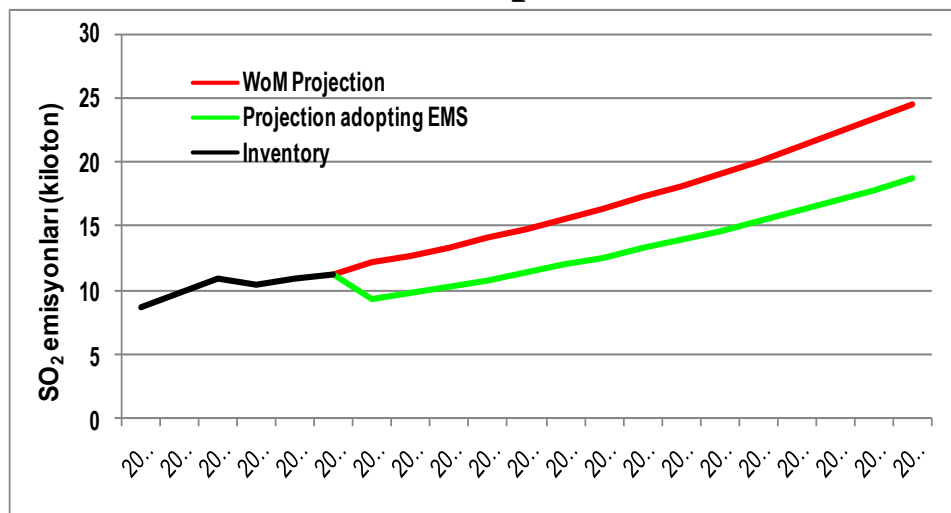
### Industrial Combustion



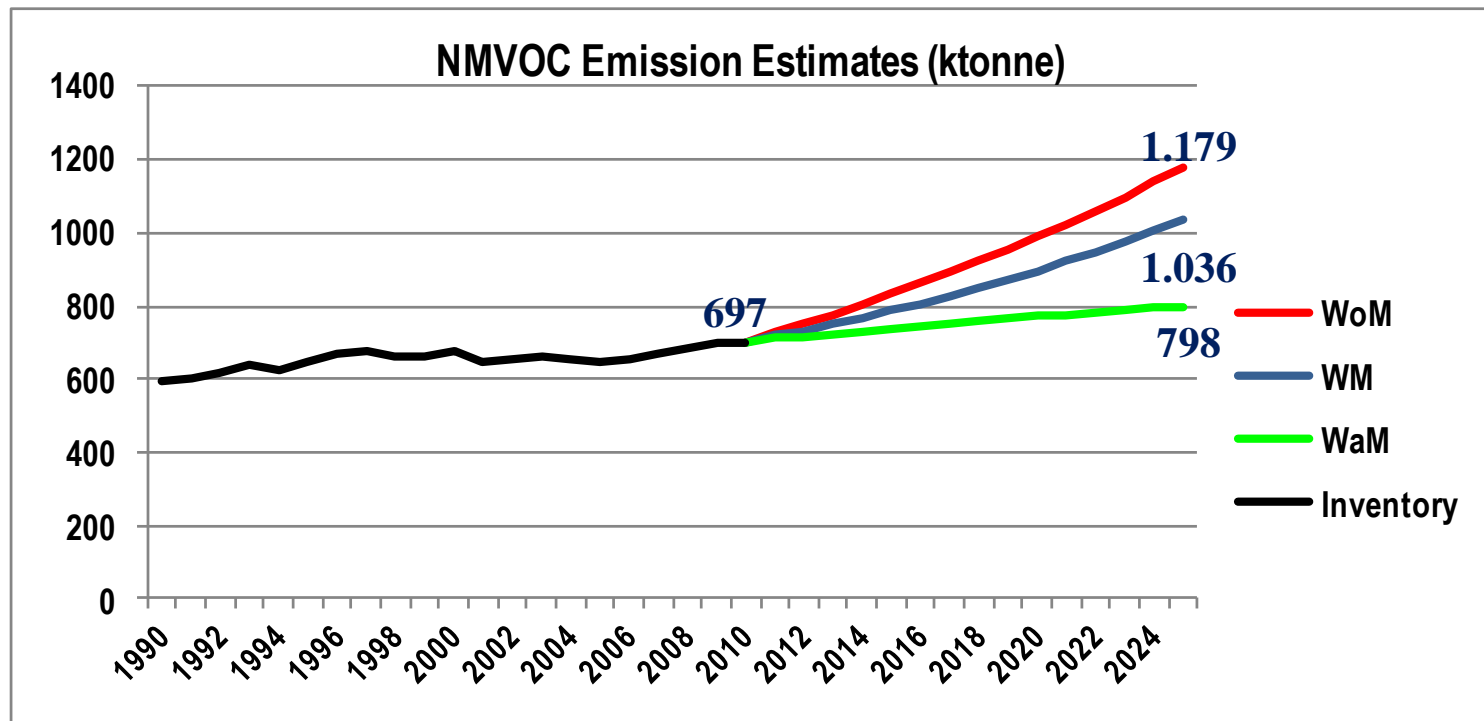
### Residential and Commercial Heating



### Transport



# NMVOC Projections

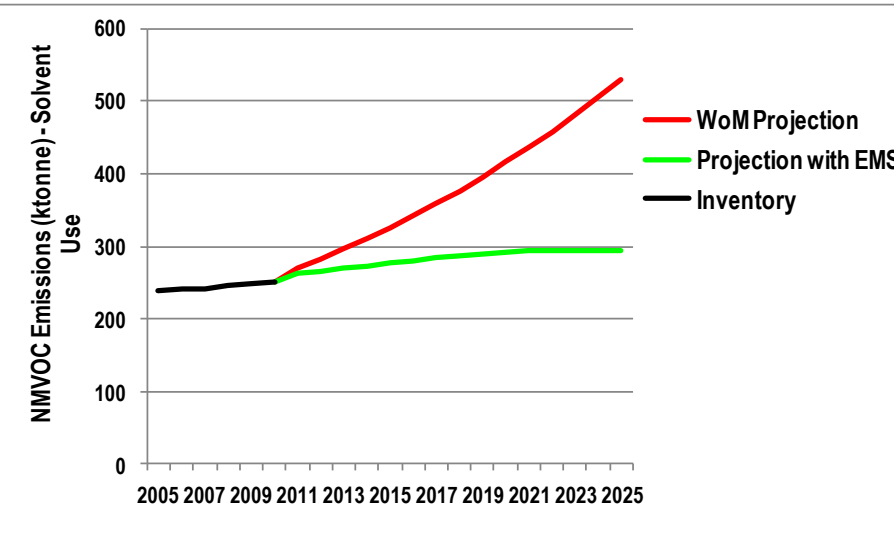


	NMVOC (ktonne)
Scenario With Additional Measures (WaM)	798
Scenario With Additional Measures (WaM) (High GDP)	843
<b>Possible National Emission Ceiling</b>	<b>850</b>

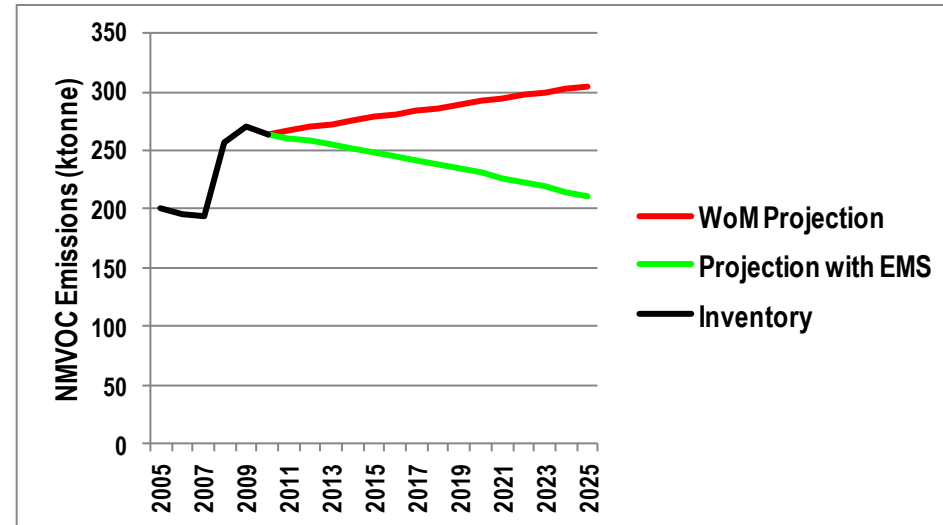
# Sectorial Emission Management Strategy (EMS)

## NMVOC Projections

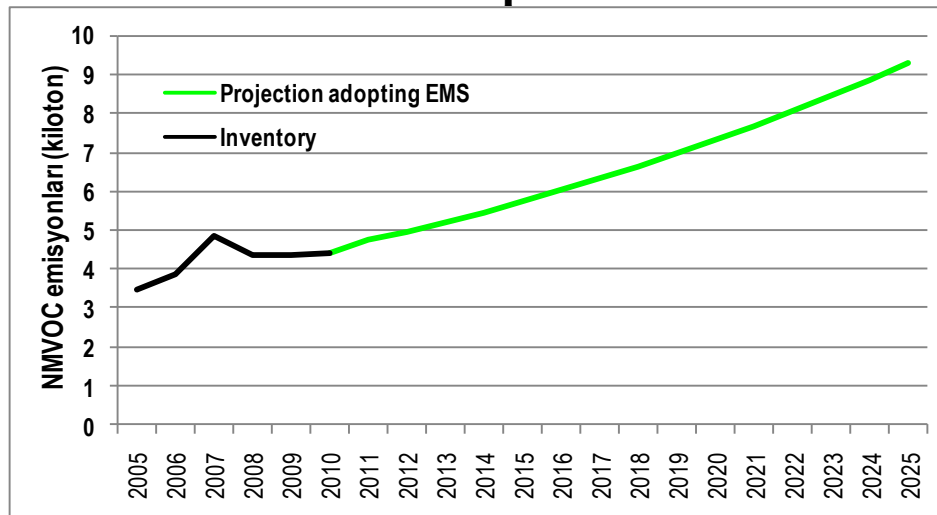
### Solvent Use



### Residential and Commercial Heating

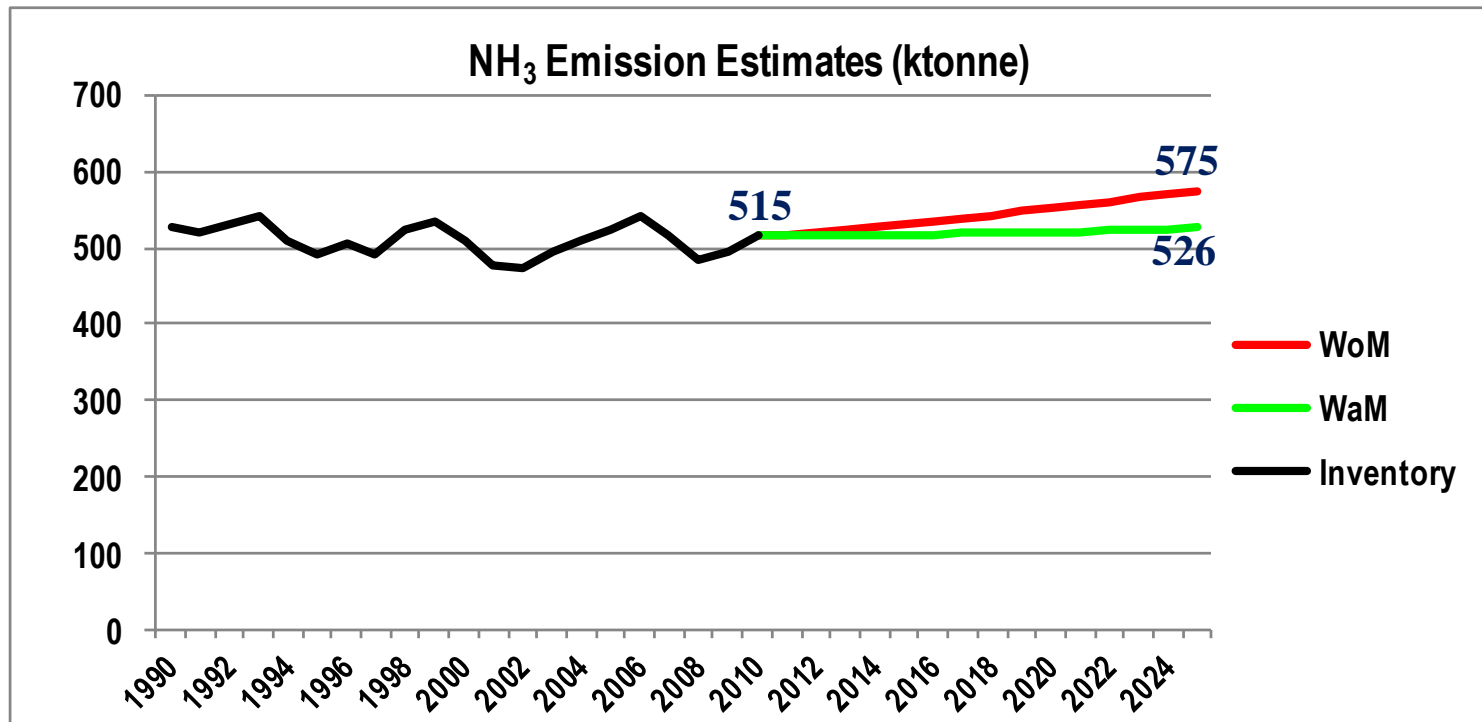


### Transport





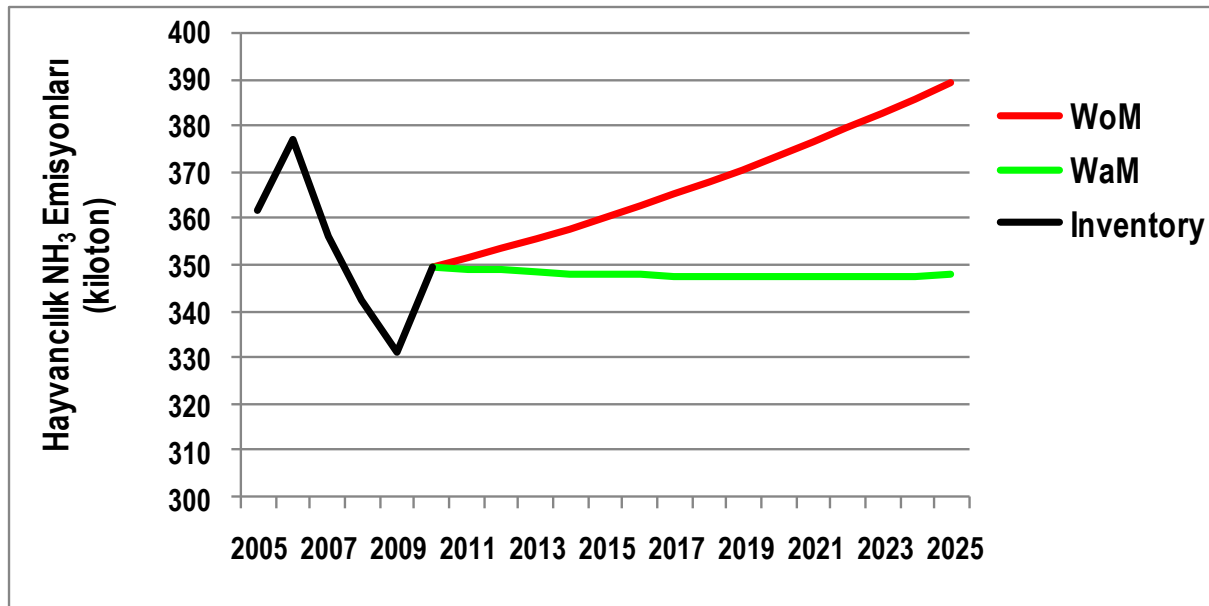
# NH<sub>3</sub> Projections



	NH <sub>3</sub> (ktonne)
Scenario With Additional Measures (WaM)	526
Scenario With Additional Measures (WaM) (High GDP)	526
<b>Possible National Emission Ceiling</b>	<b>530</b>

# Sectorial Emission Management Strategy (EMS) NH<sub>3</sub> Projections

## Livestock



# Conclusions

In order to strengthen the ceilings Turkey is to use in negotiations, the following are necessary:

- For the inventory, reducing major uncertainties as to the sulphur content in lignite, the percentage of combustion plants with desulphurization units and the efficiency rate of these units
- For the projections, improving the assumptions regarding the use of fuel mix in electricity generation sector