

“Capacity Building and Strengthening Institutional Arrangement”

Workshop: Quantitative risk assessment of oil and gas plants“

## Presentation of the workshop

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APAT

Agency for Environmental Protection and Technical Service

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# 1. APAT-EEA Project ‘Capacity building and Strengthening Institutional Arrangement’ (I)

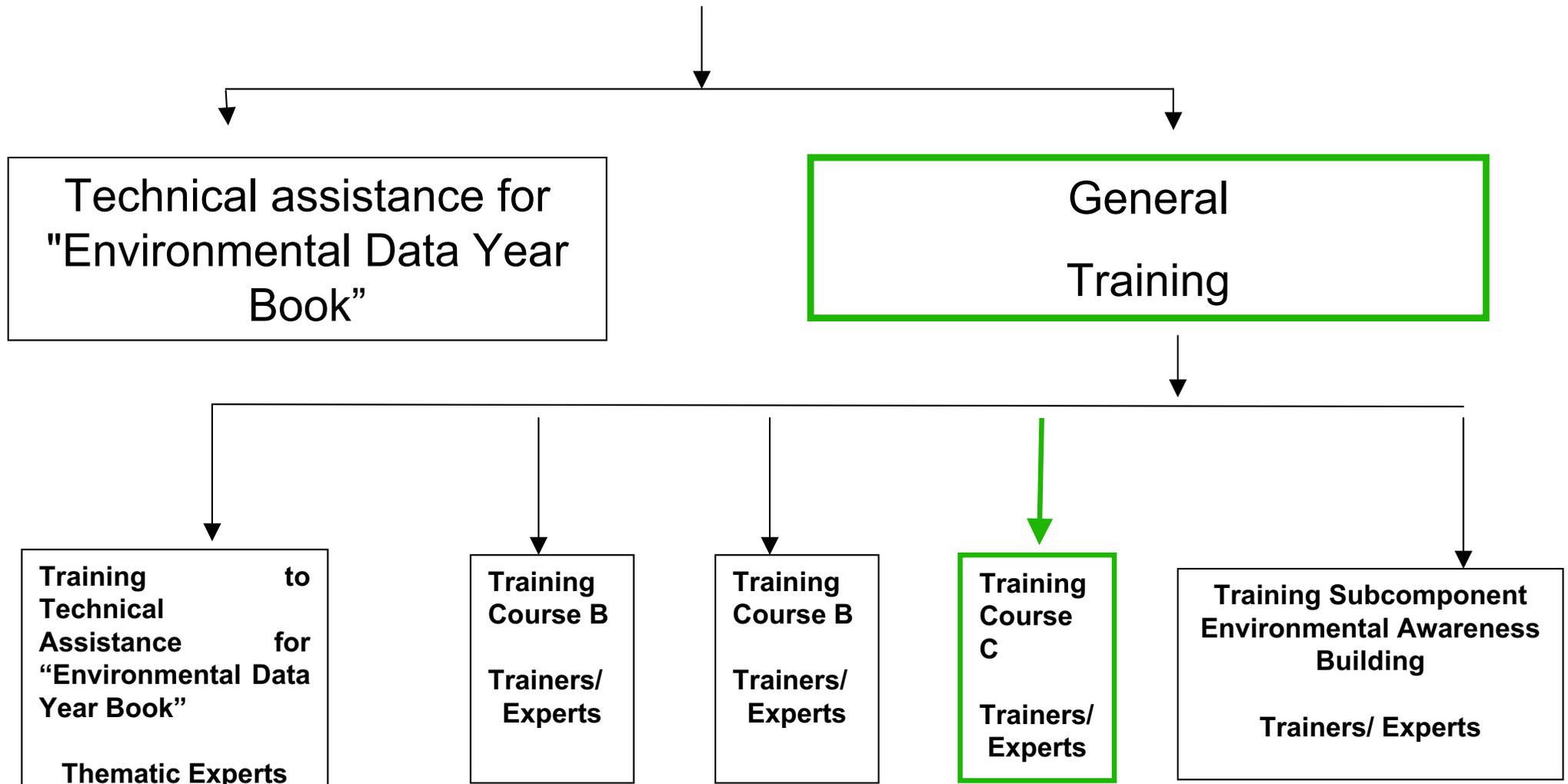
The program “Capacity Building and Strengthening Institutional Arrangement” aims at strengthening the technical and institutional capacity building of Egyptian Environmental Affairs Ministry and other environmental affairs Institutions through sharing technical, scientific and management knowledge and experience in order to develop the required and specific skills.

In this context APAT will help the Egyptian Ministry for Environmental Affairs:

1. To strengthen the capacity of Egyptian Environmental Affairs Agency (EEAA) to develop the Egyptian Environmental Data Yearbook
2. To develop general training programs in various environmental fields, according to EEAA requirements and indications, and to implement awareness programmes for most feasible areas or sectors of intervention.

# 1. APAT-EEA Project ‘Capacity building and Strengthening Institutional Arrangement’ (II)

Project: “Capacity Building and Strengthening Institutional Arrangement”



# 1. APAT-EEA Project ‘Capacity building and Strengthening Institutional Arrangement’ (III)

Previous workshops carried out, after the Kick off meeting”:  
Environmental Awareness Building, 3<sup>rd</sup> – 6<sup>th</sup> December 2005;



# 1. APAT-EEA Project 'Capacity building and Strengthening Institutional Arrangement' (IV)

Capacity Building for EEAA Training Departments, 19<sup>th</sup> – 23<sup>rd</sup> February 2006;



Capacity Building for EEAA Training Departments (Advanced), April 2<sup>nd</sup> – 6<sup>th</sup> 2006:



# 1. APAT-EEA Project ‘Capacity building and Strengthening Institutional Arrangement’ (V)

Other photos related the workshops already performed:



# 1. APAT-EEA Project 'Capacity building and Strengthening Institutional Arrangement' (VI)

Analysis and sampling of air and air pollution, 14<sup>th</sup> – 18<sup>th</sup> May 2006



# 1. APAT-EEA Project 'Capacity building and Strengthening Institutional Arrangement' (VII)

Analysis and sampling of water and water pollution, 11<sup>th</sup> – 15<sup>th</sup> June 2006



## 2. “Quantitative risk assessment of oil and gas plants” (I)

The workshop ‘Quantitative risk assessment of oil and gas plant’ is organized in 5 modules including specific working groups, with facilities provided by EEAA and the main goal to share APAT and EEAA previous experiences and technical know-how about quantitative risk assessment of oil and gas plants, following EEAA indications and APAT previously experiences in this field

### ‘Quantitative risk assessment of oil and gas plants’

1<sup>st</sup> Module: OIL AND GAS EXTRACTION, PRODUCTION AND TRANSPORT TECHNOLOGIES

2nd Module: OIL AND GAS ENVIRONMENTAL IMPACTS

3rd Module: OIL AND GAS MAJOR HAZARDS RISK ASSESSMENT

4th Module: OIL AND GAS HAZARDS CONSEQUENCES ANALYSIS

5th Module: OIL AND GAS MAJOR HAZARDS RISK MANAGEMENT

## 2. “Quantitative risk assessment of oil and gas plants” (II)

### First Module: “Oil and gas extraction, production and transport technologies ”

APAT-EEAA: “Brainstorming” (based on experiences)

- Drilling technologies aspects;
- Main environmental issues;

APAT-EEAA: “Brainstorming” (based on experiences)

- Production technologies aspects;
- Transport technologies aspects;
- Main environmental issues;

APAT-EEAA: Working group n° 1

“Define main environmental protection issues on regional basis starting from national inventories of oil and gas industries”

## 2. “Quantitative risk assessment of oil and gas plants” (III)

### Second module: “Oil and gas environmental impacts ”

APAT-EEAA: “Brainstorming” (based on experiences)

- EU and Italian standards for oil and gas industries evaluation impacts;
- Oil and gas IPCC (Intergovernmental Panel on Climate Change) implementation and emissions evaluation methodologies;

APAT-EEAA: “Brainstorming” (based on experiences)

- Oil and gas Integrated Pollution and Prevention Control (IPPC) and relative Best Available Technologies (BAT);

APAT-EEAA: Working group n° 2 “Implementation of Best Available Technologies (BAT) referring to main environmental issues of available gas industries ”

## 2. “Quantitative risk assessment of oil and gas plants” (IV)

### Third Module: “Oil and gas major hazards risk assessment ”

APAT-EEAA: “Brainstorming” (based on experiences)

- EU and Italian standards for oil and gas major hazards;
- EU and Italian procedures and organizations involved in oil and gas major hazards;

APAT- EEAA: “Brainstorming” (based on experiences)

- EU and Italian methodologies for major hazards quantitative risk assessment;
- APAT experiences on tools for assessing risks, preventing accidents;

APAT-EEAA: Working group n° 3 “Define a system for coastal zones monitoring network”

## 2. “Quantitative risk assessment of oil and gas plants” (IV)

### Fourth Module: “Oil and gas hazards consequences analysis ”

APAT-EEAA: “Brainstorming” (based on experiences)

- Criteria for the identification of critical areas;
- Analysis of environmental consequences of major hazards (soil, groundwater, air);

APAT- EEAA: “Brainstorming” (based on experiences)

- Case studies of oil and gas major hazard risk assessment ;

APAT-EEAA: Working Group n°4

“Consequences assessment analysis of major hazard oil and gas spill in soil and groundwater “

## 2. “Quantitative risk assessment of oil and gas plants” (V)

### Fifth Module: “Oil and gas major hazards risk management”

APAT-EEAA: “Brainstorming” (based on experiences)

- Safety Management Systems for oil and gas major hazards industrial plants;

APAT-EEAA: “Brainstorming” (based on experiences)

- Safety Management Systems assessment for oil and gas major hazards industrial plants;

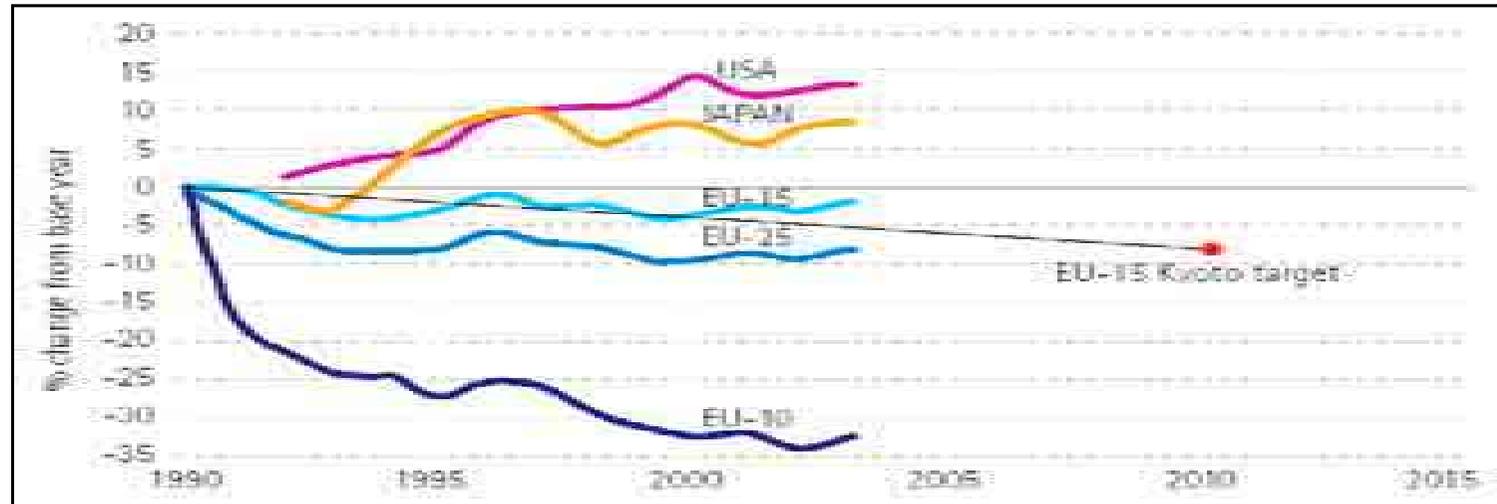
APAT-EEAA: Working Group n° 5

“Define a safety management system for oil and gas industrial units”

### 3. Energy indicators (I)

## Climate change - Greenhouse gas emissions

The EU-15 Kyoto target is an 8% reduction in greenhouse gas emissions compared to base year 1990 levels by 2008-12.



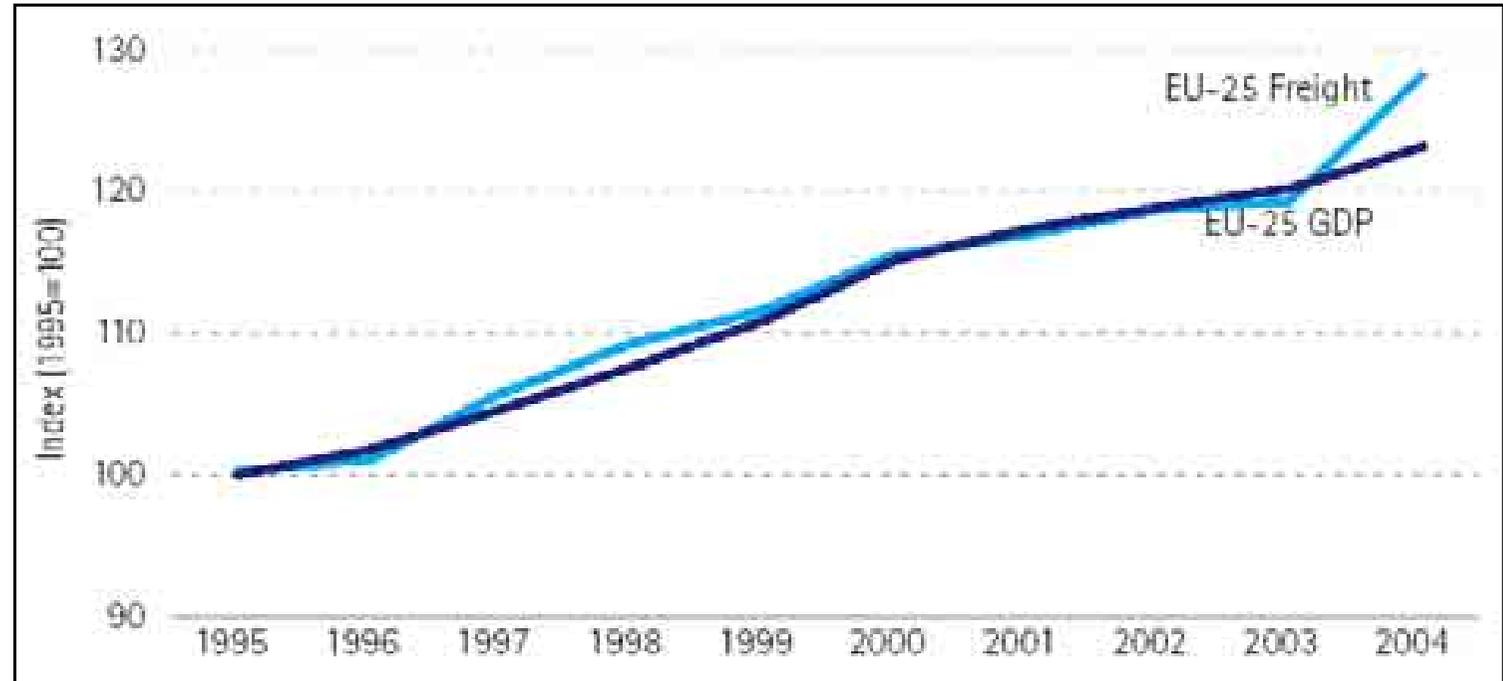
Data for 2003 show that the EU-15 had archived a 1.7% reduction over 1990 levels, showing a reversed trend compared to 2002.

In order to meet its Kyoto target, the EU-15 needs to implement additional policies and measures as well as make use of Kyoto ‘flexible mechanisms’.

All 10 new EU Member States have ratified the Kyoto Protocol and the eight (Cyprus and Malta do not have emissions reductions targets under the Kyoto protocol) that have committed to reduce their emissions by either 8% or 6% had, in 2003, already managed to successfully exceed their Kyoto target (except for Slovenia).

## 3. Energy indicators (II) Transport

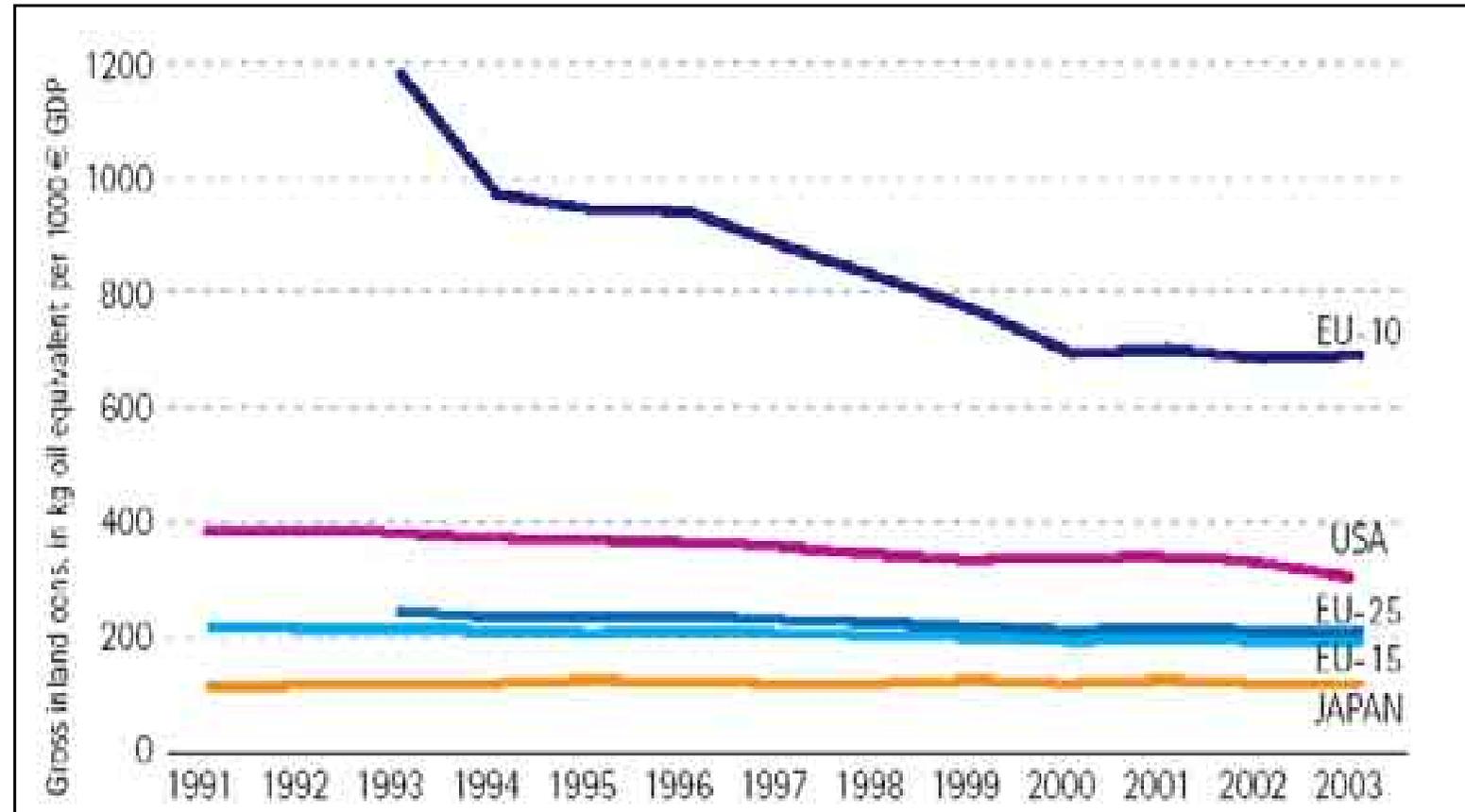
The EU aims to decouple transport growth from economic growth (Economic growth is measured by growth of Gross Domestic Product - GDP).



Between 1995 and 2004 freight transport has increased by 28% while GDP increased by 23.1%. The increase is mainly due to road transport, which increased by more than 32%. The growth in the freight transport has been far from uniform. A sharp increase in the freight transport statistics in 2004 partially reflects a change in statistical methodology. Moreover, greenhouse gas emissions from transport continue to grow on average by 1% per year.

### 3. Energy indicators (III) Energy intensity

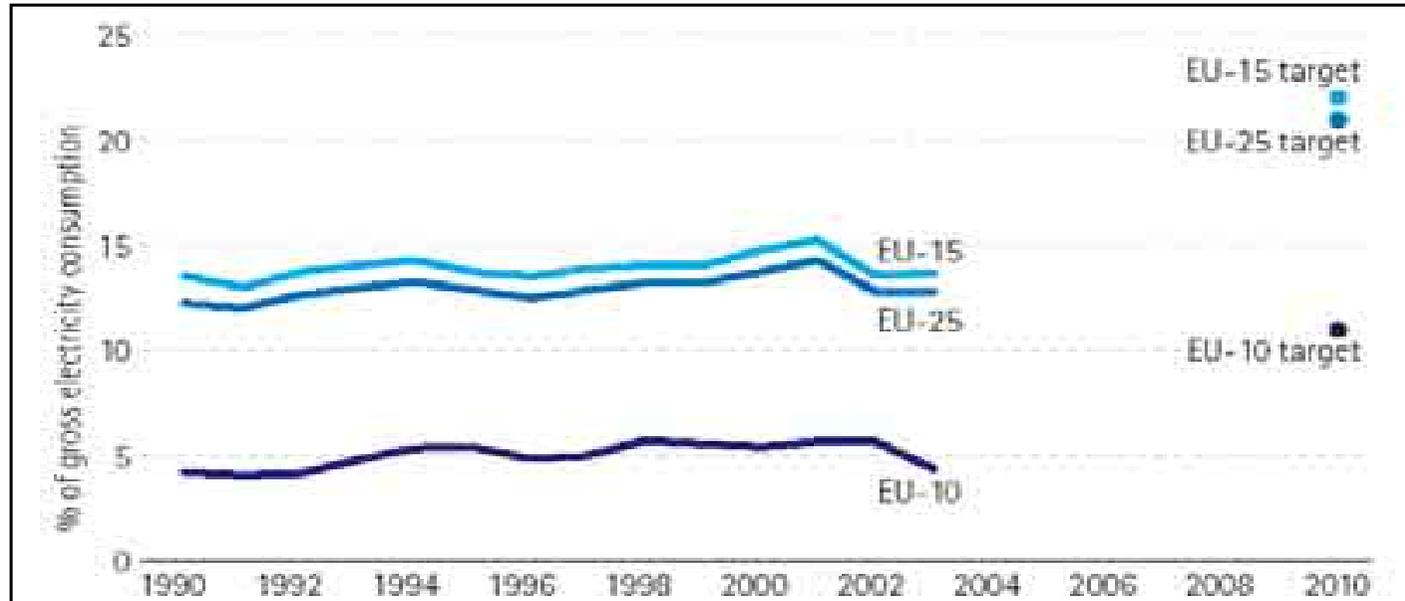
During the 1990s energy intensity steadily decreased in the EU, but since 2000 there has been no change. In 2003, as in 2001, energy intensity increased compared to the previous year.



Only seven Member States show a continuous and significant decrease in demand for energy per GDP, partly due to specific energy efficiency measures. The European Commission has proposed (2005 Green Paper on Energy efficiency) to set an EU target of reducing energy consumption by 20% compared to 2020 baseline as forecast in 2005.

### 3. Energy indicators (IV) Electricity from renewables

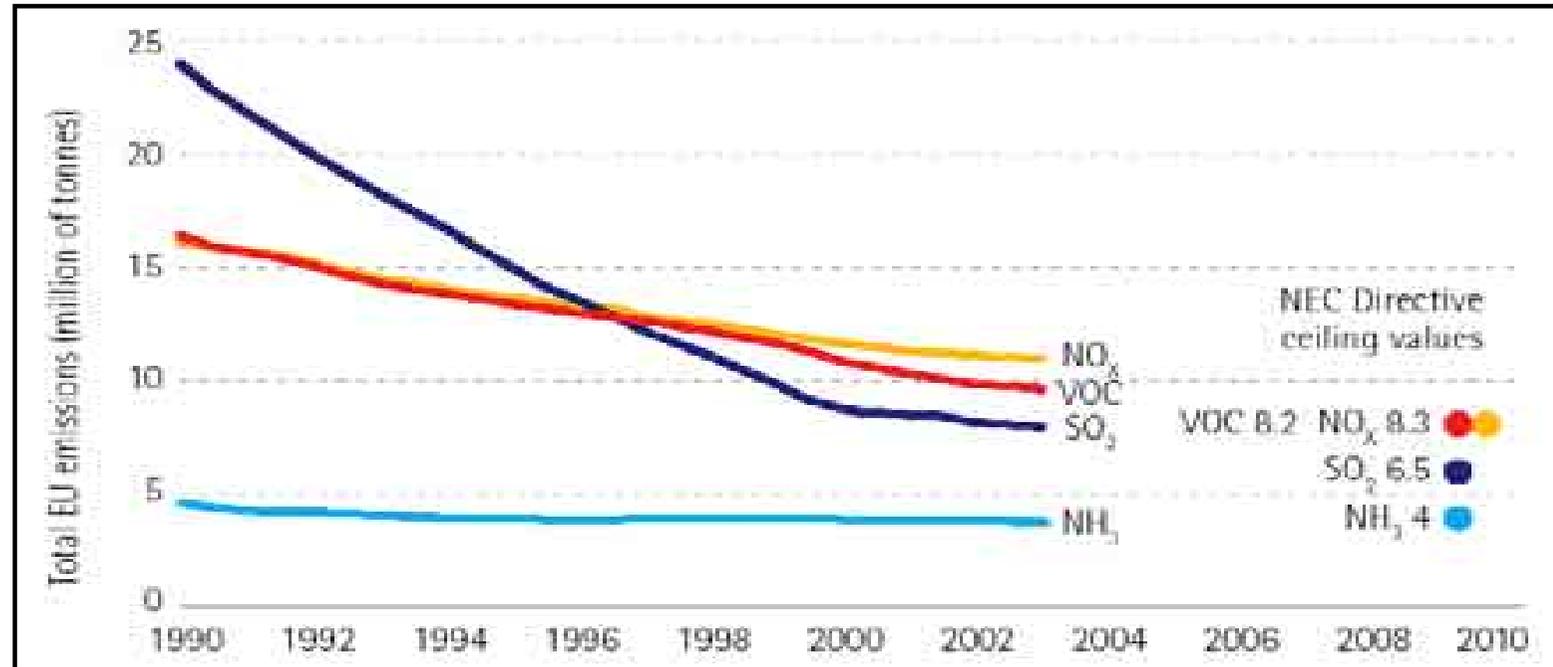
The EU's indicative target is to produce 21% of all electricity from renewable sources by 2010. The share of electricity produced from renewables in 2003 was 12.7%, as it was in 2002.



Increases in additional new renewable capacity are countered by lower production in hydroelectricity, which represents almost 80% of total renewable electricity but is largely determined by the weather conditions. Member States are showing varying trends; in particular renewables have increased significantly in Denmark and Spain. Certain countries have a greater natural potential for producing renewable energy. Policy discussions on EU targets beyond 2010 have commenced. The share of renewables in EU-10 has decreased in 2003 to reach 4.3%. This is largely due to the fact that in some countries, like Latvia, Slovakia and Slovenia, renewables decreased by more than 3.5%.

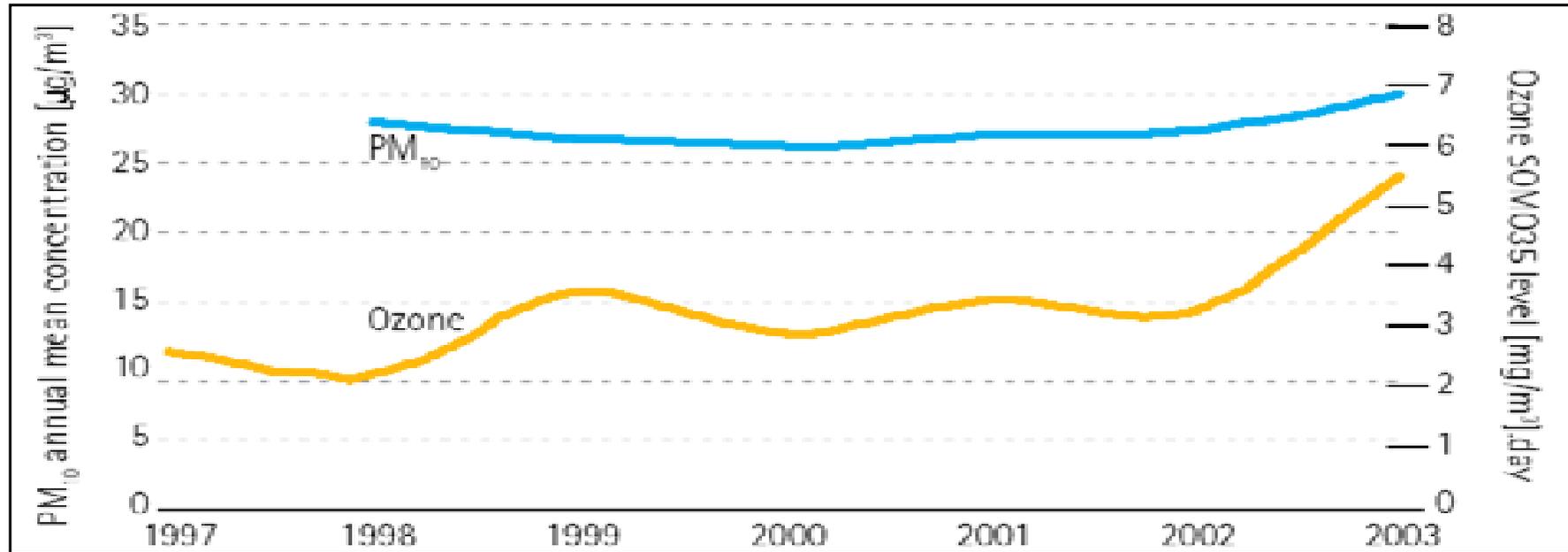
### 3. Energy indicators (V) Air emissions

The EU has to reduce air emissions to 2010 targets as set by the National Emissions Ceiling Directive.



Since 1990 the EU-25 has reduced its sulphure dioxide (SO<sub>2</sub>) emissions by 66,9%, its nitrogen oxides (NO<sub>x</sub>) emissions by 32.2%, its volatile organic compounds (VOC) emissions by 41,5% and ammonia (NH<sub>3</sub>) emissions by 17,4%.Sulfure dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC) and ammonia (NH<sub>3</sub>) have harmful effects on human health and on the environment. They result in acidification, eutrophication and concentration of ground-level ozone and particulate matter.

### 3. Energy indicators (VI) Urban air quality



Data from some large European cities indicate that concentrations of particulate matter (PM<sub>10</sub>) (including cities from 12 Member States AT, BE, CZ, DE, ES, FI, NL, PT, SE, SK, UK) are high and increased slightly in recent years. The increase in 2003 is partly due to unfavorable weather conditions. However, in many cities the situation did improve. Particulate matter has serious health implications, reducing life expectancy in the EU by about nine months and causing illness (Source: Impact Assessment of the thematic strategy on air pollution).

### 3. Energy indicators (VI)

#### Urban air quality (foolws)

For ground-level ozone, concentrations seem not to be improving. (Results are based on “urban background station” in cities having a population over 250000 inhabitants, using  $PM_{10}$  annual mean concentrations and for the ozone indicator “sum of means over 35 ppb ozone” – SOMO35 – calculated from daily eighth-hourly maximum concentrations.

Population weighting is applied. Further information may be obtained from: [env-aiquality@cec.u.int](mailto:env-aiquality@cec.u.int) Differing annual weather conditions, like the heat wave in 2003, influence air pollution levels and cause variations unrelated to emission changes. Ozone causes respiratory diseases and is linked with premature deaths. It is a major health concern for vulnerable groups such as asthmatics, children and the elderly.

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- ▶ Environmental Education

## Environmental Education and Capacity Building

APAT carries out technical and scientific activities of national interest, linked to the mission of protection of the environment, by means the elaboration, assessment and promotion of programs of divulgation and training on environmental protection. The Agency also provides technical coordination of environmental training activities to the Regional and Provincial Agencies for the protection of the environment, in order to share operational methodologies at national level to carry out institutional tasks, and gives technical and scientific support to the Ministry for Environment and Territory, and, by means of specific agreements, to other Administrations and Public Bodies.

APAT develops activities to promote environmental capacity building, to transfer scientific and technical know how for environmental protection and to enhance environmental awareness, particularly through:

- design and management of National, European and International projects
- active partnerships in international Networks
- environmental training courses and seminars
- organization and coordination of internships and internal stages
- environmental e-learning through internet
- diffusion of methodologies and knowledge to support the small Municipalities Decision Makers.

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### Energy and Radiations

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**Quantitative Risk Assessment of Oil and Gas Plants- Capacity Building And Strengthening Institutional Arrangement**

The course is aimed to provide specific competences about quantitative risk assessment of oil and gas plants, dealing with the aspects related to oil and gas extraction, production and transport technologies. Moreover, the course, deepens the specific issues of environmental impact, risk assessment, analysis and management, connected to oil and gas plants.

The contents of the course are developed within the Egyptian and Italian Cooperation Programme on Environment and therefore they are available only for the EEAA's technicians and of other Egyptian environmental Institutions

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**Energy and Radiations**

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**MODULE 1**

**Oil and Gas Extraction, Production and Transport Technologies**

Unit <b>1</b>	<a href="#">Presentation of the workshop</a> (ppt 20kb) Mr. Gaetano Battistella - APAT	
Unit <b>2</b>	<a href="#">Drilling technologies aspects, Drilling technologies aspects.</a> (ppt 20kb)	

## 4. References

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