



EUROPEAN  
COMMISSION

community research

# ENERGY POLICY AND ITS RESEARCH DIMENSION

**European Commission  
DG Energy and Transport**

**Alfonso González Finat, Director D (TREN)**





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# **I. ENERGY PACKAGE – AN ENERGY POLICY FOR EUROPE**

- 1. Energy for a changing world**
- 2. The European three energy challenges**
- 3. Sustainable development**
- 4. Security of supply at risk**

# 1. ENERGY FOR A CHANGING WORLD (1/2)

**LIMITING CLIMATE CHANGE TO 2 °C**

**ENERGY POLICY FOR EUROPE**

**GREEN PAPER  
ENERGY**

**ACTION PLAN  
2007-2009**

**SPRING EUROPEAN COUNCIL  
2006**

**ENERGY PACKAGE  
2007**

**SPRING EUROPEAN COUNCIL  
2007**

**SUSTAINABILITY AND LOW-CARBON ECONOMY**

RENEWABLE ENERGY  
ROAD MAP

SUSTAINABLE FOSSIL  
FUEL TECHNOLOGIES

PROGRESS REPORT  
BIOFUELS

ILLUSTRATIVE  
NUCLEAR  
PROGRAMME (PINC)

PROGRESS REPORT  
RES ELECTRICITY

ENERGY EFFICIENCY  
ACTION PLAN  
(19 OCT 2006)

**INTERNAL MARKET**

DG COMP  
SECTOR INQUIRY

REPORT ON  
FUNCTIONING OF  
INTERNAL MARKET

PRIORITY  
INTERCONNECTION  
PLAN

**EXTERNAL RELATIONS**

JOINT COMMISSION/  
HR /COUNCIL JUNE  
PAPER AND COM  
PAPER OCT 2006

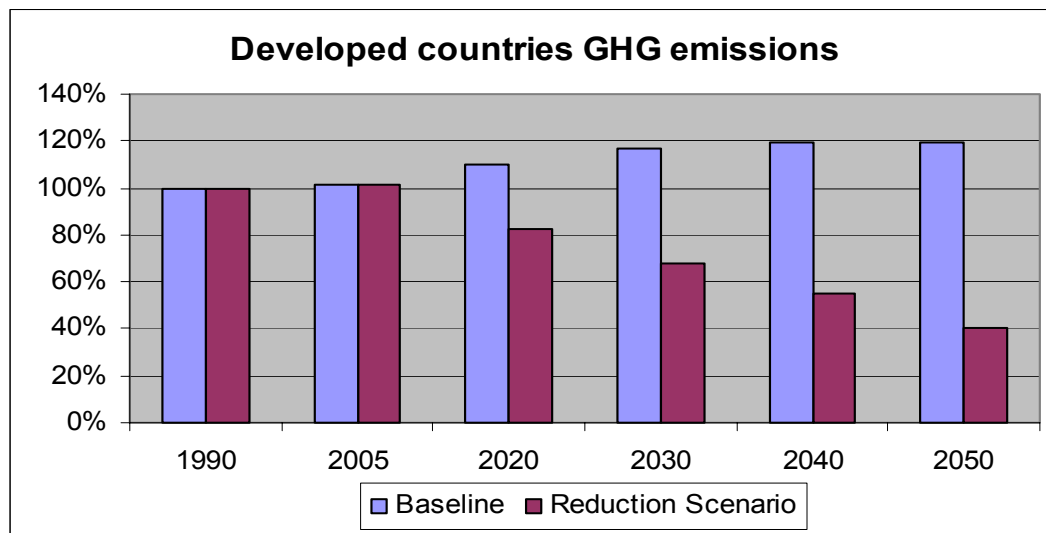
NEGOTIATION  
MANDATE FOR NEW  
AGREEMENT WITH  
RUSSIA

DIALOGUE WITH  
PRODUCERS: OPEC-  
NORWAY-GCC-ALGERIA-  
CASPIAN BASIN (BAKU  
PROCESS)

DIALOGUE WITH  
CONSUMERS:  
CHINA, US, INDIA, JAPAN

# 1. LIMITING GLOBAL CLIMATE CHANGE TO 2°C (2/2)

- **A unilateral EU independent commitment of at least 20% GHG emission reduction by 2020, compared to 1990 levels**
- **Developed countries & EU: 30% GHG emission reduction target by 2020, compared to 1990 levels, 60-80% by 2050**

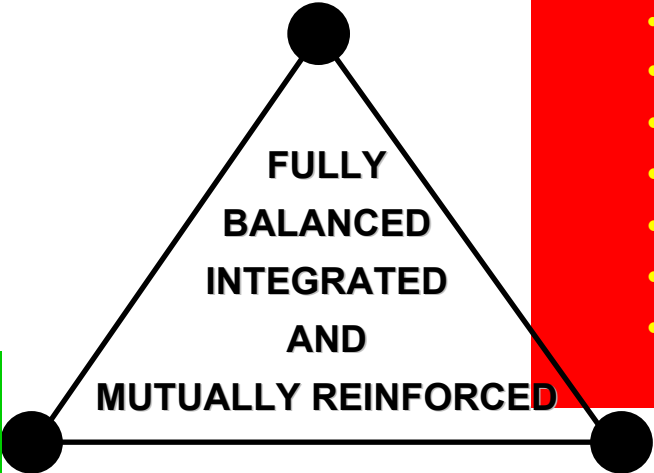




# 2. THE EUROPEAN THREE ENERGY CHALLENGES

**Competitiveness  
"LISBON"**

- Internal Market
- Interconnections (Trans-European networks)
- European electricity and gas network
- **Research and innovation**
  - Renewable energies
  - Energy Efficiency
  - Hydrogen
  - Clean coal/CO2 capture
  - Smart grids
  - Nuclear fission and fusion
  - Socio-economic research



**Sustainable  
Development  
"KYOTO"**

- Renewable energy
- Energy efficiency
- Nuclear
- Research and innovation
- Emission trading

**Security of supply  
« MOSCOW »**

- International Dialogue
- European stock management (oil/gas)
- Refining capacity and energy storage
- Diversification





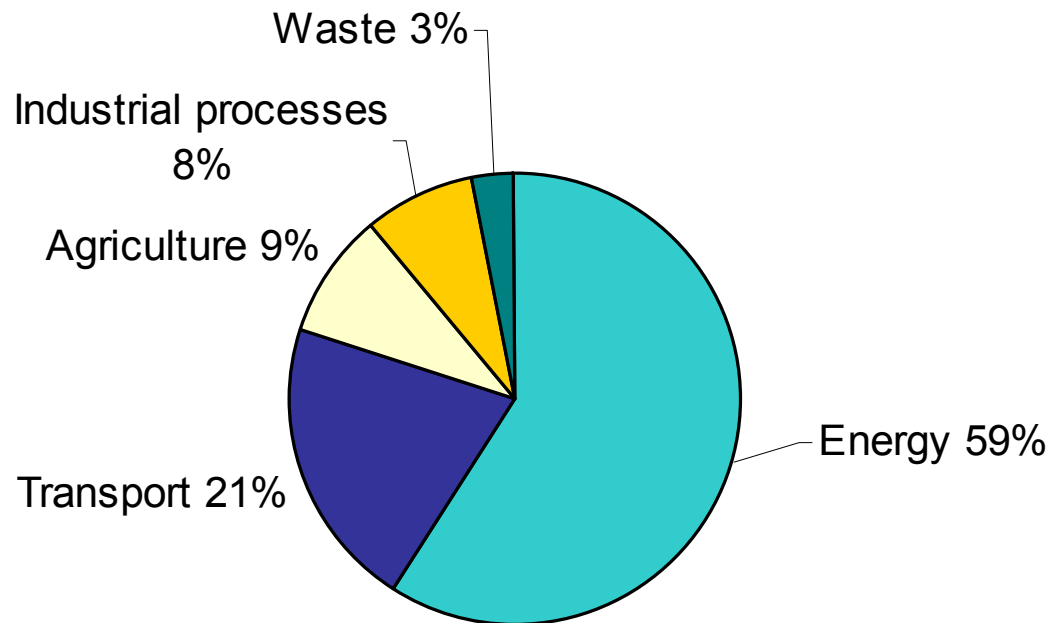
# 3. SUSTAINABLE DEVELOPMENT

(1/2)

**Energy => 80% of EU-GHG**

**Energy => 93% of EU CO2 emissions**

**75% of GHG are CO2 emissions**



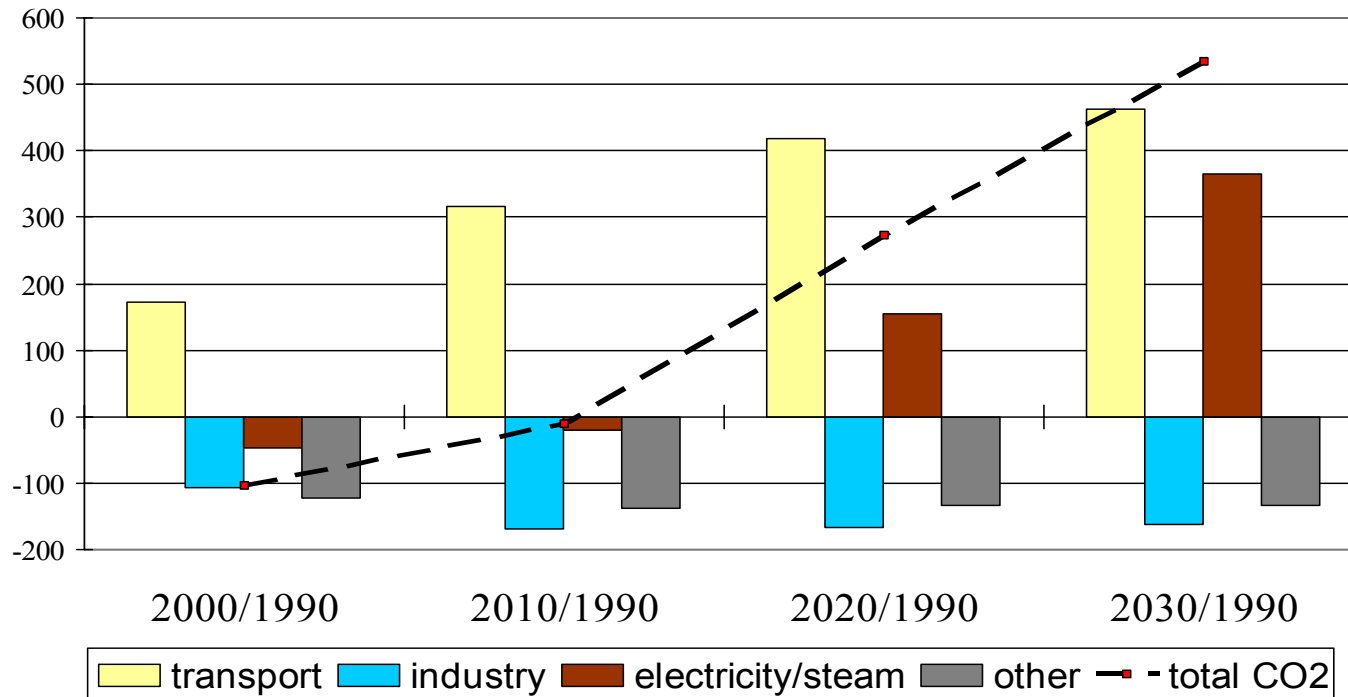


# 3. SUSTAINABLE DEVELOPMENT

(2/2)

## TRENDS IN CO2 EMISSIONS up to 2030

Mt CO2 – relative to 1990 (Baseline)

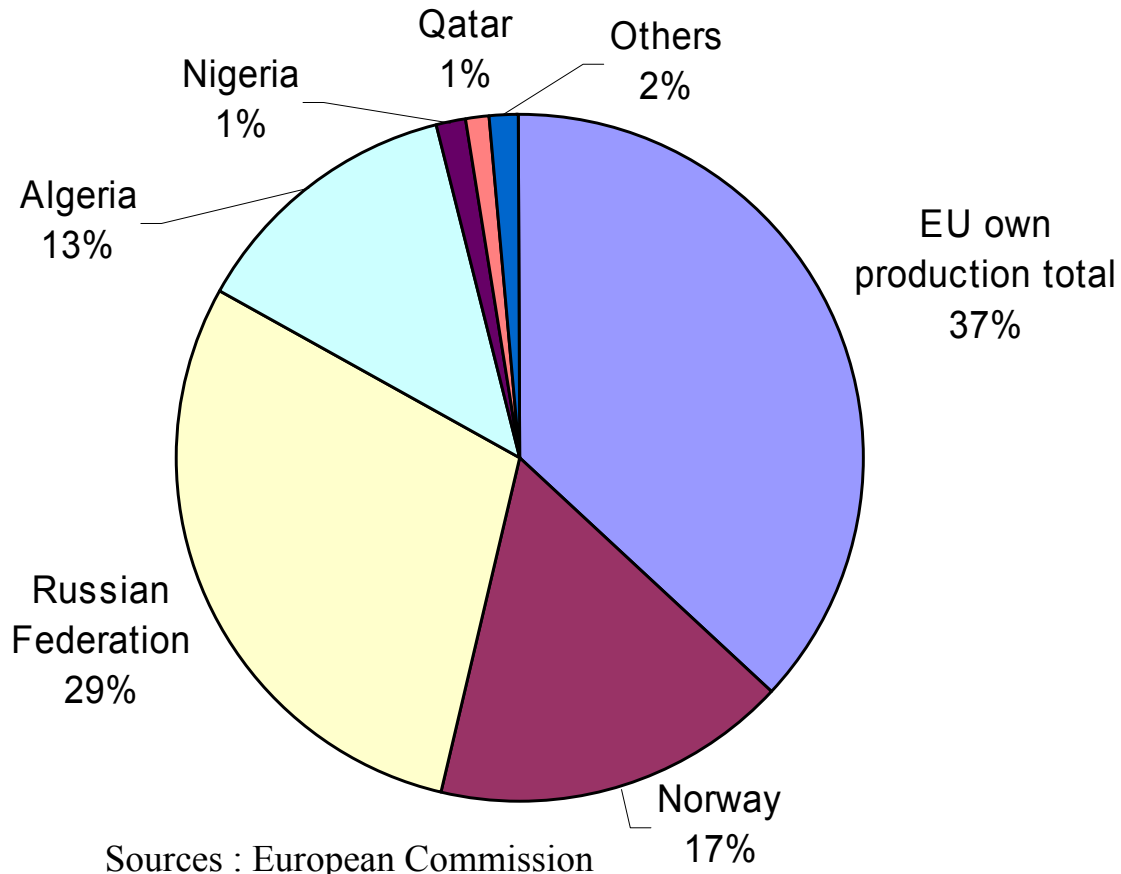




# 4. SECURITY OF SUPPLY AT RISK

(1/2)

## EU-27 ORIGIN OF GAS (2004)

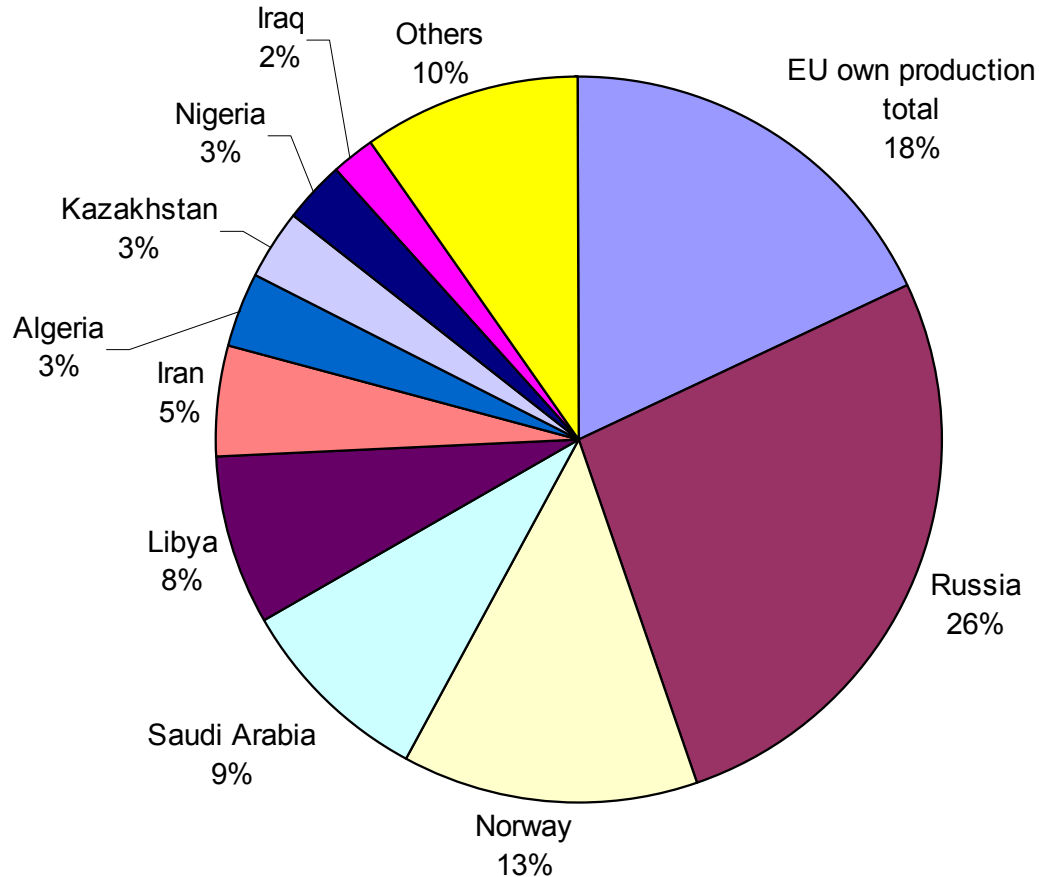




# 4. SECURITY OF SUPPLY AT RISK

(2/)

## EU-27 ORIGIN OF OIL (2004)



Sources : European Commission



## **II. TOWARDS AN STRATEGIC ENERGY TECHNOLOGY PLAN**

- **5. The insufficient scale of the current effort**
- **6. Transforming energy technology innovation: a European Strategic Energy Technology Plan (SET-Plan)**
- **7. Process to arrive at the SET-Plan**
- **8. Conclusions**



# 5. THE INSUFFICIENT SCALE OF THE CURRENT EFFORT

- **'Business as usual' is not an option**
  - ➔ Current trends and their projections show that we are not doing enough, by 2030 in both CO2 and Security of Supply
- **Structural weaknesses in the energy innovation system**
  - ➔ Market failure ('Stern Report')
  - ➔ Dominant actors and network connection challenges
  - ➔ Scattered and un-coordinated market incentives (e.g. innovation programmes)
  - ➔ **Reduction of Energy research funds (OCDE Report – «halved since the 80's»)**
  - ➔ Scattered, fragmented and sub-critical capacities
  - ➔ Strong international competition and weak cooperation



# 6. TRANSFORMING ENERGY INNOVATION: A EUROPEAN STRATEGIC ENERGY TECHNOLOGY PLAN (SET-Plan)

(1/3)

- **The EU must act jointly and urgently**
  - To develop a broad portfolio of technologies
  - Transforming the energy system will take decades, **but we need to transform now the innovation system**
- **A broad portfolio spreads risk and avoids locking-in**
- **Public policy has many instruments available:**
  - *Technology push*
  - *Demand pull*
  - *Innovation*

## 6. TRANSFORMING ENERGY INNOVATION: A EUROPEAN STRATEGIC ENERGY TECHNOLOGY PLAN (SET-Plan)<sup>(2/3)</sup>

- **Essence of SET-Plan: matching technology applications**  
*«different horses for different courses»*
- **Stronger institutional framework**
- **A shared vision**
- **Ambitious objectives but realistic resources**
- **Strategic element: selecting technologies for which the EU needs result oriented action: coalitions or partnerships; precise and measurable objectives.**
- **Synergies with international partners**



## 6. TRANSFORMING ENERGY INNOVATION: A EUROPEAN STRATEGIC ENERGY TECHNOLOGY PLAN (SET-Plan)<sup>(3/3)</sup>

Priorities of such targeted actions could mainly include:

- More energy efficient demand;
- Second generation biofuels;
- Offshore wind competitive and a competitive European offshore super-grid;
- Photovoltaic electricity competitive;
- Hydrogen for decentralised generation and transport;
- Sustainable coal and gas technologies, particularly carbon capture and storage;
- Lead in fourth generation fission nuclear reactors and future fusion technology to boost the competitiveness, safety and security of nuclear electricity, as well as reduce the level of waste.

# 7. PROCESS TO ARRIVE TO THE SET-Plan

- **Commission to adopt the first SET-Plan by the end of 2007 and put it forward to the 2008 Spring Council**
- **Vision, SWOT of the innovation system, realistic assessment of technology avenues**
- **Two-stage consultation:**
  - ➔ **Until May 2007 – experts groups**
  - ➔ **Around July 2007 – general public**



# 8. CONCLUSSIONS

- **A new energy era**
- Energy technology has a **vital role** to play
- Adequate combination of innovation because '**business as usual**' is no longer an option
- **MS and industry** should at least match the increased budgets of FP7 and IEE
- To act **jointly and urgently**
- A shared and inclusive **European vision**, involving all relevant actors.
- SET Plan must be **ambitious** in setting targets, but **realistic** and pragmatic regarding resources.
- The SET-Plan will propose specific and concrete result-oriented actions



## III. WORK IN 2007

- **Endorsements of the need for an ambitious and targeted first SET-Plan by the European Council**
- **Possible elements for developing SET-Plan:**
  - **A European vision**
  - **Specific result-oriented actions and generic actions**
  - **Strengthened and more coherent institutional framework**
  - **Financing and investing**
  - **International cooperation**
  - **Monitoring and review system for SET-Plan**