An economy without CO_2 in Europe

Roadmap 2050

CCS PROJECTS IN EUROPE - DIALOG WITH THE DIPLOMATIC REPRESENTATIVES IN ROMANIA

= FROM DEBATES TO ACTIONS =

Veronica Petri, Studies and Projects Financing Department, Energy & Environment Division - ISPE

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

A Roadmap for moving to a competitive low carbon economy in 2050

- COM(2011) 112 final
  - ➢ Issued on March 8, 2011
  - ➢ After comprehensive analysis on global and European level
- To be taken into account by MS, European institutions, in the further development of EU, national and regional policies
- The Commission will present the 2050 Roadmap to its global partners in order to stimulate international negotiations
- One of the CE documents planned to be released in 2011 within the flagship „A resource-efficient Europe", one of the seven initiatives of the Europe 2020 Strategy

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

A resource–efficient Europe

- The flagship „A resource-efficient Europe”:
  - ➢ aims to create a politics framework in order to support the transition to resource-efficient economy with low CO_2 emissions
  - ➢ provides a long term action framework in several policy fields (climate change, energy, transport, industry, agriculture, fishing, bio-diversity, regional development), components which need to be well co-ordinated
- Objective: consolidating the necessary safety for investment and innovation
  - ➢ by creating a consent on the long term vision
  - ➢ by a guarantee that all relevant policies are integrating the efficient use of resources

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

EU Objective

- **February 2011: European Council reconfirmed the EU objective of reducing GHGs emissions by 80% ÷ 95% in 2050, comparative with 1990, in order to maintain the increase of global temperature below 2ºC**

- **Roadmap objective: how to develop the EU policy framework in the next 10 years and further, so that:**

  - **to allow substantial reductions of GHGs emissions**
  - **to reduce the vulnerability to oil shocks and other aspects of energy security**
  - **to benefit of the opportunities regarding the sustainable growth and new jobs (related to the new low carbon technologies), correlated with the sustainability and efficient use of resources**

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Target and intermediate steps (EU internal)

- Current policies full implementation ➔ 20% GHG reduction in 2020, but only 10% reduction for energy efficiency
- EU must prepare for internal reductions by 80% in 2050 comparative with 1990

1990	2020	2030	2040	2050
100%	- 20%	- 40%	- 60%	- 80%

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Electricity sector

GHG	2005	2030	2050
CO2	- 7%	- 54% ÷ - 68%	- 93% ÷ - 99%

- Demand increase (due to transport and heating) ➔ total consumption increase by historical percent due to energy efficiency increase
- The preference of the MS for a energy mix which reflects the national circumstances will be however taken into account
- The three main low carbon technologies in the power sector are
  - ➢ Renewable
  - ➢ Nuclear
  - ➢ CCS equipped fossil fuel plants
- Near complete decarbonisation is mainly achieved by the combination of these different low carbon technologies
- The projected shares of single low carbon technologies should be taken with some caution
  - ➢ the uncertainty of individual technological progress rates
  - ➢ the difficulty of a possible complete change of the power network

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Electricity sector (2)

- EU-ETS = key factor for developing low carbon technologies
  - ➢ carbon price signal and long term predictability
  - ➢ reconsidering of the linear decrease by 1.74% per year
- Other means: energy taxation, technological support
- Great share of RES ➔ variable production ➔ investment in intelligent networks
  - ➢ Investment in networks lead to benefits for both operators and society (safety of network, energy security, low emissions)
    - ➔ It must be created a political framework which:
      - to favor the investment at EU/national/local level
      - to stimulate the demand management

Transport sector

GHG	2005	2030	2050
CO2	+ 30%	+ 20% ÷ - 9%	- 54% ÷ - 67%

- Energy efficiency is one of the major contributors to decarbonisation of transport
  - gradual efficiency improvements of internal combustion engines and subsequently gradual hybridization leading eventually to high penetration rates for electric propulsion vehicles
- The extent of the contribution of electric vehicles is dependent on a quick overcoming of barriers to the further development and cost reduction in battery technology
- Biofuels are also important to further decarbonise the transport
- Three key factors:
  - vehicle efficiency by new engines
  - materials
  - design

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Buildings and services sector

GHG	2005	2030	2050
CO2	- 12%	- 37% ÷ - 53%	- 88% ÷ - 91%

- Offers opportunities with low costs and on short term, by improving the energy performance
- Directive 2010/31/UE on building energy performance:
  - ➢ from 2021, new buildings will be near "zero energy buildings"
- On February 4, 2011, European Council decided that beginning with 2012, all MS must introduce energy efficiency standards in case of public acquisition for public buildings and relevant services
  - ➢ at the end of 2011 , EC will issue the Communication on "Sustainable construction" ➔ strategy for stimulating the sector competitivity correlated with increasing the environmental and climate performances
- Challenge: renovation of the existing buildings stock and its financing

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Industrial sector

GHG	2005	2030	2050
CO2	- 7%	- 34% ÷ - 40%	- 83% ÷ - 87%

- Possible contributions to GHGs emissions reduction:
  - Advanced resources
  - Energy efficient equipment and processes
  - Increase of recycling
  - Technologies for reducing no-CO2 emissions
  - CCS (large scale after 2035), for process emissions (cement and steel industries)
- Sectoral specific solutions ➔ EC will develop specific roadmaps, co-operating with industrial sectors
- Attention paid to EU / non Eu competitivity UE / non UE (relocation risk)
  - Continuously monitoring and analysis of the impact on industry competitivity and necessary measures to be taken
  - Continuously updating of the list of sectors with relocation risk

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Agriculture sector

GHG	2005	2030	2050
non CO2	- 20%	- 36% ÷ - 37%	- 42% ÷ - 49%

- Share of emissions from agriculture in EU emissions in 2050: 33%
- Agricultural policies will focus on:
  - efficient fertilizer use
  - bio-gasification of organic manure
  - improved manure management
  - local diversification and commercialization of production
  - maximizing the benefits of extensive farming
- Measures for:
  - maintaining grasslands
  - restoring wetlands and peat lands
  - reducing erosion
  - development of forests
- The dual challenges of global food security and action on climate change need to be pursued together

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Investment and financing

- Increase of public and private investment on the following 40 years:
  - Euro 270 billion annually
  - Represents 1.5% increase of GDP_{EU}
  - Current investment represents 19% of GDP_{2009}
  - Percent of GDP allocated for investment in 2009: China (48%), India (35%), Korea (26%)
- Key factors:
  - policy for creating framework conditions
  - New financial models
- For implementing 20% target in energy efficiency, EC will monitor the impact of new measures on ETS, in order to maintain the scheme incentives (reward of low carbon investment, preparing the ETS sectors for the innovations needed in future)
  - recalibrating the ETS by setting aside a corresponding number of allowances from the part to be auctioned during the period 2013 to 2020

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Investment and financing (2)

- Key elements in order to overcome initial financing risks and cash flow barriers: additional public private financing mechanisms
- Public finance can mobilize the required private finance through innovative financing instruments:
  - Revolving funds
  - Preferential interest rates
  - Guarantee schemes
  - Risk-sharing facilities
- Financial entities / funds which should play a role in providing additional financing for energy efficient and low carbon technologies:
  - EIB
  - EBRD
  - Next Multi-Annual Financial Framework

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Conclusions

- EU objectives are based on a detailed analysis of several decarbonising scenarios at global and EU level
- The decarbonising scenarios had taken into account:
  - level of climate action
  - fossil fuels prices
  - technological innovation rate
  - GDP increase, etc
- The analysis shows that 80% reduction in 2050 is feasible if a strong incentive related to carbon price is applied in all sectors
- The EU analysis shows that a less ambitious pathway will mean:
  - carbon – intensive investment ➔ later implications:
    - higher carbon prices
    - higher overall costs on the entire period

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Conclusions (2)

- Not acting on global climate change will result in continued high risks for high oil prices or temporary shocks
- R&D, demonstration and early deployment of technologies:
  - various forms of low carbon energy sources
  - carbon capture and storage (CCS)
  - Smart grids
  - hybrid and electric vehicle technology,

  are of paramount importance to ensure their cost-effective and large-scale penetration later on
- The Commission intends to use the Roadmap as a basis for developing sector specific policy initiatives and Roadmaps

Institutional & Financial Support

Project Company

Technical Consortium

Technical Support

Thank You for your Attention !

Veronica Petri
Counsellor

ISPE
Energy&Environment Division
Studies&Project Financing Department

T +4021 2061370
veronica.petri@ispe.ro