The win-win options

“Energy in motion”

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Montecatini conclusions

The Environment and Energy Ministers of the 25 European Union Countries, Bulgaria, Romania, Turkey and Norway, hosted by the Italian Presidency of European Union in Montecatini from 18 to 20 July 2003, discussed the strategies and policies to meet both energy demand and supply security in “greater Europe”, and the commitment to reduce CO 2 emissions and other greenhouse gases for the protection of the global climate.

The Ministers concluded that the integration and dialogue between energy and environment is crucial for achieving sustainable development both across our continent and worldwide, taking into account the scenarios for medium-term energy demand and related emissions.

"Business As Usual" Scenario will not result in a sustainable energy future

- ✓non-hydro renewables will grow faster than any other primary energy source. Nonetheless, due to the small base upon which they start (2% of the portfolio), the share of renewables in electricity consumption will remain small in 2030;
- ✓hydrogen & fuel cell technologies will remain marginal;
- ✓fossil dependency will grow, leading to more serious price and supply vulnerabilities;
- ✓a significant increase in conventional fossil energy uses will cause serious health and environmental consequences.

The “New Energies”

✓“New” renewable technologies;

✓ Hydrogen production from renewables, such as from fossil fuels and associated carbon sequestration;

✓ Hydrogen for transport and electricity generation;

✓ Efficiency in energy production, conversion and use

✓Bio fuels

Although the stages of development are differentiated from technological and economical view points, the “new energies” are the best option both to increase energy security and to deal with local and global environmental issues.

H_2 Present situation and long-term projections

1. Hydrogen may emerge as a large scale fuel by the middle of the 21st century
2. However, today hydrogen represents only a minor part of world final energy consumption: this situation will not change significantly in the next 30 years if no new policies and better progress in development and deployment of new energy technologies is foreseen.
3. Globally, hydrogen manufacturing represents at present about **500 billion of Nm3,** or **2% of world total energy consumption**
4. 50% of hydrogen is used in fertilizer industry, 37% in petrochemical industry and 13% in other chemical industries (i.e. hydrogenation and methanol synthesis processes)

H_2 Present situation and long-term projections

5. Hydrogen fuel cell cars will remain marginal in the next 30 years
6. WEO (2003) foresee an increase of fuel cells in power generation (100 MW/y).
7. This is the case in commercial sector for bi-generation (electricity and heating) or tri-generation (electricity, heating and cooling).
8. Such a shift would not significantly impact the fuel mix, as the bulk of those fuel cells will be fuelled with natural gas.

Biofuels for Transport (1)

Petroleum transport fuels currently dominate transportation worldwide. But energy security and environmental concerns are compelling governments to identify and support alternative transport fuels. Over the past two decades, a variety of alternative fuels have emerged, such as compressed natural gas (CNG), liquid-petroleum gas (LPG) and electric vehicles.

These fuels have a number of benefits over petroleum, but they also have a number of drawbacks that limit their ability to capture a significant share of the market. They require costly modifications to vehicles and the development of separate fuel distribution and vehicle refuelling infrastructure.

Biofuels for Transport (2)

Biofuels support several major policy objectives.

***Energy securit*y**: biofuels enhance supply diversification;

***Environmen*t**: biofuels are much more climate-friendly than petroleum fuels, with significantly lower emissions of CO 2 and other greenhouse gases over the complete fuel chain, from feedstock production to fuel conversion and transport to final vehicle tailpipe emissions – commonly known as "well-to-wheels";

Energy efficiency: refiners and automakers are discovering the benefits of ethanol in order to boost fuel octane, especially when other potential octane enhancers, such as MTBE, are discouraged or prohibited;

***Sustainable transportatio*n**: biofuels are derived from renewable energy sources, which can assist the broader effort to achieve sustainable transportation objectives.

Supportive Regulatory Framework and Policies (1)

Without a supportive regulatory framework and policy commitments from governments the private or 'market' costs of the renewable and hydrogen technologies are higher than those of fossil fuels.

International concerted actions are needed in order to make the new clean and safe energy sources and technologies available and cost effective.

Supportive Regulatory Framework and Policies (2)

- Reduce technology costs
- Mobilise financing
- Build a strong market environment

Conclusions

The accelerated development in zero/low carbon emissions technologies can have considerable impact in reducing marginal abatement costs .

1. **The potential of the new renewable technologies in costs reduction is relevant in the medium-term. The impact of renewables will be higher in the new industrialised countries and in the developing countries, than in European Union.**

   The full use of Kyoto mechanisms, to enhance renewables in the global market of energy, will drive the abatement costs.

2. **If hydrogen can be produced and used at reasonable cost in 2020-2050 timeframe, hydrogen technologies will have a key role in relation to energy security and emissions reduction.**

   Strengthening the international cooperation in research and development on technologies is thus a priority for meeting CO_2 global emissions reduction target of 50%-60%.