21th FORUM

CROATIAN ENERGY ASSOCIATION

World Energy Council
CONSEIL MONDIAL DE L'ENERGIE

REDUCING CO_2 EMISSIONS BY 80% BEFORE 2050 – REALITY OR UTOPIA?

CALL FOR PAPERS

Zagreb, 23rd of November 2012

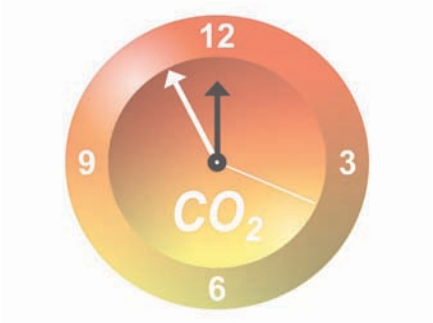
The Forum will be held on 23rd of November 2012 beginning at 9 am.

Small Hall (Mala dvorana) 'Vatroslav Lisinski'
Trg S. Radića 4, Zagreb, Croatia

The Forum will last for a day, from 9 am to 6 pm and it will be divided into four sessions with coffee and lunch breaks.

Paper presentation will be limited, depending on the number of papers accepted and received.

During the 20 forum it will be possible to present products according to the agreement of the companies interested and the HED as the organiser.



Paper registration deadline: 15th of July 2012

Paper registration includes the title of the paper, author's name, address and telephone number, and summary of the paper. Authors will be informed about the receipt of papers by 31 August 2012.

Full papers should be sent to HED office not later than 20 October 2012.

The paper may have up to eight pages of text with enclosures. Please note that the title and the summary should be translated into the English language. The paper is to be submitted by e-mail or on the CD. Detailed writing instructions will be furnished to the authors together with the letter confirming paper acceptance.

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The international community still has not reached a global agreement on reducing the greenhouse emissions to acceptable levels in the period after 2012. According to the estimates of the Intergovernmental Panel on Climate Change, by 2020 the developed countries should reduce their anthropogenic greenhouse emissions by 25-40 per cent in relation to the 1990 level. Until 2050 total global GHG emissions should be reduced to at least 50 per cent, while the developing countries should make efforts to decrease the emissions by as much as 80-95 per cent. The global reduction of anthropogenic GHG emissions by at least 50 per cent by 2050 is a prerequisite for an optimistic scenario devised by IPCC, which envisages the stabilisation of GHG concentration at 450 ppm as well as the rise of average temperature of about 2ºC until the year 2100 from the 2000 level. If the global GHG emissions continue to grow, the GHG concentration could reach as much as 1000 ppm in 2100, while temperature could rise by as much as 6ºC, which can have far-reaching consequences on the climate.

Reducing emissions of CO_2 and of other greenhouse gases by at least 80 per cent from the 1990 level is a strategic goal of the European Union as it has been presented in the document EU-Roadmap 2050. The concept of development of the energy sector which would be practically CO_2 emission-free is set to change the setting and the structure of the energy sector as such, along its whole technological chain, from production and choice of primary energy forms to transmission/transport, distribution and use of energy.

Such a concept of the energy sector opens the following questions:

- Is it realistic to achieve the reduction in CO_2 and other GHG emissions by at least 80 per cent by 2050 with the current technological solutions or are some new technological solutions being expected?
- In terms of fulfilment of customers' needs for energy, is it possible to ensure the current security of supply and customers' comfort?
- What price the energy buyers would have to pay? Of course, when it comes to the issue of energy prices, the discussion is not about whether it is more economical to endanger the climate than to change our production and use of energy. However, the way such changes may influence energy prices is essential in understanding their consequences on economic development and on social and individual standard of living.
- Will domestic industry, science and services take part in these developments or it will be just a new cost which will not bring any added value to the national economy?

How to achieve these goals in the conditions of actual functioning of the energy system and its subsystems, without compromising the customers' security of supply with any measures that might be necessary. The entire endeavour can be compared to an open heart surgery, with that difference, of course, that the CO_2 emission reduction operation would take several decades. Presently, in the foreground is the rational approach to energy consumption and energy efficiency increase in all their dimensions. While technological development and legislation standards will deal with the issue of

new consumers and appliances, the biggest challenge in financial, legislative and organizational terms will be to enhance energy performance of the existing buildings.
A particular challenge is substituting fossil fuels with renewable energy sources and addressing the issue of CO_2 emission by application of new technologies, primarily with carbon capture and storage and nuclear energy.

The questions that still await the answers are the following:

- What are potential impacts of renewable energy sources, taking into account the characteristics of their production and their high dependence on climate conditions, including the issues such as operation planning, balancing production, engagement of other power plants in maintaining balances, technological advances, etc.?
- What possibilities do fossil fuels offer during and at the end of the CO_2 emission mitigation process as well as in the period of rising energy needs from the emerging countries, and what influence may new technologies have on fossil fuels consumption?
- Will the ambitious goals to mitigate CO_2 emissions trigger new research and development in the field of nuclear energy, especially the security aspect?

The current development of renewable energy sources is based on their preferential position and price. At the same time, the concept of open market for gas, electricity and heat is being built up and developed legally and institutionally. Basically, these are two opposite concepts because with increasing a market share the market volume is shrinking. The choice for tackling this question of the opposition between a preferential-based share and market-based is either by:

- Introducing the obligation of solving the issue of CO_2 emission from fossil fuels and eliminating any kind of protectionism and preferential position in the frame of open market, or by
- Continuous enlarging the regulated segment in the renewable energy sector and by introducing regulation in the fossil fuels sector as well, in cases of new CSS technologies being used.

The introduction of smart grids and distributed generation will change the concepts of network development, management and security. The question is how to put everything in line, keeping at the same time the clear responsibility for security of supply.
Defining parallel politics, utilization of renewable energy sources, efficiency, markets, intelligence networks, security issues may bring to a standstill all the changes and will not bring the expected results if they are not concerted and their inter-relations and effects properly understood.