

Sustainable and Realistic Commitments for the Supply of Energy

by

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Abstract:

As it is anticipated that the world population will reach 9.1 billion in 2050, with more and more people residing in cities and megapoles, the supply of energy stands as a major issue for the next decades due to the depletion of fossil resources and to the constantly increasing demand from developed and developing countries. Ethical and environmental constraints, including the climate change issue to be addressed, must now and always be taken into consideration, notwithstanding the profitability of financial investments. The concept presently privileged within that respect is called “Energy Mix”. It acknowledges the diversity of needs and resources depending on the geographical, social, financial and political context and therefore, at the same time, calls for a “low carbon economy” through renewable resources including the recourse to nuclear energy, while being aware that fossil fuels will continue to be an essential component of the Energy Mix in many countries, at least in the medium term. This leads to sustainable and realistic commitments in the energy field for the next decades, which are also concerned with reducing energy use. They imply new trends of research in mechanics ranging from climate change modelling to material science through aerodynamics, rock mechanics, civil and structure engineering, etc., in the short term and long term analyses that are necessary for the social acceptability of some proposed solutions such as Carbon Capture and Storage (CCS), wind power, tidal and sea-current energy, and the new generation of nuclear reactors. Apart from the recognized necessity of developing smart energy grids, efficient and high capacity energy storage—chemical, mechanical or electrical—is an ever pending issue in order to cope with the intermittency of renewable energies and to render them more dependable. In consideration of the global relevance of the problem, research and capacity building stand as commitments to be handled at the international level.



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