



3rd INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD”

The Nuclear Option to Contribute to a Cleaner and Sustainable Production of Electricity

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Abstract

The integration and economic balance, environmental and social concerns are fundamental to the preservation of human life on Earth. For achieving these goals we must take a fresh look at how to produce, consume, live, work and relate with people. The concept is revolutionary, and like all original ideas, leverage heated debates between governments and citizens on how to achieve this sustainability.

Access and absolute amount of energy used per capita, especially electricity, are essential for human development and for the delicate equation of sustainability. Globally, electricity generation should increase by around 80% over the next 20 years, with heavy dependence on fossil fuels (coal and natural gas). This dependence contrasts with the need to reduce emission of greenhouse gases. Electricity generation is responsible for 41% of emissions of greenhouse gases and this share has increased steadily, growing from 36% in 1990 to 39% in 2000, and continues to grow in the projections of the International Energy Agency - IEA to 44% in 2020 and 45% in 2030. A course correction is urgent to prevent further environmental issue. Assessments prepared by IEA as subsidy to the discussions at COP-15, indicate that correcting this trend is necessary to reduce the intensity of CO₂ emissions by 21% compared to 2007.

Producing electricity from clean and sustainable manner while promoting social inclusion, rising its offer, it is an equation of increasing complexity in which is not always the socio-economic costs and environmental impacts are possible to be equalized. In this scenario, the nuclear option back on the agenda of various countries, due its favourable environmental aspect regarding the generation of greenhouse gases, and is the only source of electricity production on a large scale that is fully liable for the costs of decommissioning of its facilities and the management and disposal of waste generated.

From an economic standpoint, even with all costs included in the price charged to consumers, nuclear-generation is economically competitive with other forms of electricity generation, except where there is direct access to fossil fuels of low cost . This competitiveness can be changed significantly if financial penalties from greenhouse gases emissions be added to fossil fuel plants.

In this paper we discuss the contribution of the nuclear option as a support for continuous and sustainable development, as well as aspects related to operational safety, radioactive waste management, the mechanisms that prevent the diversion of nuclear materials for use in reactors for military purposes, the horizon of use permitted by uranium reserves and the status of this option in the Brazilian scenario.

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