



## INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

"KEY ELEMENTS FOR A SUSTAINABLE WORLD: ENERGY, WATER AND CLIMATE CHANGE"

# Obstacles for Brazil's Consolidation in Cleaner and Renewable Energy Production

Giuliana Aparecida Santini <sup>a</sup>, Leonardo de Barros Pinto <sup>b</sup>

a. Universidade Estadual Paulista/ Campus Experimental de Tupã, São Paulo, [gjusantini@tupa.unesp.br](mailto:gjusantini@tupa.unesp.br)

b. Universidade Estadual Paulista/ Campus Experimental de Tupã, São Paulo, [leonardo@tupa.unesp.br](mailto:leonardo@tupa.unesp.br)

---

### Abstract

The discussions concerning the use of natural resources (the ways they are explored and their possibility of being lack) have intensified. Considering it from a historical view, several meetings have been conducted worldwide and were important to consolidate the notions related to Sustainable Development and Cleaner Production. In the first case (Sustainable Development), the concept was affirmed in the 1970s and 1980s, with the concern that the present development would not jeopardize the future generations development. Also to complement this idea, the Cleaner Production notion starts to rise in the following decades trying to improve the country's efficiency in productive aspects, mainly in the use of raw material, water and energy, aiming the generation of economic and environmental benefits in the production process.

From this context emerges the growing need for countries to produce technologies which would bring (not only) the economic benefits of production (which was the main concern then), but the social and environmental aspects as well, showing the concern with sustainable development of future social structures. In Brazil, especially, the alignment with this new development paradigm has been applied in energy production.

The sugar / alcohol sector, by producing and processing the sugar cane, contributes to the clean and sustainable production of technologies: ethanol (as fuel) and the energy from biomass – using the sugar cane bagasse. The advantages of the use of ethanol compared to other energy use (fossil and from other vegetable crops) are mainly economic and environmental ones, besides providing a greater energy balance. Another favorable aspect in using the sugar cane bagasse to produce energy is the fact that Brazil has great natural richness, topography and favorable physical features to agriculture, which would reduce the exploration of scarce hydric and fossil resources.

However, it is necessary to underline the obstacles that make the sustainable production difficult. Thus, this article aims to discuss the problems, which are found inside and outside the country and which makes the country consolidation difficult as an important world producer of clean energy, as well as the strengthening of these productive activities. As for the ethanol, there are some politic-economic, environmental and social problems that must be solved, like the protectionist measures established by importers; the effective reduction of polluting gases by adopting more efficient productive processes; working conditions and wages for the sugar cane activity. As for producing electricity from sugar cane, there are some legal obstacles related to the regulation of the sector. Thus, some efforts are necessary to make this consolidation possible, by adopting public policies that ensure the investments made so far, considering the local and global markets; better organization management; the definition of areas used in sugar cane exploration, etc. Surely, sugar cane activity is a promising business, though promoting a sector development by damaging the development of others, might be a mistake.

*Keywords: sustentability; renewable; sugar cane; ethanol; energy.*

---

KEY ELEMENTS FOR A SUSTAINABLE WORLD: ENERGY, WATER AND CLIMATE CHANGE

São Paulo – Brazil – May 20<sup>th</sup>-22<sup>nd</sup> - 2009