

Thematic Session 3

The challenge of renewable energies: a debate about innovation policy

The world energy matrix is changing. Although fossil fuels remain the main vector of energy generation, renewable energies are sharply growing worldwide, encouraged by reservations related both to energy security and global warming hazard. Renewable energies hold out many technological innovation opportunities, with a high potential of cost reduction. In some less developed countries, renewables can be used as an alternative to provide access to energy sources in remote areas of the country, contributing to social inclusion and combating poverty.

The development of wind energy, for example, represents an immense potential for social inclusion in Brazil. Almost all area used for a wind farm can be used for other purposes such as agricultural activities. The development of wind farms in Brazil has been a stimulus for regulation of land property and has represented an increase in the income of small farmers that leased part of his property for the owners of wind farms.

In addition, the development of wind energy provides the opportunity for reduction of regional disparities. Winds in Brazil are mainly located in a historically excluded region of the country: the Northeast. By 2013, it is estimated that approximately \$ 15 billion will be invested to development of wind farms in the Northeast with the generation of six thousand direct and indirect jobs. Therefore, the development of wind energy is a possibility to bring high levels of investments to the Northeast of Brazil and to contribute to social inclusion.

The development of wind energy also has the potential to develop the industry of wind power equipment and services related. The characteristics of policies and its instruments are the main determinant in domestic industrial growth. Thus, the strengthening of productive capacities related to the production chain and supporting processes brings several challenges for public policy. Thus, the question arises: have wind energy been included in the agenda of political science, technology and innovation? Have the adopted instruments of incentives enabled the development and increased competitiveness of wind energy?

The case of wind energy is an example of the potential associated with the development of renewable energy and the relevance of public policy development to enable their development. Other renewable energy sources like solar and biomass also have a high potential for technological development and social inclusion. Notwithstanding the Proálcool technological advances, the bioenergy sector still faces important technological paths for its development in Brazil. Ethanol, biodiesel, the sugarcane diesel (developed by Amyris), the cellulosic ethanol and the cogeneration of the bagass and the straw all represent key opportunities for innovation.

The objective of this thematic session is threefold: i) analyse the role of the national system of innovation to the upgrading of renewable energy sources competitiveness; ii) identify the opportunities to renewable energy sources innovation; and iii) assess the policies that are being adopted to foster this kind of innovation.

Guiding Questions:

1. Have the policies (and their instruments) designed to renewable energies been efficient to promoting innovation in the sector?
2. What are the Brazilian main challenges in renewable energy? Are they technical or economical?
3. How can developing countries promote the strengthening of renewable energies to foster national industrial development? Which kind of policy is necessary?
4. Which natural resources and which technological paths should be prioritized?
5. How the development of renewable energy alternatives can be used to contribute to the government's aim to fight poverty and promote social inclusion in the country?