

TECHNOLOGY MIX IN THE BRAZILIAN ELECTRICITY SECTOR

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Overview

The technology mix is a crucial aspect to confer supply security to electricity systems. It is a main challenge to electricity sector reforms, which liberalized this market. In Brazil it reaches special features due the large share of hydroelectricity in the generating mix and the power rationing of 2001/02. The central goal of the second reform of the Brazilian electricity initiated in 2004 is to avoid a new electricity supply crisis. The wholesale power market was radically modified and new institutions were developed. The most important instrument to promote an adequate generating mix in the new electricity model is the auctions for new generating capacity. Since 2005, four auctions were carried out. The paper presents the institutional arrangement of the two reforms of the Brazilian electricity sector and analyzes the results of those energy auctions, evaluating their impact on the future generating mix and security of supply.

Methods

The analysis is based on the generating mix that results of the four new energy auctions carried by the Brazilian government since 2005. The authors use a computer model that simulates supply and demand balance in the Brazilian electricity system for the next three years to estimate energy prices and supply security.

Results

The energy auctions resulted in a generating capacity expansion concentrated in oil fuelled power plants. We estimate that the risk of an electricity deficit will be lower than 5% until 2010, what is the official benchmark for energy planning in Brazil. However, the price of electricity will rise substantially in the coming years. In a case of a dry period, the high operational cost of oil power plants will boost the prices.

Conclusions

To avoid a new power rationing, the Brazilian government took back the planning of the sector and drastically altered the wholesale market, where the new power auctions are the main piece. The four auctions carried out implicated in a low risk of an electricity deficit but the Brazilian electricity consumers will pay a huge bill for that. Facing barriers to develop competitive power sources (hydro and natural gas); the generating mix resulting from the auctions is costly and clearly inadequate.

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