Distributed Power Generation in São Paulo – impacts on the tariffs and cross-subsidy

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Overview

Given the shortage of resources, the growing demand for electricity and the major impacts energy has over climate change, the promotion of renewable energy is understood as a main key to overcome this issues under a sustainble prospect. On this regard, distributed energy generation in Brazil is presented as an important achievement since it allows people to generate their own energy while promoting solar, wind and hydro power generation and, thus, encouraging the development of the incipient renewable energy market in the country. Regulated since the publication of the normative resolution 482 by the National Agency of Electrical Energy (ANEEL), some issues have been identified as more people started investing in solar energy (which accounts for around 99% of the number of projects developed in their country). One particular issue arise from the tariff framework in Brazil: because some fixed costs are paid by kWh consumed, some argue that a cross-subsidy among final consumers has been established since the regulation of the practice. Given the high investment required to generate one's own electricity, it could be inferred, if correct such assumption, that those who cannot afford to invest in renewable energy generation are in a way subsidysing others' investments. This paper aims to address this matter in order to promote a deeper understanding over the limitations and potentialities of distributed power generation in Brazil.

Methods

In order to address the issue of cross-subsidy under the distributed energy generation regulatory framework in Brazil, given that there are significant differences between utilities and different diffusion trends in what concerns investments in renewable energy projects in the country, data from the utility "Eletropaulo" was assessed by the paper. Firstly, the paper aimed to investigate the diffusion of distributed energy projects under the concession area of the utility in order to observe the pace of expansion of residential renewable energy projects. Secondly, the paper focused in analysing electricity tariffs' composition in Brazil and the pricing fluctuation in Eletropaulo. Finally, given the verification of rebewable distributed energy generation status in the area and the tariffs' pricing framework in Brazil, the paper indicated how is that generating energy while still connected to the grid may affect others' final clients so that it became possible to verify whether in a short or long term the impacts that or not be significant.

Results

Based on the composition of one's electricity tariff under Eletropaulo concession area and given the Brazilian regulatory framework, the paper provides significant evidences that mainly because of the fixed cost regarding tranportation, distribution and taxes paid per kWh consumed, there is a cross-subsidy paid by all final consumers supporting distributed energy generation in Brazil. Although in a short term such cross-subsidy does not represent a major impact in one's electricity tariff, given the fast pace distributed energy generation is spreading and penetrating power distribution as observed in the paper, in a long term it may considerably affect electricity tariff and overcharge those who cannot invest in generating their own electricity.

Conclusions

Given the results presented, the paper indicates that, in order to guarantee a sustainable movement towards a more descentralized and renewable electricity mix, it would be necessary to rethink alternatives to overcome the issue of cross-subsidy.

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