Who is the good neighbour?
A simulation approach to market integration between Colombia and Ecuador

Our aim is to improve the understanding of the implications of Market Coupling on the long term electricity supply, and on the effect of policies aimed at guaranteeing security of supply. We develop a simulation model that allows us to analyse the evolution of two neighbouring countries under different scenarios of interconnection and different policies regarding the implementation of capacity payments. The analysis is focused on the particular case of Colombia and Ecuador, which have been trading electricity for more than a decade, and offer an interesting case study given their complementary hydropower supply.

Effect of Interconnection

The effect of the interconnector capacity on generation investments is non-monotonic. While integration may indeed bring benefits in terms of lower supply costs and better use of resources, these benefits are highly dependent on the degree of interconnection and differ across countries, depending among other things on their relative size.

Effect of Capacity Payments

There may be a trade-off between lower prices and independence from the neighbouring country. The regulator may thus decide to implement capacity payments to guarantee a certain level of national capacity margin, but these may lead to counterintuitive and undesirable outcomes.

Conclusions

Electricity market integration may indeed bring benefits in terms of lower supply costs and better use of resources; however, these benefits are highly dependent on the degree of interconnection and vary from one country to another. The outcome of a capacity payment mechanism depends on the degree of interconnection as well as on the policies implemented by the neighboring country. The result may be counterintuitive and undesirable. The main recommendation to draw from this study is that although the limited need for market harmonization is generally presented as an advantage of the market coupling mechanism, coordination is crucial for its success. Even if technically not necessary, the lack of coordination in the implementation of policies and in market design in general may lead to undesirable outcomes and situations where one country obtains benefits at the expense of the other.