

# ***CAN ELECTRICITY RENTS EXTEND BELGIUM'S NUCLEAR POWER LIFE?***

Aviel Verbruggen, University of Antwerp,  
Prinsstraat 13, BE2000 Antwerp, Belgium  
+32 476 888 239, [aviel.verbruggen@ua.ac.be](mailto:aviel.verbruggen@ua.ac.be)

## **Overview.**

Goal and scope: the goal of the article is to provide information and insight in the development of the nuclear power sector in Belgium. In that context is described the debate on the definition and height of electricity rents, in the context called “nuclear rents”. Several proposals about sharing the rents between the power industry and the public treasury are on the table. They have a different impact on the likelihood of life extension of the seven nuclear plants operational at present in Belgium.

The contribution consists of two main parts.

In part I the history, growth and actual state of the nuclear power generation sector in Belgium is described. Belgium is a small country but already in 1952 it started exploring and developing nuclear technology. The country aimed at a full coverage of the nuclear cycle, but experienced that the scale of nuclear activities was beyond its carrying capacity. In 1962 it demonstrated as first in Europe the PWR reactor by a 11 MW pilot plant. It joined France in a fast up-scaling of nuclear power plants: Chooz A, 305 MW, opened in 1967; Doel I & II, 400 MW each, were started in 1974/75; Tihange I, 950 MW in 1976; Doel III & IV, Tihange II & III of the 1000MWe size class in 1984/85). By reduced demand growth after the oil crisis (1973, 1979) and by the accidents in TMI and Chernobyl ambitious expansion plans for series building of 1300MWe plants were shelved. The output and expense performance of the Belgian nuclear plants has been excellent up to present; no major accidents happened.

The two owners of the Belgian nuclear plants are now French companies (GDF-SUEZ-ELECTRABEL and EDF-SPE), and want to continue nuclear power generation for unlimited time. However, in 2003 Belgium enacted a law imposing the end of nuclear power generation when a reactor has served for 40 years. This law is contested but not yet changed, what does not block the nuclear companies to continue business-as-usual (for example replacing in 2009 the steam generators of Doel I, a unit normally to end production by 2015).

While describing briefly the nuclear sector in Belgium, insight will be given in the institutional and regulatory context from a historical viewpoint for a better understanding of the present situation and ongoing debate.

In part II the discussion about the height and the sharing (between the nuclear sector and the treasury) of the “nuclear rents” is described and analyzed. Next to the power company Electrabel, established public institutes (the federal regulator CREG, the study department of the National Bank of Belgium) have delivered opinions and assessments of the amounts of nuclear rents that deviated significantly from one another. The differences are due to terminology (how to define “nuclear rents?”), and to methodology (how measuring what is labeled as nuclear rents?). Nuclear power is part of integrated power generation systems, and like any other kWh once it entered the grid no longer discernable of any other kWh maintaining the current flowing. Electricity is sold to end-users by a variety of sellers through a variety of contracts, for example: some power passes the power exchanges, a lot of bulk power is delivered via direct bilateral contracting, and some power deliveries are in several EU countries still firmly regulated by public authorities. This complicates to find out what the actual price of sold nuclear power is. This price is where nuclear generation costs are subtracted from to assess the “nuclear rents”. When however set in a broader economics cost framework this simple definition is complicated further.

The paper will provide an overview of the debate from a perspective of theoretical and practical electricity economics.

## **Methods**

Two parcels of economic analysis underpin the paper. First, the contribution refers to political and regulatory economics to sketch the history, development and expectations about the future of nuclear power generation in Belgium. Second, the explorative analysis and evaluation of the definitions of the term “rents” in general, and of “nuclear rents” in particular. The methodologies employed in assessing

the height of nuclear rents are reviewed. This analysis builds on the theory and practice of electricity economics.

## Results

The results about the future of nuclear power production in Belgium are not numerical and the qualitative findings mostly have to be expressed in conditional terms. Their strength depends on the clarity and accuracy of assessing the historical and present record of the nuclear activities in Belgium. The analysis of the nuclear rents adds to a more complete and more accurate understanding of what rents really cover, in particular what nuclear rents could mean and how they could be quantified.

## Conclusions

While Fukushima is an extraordinary catastrophe, the impact on the European nuclear activities depends more on the member states evolution during the last years (decades) than the sheer size of the catastrophe. A country that heavily invested in the nuclear option cannot be expected to change course overnight. In Belgium the interests and the visions are widely dispersed. This combined with the opaque regulatory environment, the future of the nuclear sector shifts from bright to doom, forth and back. The assessment of the height of the nuclear rents and the debate on their appropriation (private generators or public treasury) has attracted most attention, even obscuring the fundamental question of how to obtain the necessary electric power in the future.

## References

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