

# **Natural monopolies: the case of Romania's distribution network**

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*Meet Andrei and Radu. They are two Romanian young professionals, both under 30, who live in Bucharest. Every day, for the past years, they took the subway to get to work.*

*A few years ago, the local regulatory authority and other competent bodies decided to allow the construction (by a private company) of a new parallel subway railroad. Now, there are two ways for them to get from their homes to work by subway. Radu prefers the old line, because he believes the trains come more often. On the other hand, Andrei prefers the new line, because in his opinion, there are more seats available. But they are paying considerably more per fare. This happens because for each subway line the high (fixed) infrastructure costs are now split between fewer customers. Now, they pay much more for a one-way ticket, which means Bucharest is, by average income, in the top 15 most expensive cities when it comes to subway fares.<sup>1</sup>*

*Lots of people have troubles being able to pay for their transport fares, so a large share of customers have switched to walking or biking to their work places, reducing even more the group of subway paying travelers and thus leading to a further increase of fares.*

Though the above story is fictional, a similar situation can occur when it comes to natural monopolies on electric grids.

First things first:

## **Natural monopolies: the concept**

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<sup>1</sup> Hopes&Fears (March 2015), *City Index – What are the subway fares around the world?*, [Link](#)

*“A natural monopoly exists when economies of scale are so substantial that a single firm can produce total business output at a lower unit cost, and thus more efficiently than two or more firms”<sup>2</sup>*

In Romania, a number of industrial sectors that serve the public interest are strictly regulated – natural gas, railroad or electricity systems, to name a few. As such, for the local energy sector, and particularly for electricity, the transmission and distribution services are regulated as “natural monopolies”. Conceptually, this is explained through reasons of public interest: assuming a context of fragile and inefficient markets, the regulatory body represents society’s interest.<sup>3</sup> In this approach, natural monopolies, as single suppliers, are seen as lowering product costs<sup>4</sup>. In other words, a company that is alone in a sector can focus its investment on the long term, which will lower the costs, while competition in such a sector would generate wasteful investment.<sup>5</sup> Simply put, “in some industries, average costs are minimized when production is concentrated within a single firm”.<sup>6</sup>

Academically, natural monopolies are analyzed as excludable but not rival goods. The underlying logic is that without competition only one competitor would survive and thus generate a monopoly over that particular good. Furthermore, the state regulates the existence of natural monopolies in order to prevent private entities from going into limiting supply under the incentive of charging a price that is much higher than its costs<sup>7</sup>.

In the particular case where privately owned companies were granted specific licenses to operate a distribution network, this is legally defined as a *public franchise*: “a right granted to a firm by government that permits the firm to provide a particular good or service and that excludes all others from doing the same”<sup>8</sup>.

## **Energy distribution as a natural monopoly**

*“Since the DNOs are natural monopolies, they are regulated by us to protect consumers from potential abuse of monopoly power” (OFGEM)<sup>9</sup>*

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<sup>2</sup> Sherer, F. M. (1980), *Industrial Market Structure and Economic Performance*, *apud* United Nations’ *DESA Discussion Paper* no. 8 (1999)

<sup>3</sup> Posner, R. (1974), “Theories of economic regulation,” in *The Bell Journal of Economics and Management Science*, Vol. 5, No. 2

<sup>4</sup> Kahn, A. (1991), *The Economics of Regulation: Principles and Institutions*, p. 11

<sup>5</sup> Sharkey, W. (1982) *The theory of natural monopoly*

<sup>6</sup> Tirole, Jean (2014), „Market Power and Regulation,” Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2014, compiled by the Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences

<sup>7</sup> Gunning, Patrick (1998), *Understanding Democracy: An Introduction to Public Choice*

<sup>8</sup> Arnold, Roger A. (2008), *Macroeconomics*, p. 224

<sup>9</sup> OFGEM, *The GB electricity distribution network*, [Link](#)

Expanding on the above mentioned reasons, it is worth looking in more detail at them from the perspective of the energy system. Under the assumption of a parallel electrical grid for distribution or transport, customers' bills will not be lowered – on the contrary. If two high-cost investments, the old and the new distribution systems, are to be split between fewer paying customers per system (some may choose to remain with the former distributor, while others may switch to the new one), both bills will increase dramatically.

First, a distribution operator develops and maintains the equipment that transforms the power supply to the type that meets customers' needs. Second, the distribution operator meters the amount of energy the customer uses. For all these activities, the national regulator sets the price through specific orders, with distribution costs coming to about 30% of the bill. Third, distribution operators make a long-term, strategic investment commitment when bidding for distribution licenses, investments that are monitored yearly.<sup>10</sup>

To avoid monopolistic behavior, industries such as energy distribution are highly regulated, so as to maintain a balance between the incentives granted to DSOs for efficiency and the costs reduction for customers. In order to do that, the regulator must fully understand the DSOs' costs, their structure and the mechanisms attached to this business.

The highly regulated environment is, basically, an economic instrument that can generate „quasi-competition” in regional natural monopolies, to determine them to aim for efficiency and quality.<sup>11</sup>

To sum up, the main arguments why competition in the energy sector is only possible in the generation and supply segments of the value chain, and not in transmission and distribution ones (which continue to remain regulated) are the following:

- **Efficiency** – Two or more electrical grids will be less efficient than having just one, mostly due to high upfront costs, this being the reason why no significant case of such competition has been recorded in the industrialized world. Competition drives prices down in any market, except for those that are defined as “natural monopolies.” For this precise reason, these activities are fully regulated and government authorities establish the incentives for an efficient operation.
- **Public service** – A natural monopoly in this sector comes with high obligations and requirements. Since the distribution of electricity is a public service, it is mandatory for this service to be available to virtually all those that need it. Therefore, a distribution operator cannot choose between a customer in a densely

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<sup>10</sup> As an example, the status of the investments made by the Romanian distribution operators for 2014-2015 can be consulted here: [Link](#)

<sup>11</sup> Fichert, F., J. Haucap și K. Rommel (eds.) (2007), *Competition Policy in Network Industries*

populated city, for which costs of maintenance are low and consumption is high, and one that lives in a remote area, and whom it makes little business sense to serve. Thus, **cherry-picking** the regions where it is profitable to provide the distribution service is neither desirable, nor sustainable from an economic and social point of view.

- **Affordability** – If investments are made to duplicate grids, consumers will ultimately pay more for the same service. In Romania, the cost of energy (electricity or gas) represents a high share of people’s income. This renders such investments neither affordable, nor reasonable for consumers. Moreover, if an alternative distribution service can, indeed, be provided at lower costs to customers in densely populated areas, it means that investments already in place, made by the incumbent distribution operator, will have to be borne by those clients that are more disadvantaged, thus increasing inequity.
- **Technology** – The world is changing at a fast pace, set by the technological evolution. Not far from now the role of distribution will change dramatically. The new trends involving digital networks (smart grids, prosumers, storage etc.) or other disruptive technologies are part of the Energy Union’s agenda. These are the main objectives that the authorities have to promote and incentivize, and they require major investments. Thus, resources should be well directed towards the modernization of existing grids which, in conjunction with smart and rigorous regulation, can ensure a smooth transition to the new energy model.
- **Reliability** – When the privatization of distribution systems took place, the criteria for choosing the right companies were set by the Government, so as to ensure a high degree of reliability. Electricity distribution and transportation require advanced technical specialization for efficient operation, while maintaining a high standard of safety. This is the reason why reputable international companies did join the tender auction for regional distribution systems, as well as the reason why this sector should continue to be highly regulated, ensuring an adequate level of specialization.

## Conclusion

“Natural monopolies” made the subject of numerous academic analyses, with numerous scholarly perspectives touching upon the subject. Policy makers have also been concerned with this issue, especially to optimally organize critical industries.

Taking into consideration the aforementioned issues regarding efficiency, affordability, reliability, analyzing the technological progress, and also considering the need to avoid cherry-picking practices when it comes to electrical networks, the

construction of parallel grids in the energy sector is not at all an efficient and productive scenario.

Even if riding a bike to work would be a more environmentally friendly alternative, Andrei and Radu still prefer to take the subway on the same old line.

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