

The energy companies: Green is making them see red

By [Sarah Guillou](#) and [Evens Salies](#) [1]

Does the common energy market unduly favour renewable energy sources (“renewables”)? This is the opinion of the [nine energy companies that appeared before the European Parliament](#) in September. According to them, meeting the target of having 20% of final energy consumption in the EU come from renewable sources by 2020 would have a negative impact on the electric energy sector, and in particular could harm both the energy companies’ financial results and the security of the electricity supply. There is no denying that since the late 1990s the EU has conducted a very active policy promoting RES in this field. The European Commission (EC) has made numerous suggestions to the Member States about ways to meet the 20% target (see [Directive](#) 2009/28/EC), including guaranteed purchase prices for electricity produced from renewable energy sources, tax credits, etc. Moreover, in 2011 this set of measures has enabled the EU-27 to hit a level of 22% of electricity generated from renewables, hydroelectricity included ([Eurelectric, 2012](#)) [2].

How does this policy hurt the historical producers or threaten the security of the supply? Let’s look at a few stylized facts about the consumption and management of electricity production. Average consumption is lower at night (“base” period) than in the daytime when it experiences a peak or two (periods called “spikes”). As electricity is not storable, the least expensive way to meet the base-to-peak transition is to draw on power plants according to their “order of merit”. A producer using several sources of energy then calls on them in order from the least flexible (slow start-up, low marginal cost) to the most flexible (fast start-up, high marginal cost). In theory, the stack is/was: nuclear-coal for the base

period, nuclear-coal-gas for the peak period [\[3\]](#). It is during peak demand, when the wholesale price can soar, that producers earn the most money. The production of RES plants is in turn contingent on the vagaries of the weather (“intermittent”): these plants produce only when the associated primary resource (wind, sun, etc.) is sufficient; they are then prioritized for meeting electricity consumption.

The integration of RES into the generation fleet changes the merit order. The stack above becomes wind-nuclear-coal for the base, and wind-nuclear-coal-gas at peak, with wind substituting for some uranium, coal and gas. Given that for RES plants the marginal cost of production is close to zero, their integration in the energy mix, however minimal, reduces the average price on the wholesale markets. As a result, with the integration of RES, fossil fuel plants are less well paid. As for the RES plants, they always enjoy a guaranteed purchase price (in France, 8.2 c€/kWh for wind and between 8 and 32 c€/kWh for solar, etc.) [\[4\]](#). The loss in earnings is greatest during periods of peak demand. Producers have less incentive to invest in the construction of fossil fuel power plants, whose output is nevertheless needed during these periods. Hence the risk to the security of supply: with the gap between available capacity and peak demand potentially reduced, there is a greater risk that the real gap between output and consumption becomes negative.

One possible solution is the creation of a “market for capacity”. In this market, making the output capacity of a power plant available well in advance would be remunerated, even if there is no actual output. The nine energy companies considered this kind of market as interesting, insofar as they are equipped with gas power plants and / or are sellers of gas, which is what is demanded in peak periods. In France, the [NOME Law](#) of 2010 provides for the establishment of such a market at the end of 2015.

It is also worth noting that since a substantial share of

fossil fuel plants are not at the end of their physical life, the integration of RES is adding capacity to a European market for electricity that is already characterized by overcapacity. This is now being exacerbated by the economic crisis, which is hitting energy demand. This mainly concerns gas plants that already face stiff competition from coal-fired plants, which have become more profitable since the import of surplus US coal, which has been supplanted by shale gas. The excess supply is, however, helping to contain electricity prices.

In the end, the hearing involving the nine energy providers in the European Parliament reveals two major difficulties facing any energy transition policy. The first is the cost of adjusting to the new energy mix. The energy companies are, like these nine, complaining (rightly) that this cost is jeopardizing their profitability and that in order to cope some of them will be forced to close or even dismantle production sites ([Eon in Germany](#)). The consumers, for their part, are financing among other things the obligation to buy electricity – in France, through the contribution to the public electricity service ([700 million euros in 2010](#)). The cost of adjusting is inevitable and even necessary to the adjustment: it is because the providers have to bear an additional cost that they will change their energy portfolio. The second problem comes down to a single question: how can support for RES be reconciled with a secure supply? While energy policy is contributing to a genuine improvement in air quality, it still seems ineffective in managing the security of supply, which is nevertheless a public good.

The EC is moving toward cooperative solutions. As in the case of the coordinated development of the interconnection of the national transport networks, led by the network managers, it is considering the feasibility of a [common market for the exchange of electricity generation capacity](#). The EC would also like the Member states to coordinate the setting of guaranteed purchase prices. These rates could in practice create a

windfall, especially for equipment makers (see [Guillou, S., 2013, Le crépuscule de l'industrie solaire, idole des gouvernements, Note de l'OFCE No. 32](#)) [Guillou, S., 2013, "The twilight of the solar industry, the darling of governments", OFCE Note 32]. What remains is to find ways to facilitate the coordinated management of the security of the EU's electricity supply, while making room for RES. The hearing of the energy providers in the European Parliament should lead to a more general consideration of the security of supplies in the EU with respect to all sources of energy.

[\[1\]](#) We would like to thank Dominique Finon, Céline Hiroux and Sandrine Selosse. Any error is, however, our own responsibility.

[\[2\]](#) The figure of 20% covers a number of sectors, beyond just the electrical energy sector.

[\[3\]](#) This principle was especially true before the liberalization of the wholesale markets, at a time when a vertically integrated producer decided which power plants to start to meet national demand.

[\[4\]](#) Guaranteed purchase prices were introduced so that the technology for producing electricity from renewable energy sources, which was not yet mature, was not put at a disadvantage.

Tales from EDF

By [Evens Salies^a](#)

The challenge facing policy-making on the reduction of greenhouse gas emissions is not just environmental. It is also necessary to [stimulate innovation, a factor in economic growth](#). Measures to improve energy efficiency [\[1\]](#) demand high levels of investment to transform the electricity network into a [smart grid](#). To this end, EU Member States have until 2020 to replace the meters of at least 80% of their customers in the residential and commercial sectors with “smarter” meters. In France, these two sectors account for 99% of the sites connected to the low-voltage grid (< 36 kVA), or about 43% of electricity consumption and nearly 25% of greenhouse gas emissions (without taking into account emissions from the production of the electrical power that supplies these sites).

These new meters have features which, as has been shown by research, lead to lower energy consumption. The [remote reading](#) at 10 minute intervals of data on consumption, which is transmitted in real time to a remote display (a computer screen, etc.), immediately shows the savings in electricity, which, with two surveys per year, was previously impossible. High-frequency remote reading also makes it possible to expand the range of vendor contracts to include rates that are better suited to customers’ actual consumption profiles. The “pilot” flying the transmission network can better optimize the balance between demand and a supply system that has fragmented due to the growing number of small independent producers. For distributors [\[2\]](#), remote reading solves the problem of gaining access to meters [\[3\]](#).

These features are supposed to create the conditions for the emergence of a market for demand-side management (DSM) that is complementary to the supply market. This market would give non-traditional [suppliers](#) an opportunity to differentiate

themselves further by offering services that are tailored to the needs of the DSM customer [\[4\]](#). This could lead to significant gains in innovation if other companies that specialize in information and communication technology also develop software applications that are adapted to the use of the smart meters. However, in France, the policy on the roll-out of smart meters does not seem to be facilitating greater competition. Innovation could stop at the meter due to a [decision](#) by the French Regulatory Commission (CRE) which states that:

“The features of advanced metering systems must strictly meet the missions of the electricity [distributors] ... Thus the additional features requested by some stakeholders [essentially suppliers] which are subject to competition (basically remote displays) are not accepted.”

A reading of this paragraph would seem to indicate that the suppliers are not willing to bear the cost of developing these features. However, according to Article 4 of this decision, which specifies the list of features for distributors, none of them seems to have been left exclusively to the competitive sector. In practice, households with a computer can check their consumption data without going through their provider or a third party.

It is worth considering the costs and benefits of such an approach, which *a priori* would seem to amount to the monopolization of the DSM market by the distributors.

This approach will make it possible to quickly reach the goal of 80%, since the CRE has opted for a public DSM service: the distributors, who have public service obligations, will roll out the smart meters. The “Linky” meter alone, from the dominant electricity distributor, the ERDF, will be installed on 35 million low-voltage sites, covering 95% of the national distribution network [\[5\]](#). There is thus little risk of under-investment in the demand-response capacity that electricity

suppliers will soon have. In fact, as the suppliers do not have to bear the costs of the manufacture and deployment of the meters, they can quickly invest in the development of these capabilities. In addition, the equalization of subcontracting costs for the manufacturing of the meters and their installation throughout the French distribution network will make for considerable economies of scale. Finally, the low rate of penetration of meters in countries that have opted for a decentralized approach (the cost of the meter and services are then borne partly by the households concerned) argues in favour of the French model. This model is more practical since it removes most of the barriers to adoption.

Despite this, the degree of concentration in the business of the distribution and supply of electricity to households raises questions: ERDF is affiliated with EDF and has a virtual monopoly on the supply of electricity to households. In terms of innovations in DSM services, it would seem that EDF has little reason to go beyond its subsidiary's Linky project – first, because of the costs already incurred by the Group (at least five billion euros), and second, because the quality of the default basic information mechanism in Linky will be sufficient to lead to a cost for migrating to DSM services offered by competitors. [\[6\]](#) Alternative suppliers will of course be able to introduce innovative tariffs. But so will EDF. One way to overcome this problem would be to set up a Linky platform so that other companies' applications could interact with its operating system. With the agreement of the household and possibly a charge for access to the data, the business would of course be regulated, but entry would be free. This would stimulate innovation in DSM services, but would not increase competition since these companies would not be electricity suppliers. Would the consumer have a lot to lose? This would obviously depend on the amount of the reduction in their bills. Given that the price of electricity is likely to rise by 30% by 2017 (including inflation), we are worried that consumers' efforts to optimize their consumption

will not be rewarded. The net gain in the medium term could be negative.

Finally, we can ask ourselves whether with Linky the EDF group is not trying to reinforce its position as the dominant company in the supply of electricity, a position that has grown weaker since the introduction of competition. With DSM service installed by default on 95% of the country's low-voltage sites, Linky will become an element in the network infrastructure that all DSM service providers will have to use. From the point of view of the rules on competition, one must then ask whether ERDF and its partners have properly communicated information about the Linky operating system, without any favouritism being shown to the EDF Group and its subsidiaries (Edelia, NetSeenergy). The story tellers would like to tell us a beautiful tale about encouraging innovation in energy and the digital economy in order to deal with the ecological transition. Knowing that the current CEO of the company in charge of the architecture of the Linky information system, Atos, was Minister of the Economy and Finance just prior to the launch of the Linky project in 2007, there seems to be room for doubt ...

[\[1\]](#) “Energy efficiency improvement” and “energy savings” are used interchangeably in this post. For precise definitions, see Article 2 of Directive [2012/27/EU](#) of the European Parliament and of the Council.

[\[2\]](#) The distributors manage low and medium-voltage lines. [ERDF](#) has the largest network. The networks and meters are licensed equipment, which are the property of the local public authorities.

[\[3\]](#) This would nevertheless involve, for example for ERDF, the elimination of 5000 jobs (compared with 5900 retirements, see Senate Report no. 667, 2012, Vol. II, p. 294).

[4] In accordance with the NOME law of 2010, suppliers and other operators must be able to make ad hoc reductions in the consumption of electricity for certain customers (temporarily cut the supply to an electric boiler, etc.), which is called demand-response load-shedding.

[5] In areas where the ERDF is not a supplier, other experiments exist, such as that of the distributor SRD in Vienna, which has installed its smart meter, i-0uate, on 130,000 sites.

[6] See the document by the DGEC, 2013, the Working group on smart electricity meters (GTCEC) – [Coordination document](#), February [in French].

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Valuing energy savings fairly

By [Evens Salies](#) [1]

Following the first meeting of the *Commission mixte paritaire* (a joint commission of the two houses of the French Parliament) on the proposed legislation to “make the transition to a sound energy system”, it is important to examine the reasons that led the Senate to adopt a motion on 30 October 2012 to dismiss this bill. This rejection is based on errors of judgment that reflect the difficulty of defining a residential energy pricing that is efficient and fair in

light of the government's objectives to control energy demand. It also seems appropriate to seek clarification of whether the proportional pricing in force needs to be corrected in order to reward energy savings.

The opposition of the parliamentarians focuses on the following point: the bonus-malus system breaches the principle of equal treatment of citizens regarding access to energy.[\[2\]](#) This argument is reminiscent of the annulment by the Constitutional Council in 2009 of the carbon tax.[\[3\]](#) It is nevertheless surprising, since the principle of equal treatment is not fully respected by the current system of tariffs. In practice, each household pays two local taxes on their final consumption of electricity. However, the taxes differ from one town or department to another, for reasons that are difficult to explain. The Senators also criticized the progressivity of the bonus-malus system that is to be superposed on the current rates, treating it as a hidden tax. There seems to be little grounds for this criticism in that the social tariffs already introduce some progressivity.[\[4\]](#)

The innovative element of the bill concerns the compatibility between the proportional pricing in force and the valuation of energy savings. Between households of similar composition who are subscribers at the same rate, there is already a reduction for the household that controls its usage. But is this reduction sufficient to compensate for the effort? In other words, should we consider that a kilowatt-hour of savings that costs an effort has the same economic value, in absolute terms, as a kilowatt-hour that is simply consumed? Everything depends on whether the savings in question is considered a gain or a loss. For households in the latter situation, the savings is seen as a cost. So the savings is not made, which is why the bonus-malus system would be effective. The others do not need an added incentive.

The bonus-malus system does not simply offer a discount (bonus) that is to be funded by the overages. [\[5\]](#) It also aims

to inform individual households about their behaviour, *i.e.* whether it is virtuous or not, which is consistent with several recent observations in the literature: a household does not base its energy consumption on tiny marginal pricings, which are counted in centimes per kilowatt / hour and which people understand only imperfectly. Changes in the amount of the energy bill and announcements of price fluctuations play a greater role. Bonuses and penalties thus matter less as absolute values than as signals sent to households by their relative values on the invoice.

The superposition of the bonus-malus system on the rates in effect will of course initially simply amplify the gaps in spending between users. But the bonus that would apply on the bill of households whose behaviour benefits everyone is no less legitimate than the discounts enjoyed by households who changed suppliers once the retail energy markets were opened to competition.

Unfortunately, the rejection of the Brottes bill has ended any educational discussion about the relationship between energy efficiency and residential energy pricing. The lack of enthusiasm for the topic in the public debate is easy to perceive from reading the recent, voluminous report of the Commission of Inquiry on the actual cost of electricity. This is not so surprising in a sector where innovation is encouraged more on the supply side. The *effacement diffus* scheme is the latest example.[\[6\]](#) But without innovation in the structure of energy tariffs too, will France be able to achieve its goal of reducing energy consumption?

[\[1\]](#) The author would like to thank Marcel Boiteux, Marc-Kévin Codognet, Jérôme Creel, Gilles Le Garrec, Marcelo Saguan and Karine Chakir. The opinions expressed in this note are the responsibility of the author alone.

[\[2\]](#) This principle is ensured by tariff equalization: the schedule of tariffs is the same regardless of the place of residence.

[\[3\]](#) On the grounds that this tax violates the equality of taxpayers with respect to the public tax burden.

[\[4\]](#) Crampes, C., Lozachmeur, J.-M., 10 Sept 2012, "Les tarifs progressifs de l'électricité, une solution inefficace", *Le Monde*.

[\[5\]](#) In the case where the sum of the penalties is not enough to cover the bonuses, the State will finance the deficit. And even in the absence of a deficit, as the distribution of virtuous consumers is not necessarily the same from one provider to another, an equalization of the bonus-malus balances should be applied so that everyone ends up with a zero balance.

[\[6\]](#) This consists of interrupting the power to a radiator or boiler for 10 or 15 minutes.