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Towards a new target model?

1/ Where are we right now?

- I can hear “no market based investment in the European power sector is possible; it’s a proof the market is broken, a proof of the failure of the liberalization of this industrial activity”
- It’s indeed impossible to invest when looking at the market prices: the forward cal17 in Germany is around 31 – 32 €/MWh. This is half of the total cost of the cheapest baseload solutions! And there are no signs of recovery in the near future.
- And although we can be wrong in our medium term forecasts, there no sign of any recovery in the near future.
- However the European market does work: it ensures an efficient use of the existing technologies, regarding variable costs, allowing to dispatch the cheapest ones at any time.
- What are the reasons for such a depressed market? We all know the answers:
 - The economic crisis starting in 2008: the electricity demand has been more or less been flat since then. The utilities had anticipated growth and had invested in new facilities, mainly CCGTs, that were no longer needed when connected to the grid: the power sector has built overcapacities.
 - It’s an usual pattern in our industry; economic cycles exist in nature and we have to take them into account: the life time of our assets as well as the time we need to build them, cause a repeated alternation of undercapacities and overcapacities.
 - What has been completely unusual, and I believe, unique in the economic history, is this flood of new capacities in a very short period of time. The issue is not the

renewable per se, as it's necessary to support emerging technologies, but the level of the subsidies for these technologies: the 20/20/20 climate / energy package had been settled before the crisis in a world with a steady European economic growth, in a world where new capacities were needed and supposed to meet the rising demand for electricity. After the crisis, the picture is completely different: I would say, you lose twice for each new MW: first by subsidizing a MW you don't need, second by creating 1 MW of stranded cost.

- As a consequence, we do not experience the usual market adjustment resulting from an overcapacity situation, such as the closure or mothballing of some old and less efficient power plants. As long as you continue to subsidize tens of new GW year after year, the market can't recover, and it means tens of billions euros per year of subsidies at the EU level: for Germany only, the amount is over 20 bn€ this year. Such amounts, in some Member States, may be close to the global value of the electricity on the wholesale market (national consumption X market price)
- Therefore, the EU is facing a basic choice: do we want, or not, to get back to an efficient market based power system. If the answer is yes, we should remove the bulk of the subsidies, which won't be easy in the short term, as it would depress the investment and trigger strong oppositions. Maybe we'll need a decade to gradually wipe out these subsidies while at the same time pushing the CO2 price up.

2/ CO2 price is a key

- For the time being, in most of the European countries, low carbon technologies cannot compete with other technologies, such as gas and coal fired power stations, if the CO2 is for free :
 - while the lifetime extension of the existing nuclear fleet is by far the most competitive solution, I'm sure you have noticed we need some time to relearn how to build new competitive nuclear power plants!
 - As for renewables, it's not different: although the unit cost for the different technologies is still decreasing :
 - networks capacity need to be increased to cope with their intermittent nature;
 - there is a gradual shift from lower cost solutions to higher costs ones, as for wind farms, moving from onshore to offshore,
 - the value of this electricity generation decrease with its growing share in the power mix; a kind of cannibalism which has been assessed for instance in Germany by the TSOs expecting this year the value of onshore wind

generation being at 85% of the baseload market value, therefore well under 30 €/MWh !

- the third pillar for decarbonation is Energy Efficiency; but then again, it's not cheap : Germany wants to foster the rhythm of building refurbishments at a rate of 2% per year. This target was announced years ago, but they are still stuck to a rate of 1% per year, despite all time low interest rates and a major financing tool as KfW bank: customers are clearly not so much interested in, because it takes too many years to get their money back, even if German power prices are among the highest rate in Europe.
- Although the expressed desire is to de-carbonize our economies, we go on telling the consumers : “ the high carbon solutions are cheaper than the low carbon ones “:
 - This is what happens in the power market: facing huge overcapacities, the utilities are mothballing or decommissioning brand new CCGTs, which are high efficient plants and reasonably low CO2 emitting, while still running older, poorly efficient, highly CO2 emitting, coal or lignite ones!
 - This does not make sense, and it costs a lot to the consumers : while the switch from coal to gas within the merit order would need a few tens of € / t CO2 which we are unable to ensure, we are developing and supporting solutions with subsidies which embed an implicit CO2 price that may reach hundreds of €/t CO2.
 - And I'm not confident with the recent decision of the German government, based on the mandatory closure of 2.7 GW of lignite : once again it's not a market based solution, and maybe it will have a positive impact in Germany, but it could be inefficient at EU level, as it will ease the balance of the CO2 market, allowing some producer somewhere to emit more CO2 for the same cost than before ...
- I think you understand my point: a meaningful CO2 price is an absolute necessity. It will allow to get low carbon solutions into the market and to let them compete. I've no preference between nuclear, electric renewables, renewable heat, energy efficiency ... I'm convinced the future energy mix will be diversified in the different countries, but has to be on a rational and efficient basis, using competition between technologies. This is the main reason why we need a CO2 price. If we don't get it, we'll dive deeper into a world of subsidies, of partisan lobbying, of regional or local solutions and inefficient regulations.
- Of course, doing that within Europe, we'll have to set up bespoke protection for energy intensive industrial customers competing at a worldwide level as well as fuel poors at the other end of the range.

3/ Capacity mechanisms are necessary but not at the heart of the problem

- These mechanisms are a clear necessity: “energy only” markets are just unable to ensure the desirable level of SoS; there are several reasons for that:

- The existence of price caps on the spot markets as rocketing prices are not politically tolerable,
 - The increasing complexity of power systems and associated risks with increasing number of players, demand volatility, intermittent generation, availability, bottlenecks through interconnections ...,
 - The financial stress on many utilities that are speeding up their decommissioning decisions
- The cornerstone is to determine the desired level of SoS, which will be translated into the level of capacity which is needed, either on the supply or on the demand response side, knowing that, in the forthcoming decade, the likely critical decisions will be on the level of decommissioning. That said, such a mechanism has to be designed in order to allow fair and efficient competition between different solutions: existing / new plants, demand side management.
 - Of course, it should not be a way to rescue conventional assets in poor financial situation, but which are not competitive neither necessary to ensure the desired level of SoS. I'm surprised, or even angry, when I can hear some people saying: "wouldn't the French mechanism be a way to subsidize EDF ?" The French system is basically a requirement for the suppliers; an obligation is a cost, not a revenue!

4/ Back to the target model

If I dare to be a bit simplistic, the EU will have to face two potential scenarios:

- In the first one, we succeed to fix the EU ETS and to get a relevant and rather predictable CO2 price. Then there is a future for a market based approach, where the energy market will be the main component, including the CO2 market. This market will become the main driver for investors again, and will stimulate the development of low carbon solutions.
 - But clearly, we won't get it tomorrow, and it will take probably a decade to get there, and yet supposing we start now.
 - And some countries cannot wait for so long! I refer to the UK situation where assets are old and the decision on how to replace them has to be made in the short term. The British government shows a high level of responsibility by avoiding any investment in high CO2 emitting solution (and taking care of energy self-sufficiency). Although the Carbon Price Floor is a good signal, it's more than risky to launch a huge investment without a guarantee that no government can ensure on the longer term: it's a matter of democracy, nothing else. Which means long term contracts are needed for building new low carbon asset : this is the basic reason for CfDs

- In the second scenario, clearly not the preferred one ..., the EU ETS crashes down, the CO2 price is unable to sustain any low carbon investment on a medium and long term basis.
 - Then, we'll need long term contracts that will be the exclusive pillar for new investments while the energy market will remain dedicated to the short term optimization.
 - In such a context, competition will have to be supported through tenders, technology neutral auctions, regional rather than national approaches,... It would be the only way to prevent the multiplication of national or local solutions, related to local lobbies rather than to industrial performance and economic efficiency.
- I'm aware I have a bit simplified the situation. But we have to keep in mind that a de-carbonised future is a world of capital intensive solutions, regardless of the specific technology: most of renewable, nuclear, energy efficiency solutions ... Therefore the design has to be in line with the technologies and their economics. These technologies are moving, not only on the generation side but also on the demand side and on the networks side : one key point we have to address is precisely related to the networks: we have to improve networks price structure in order to support an efficient arbitrage between centralized and decentralized generation as well as demand response.

5/ EDF and the energy transitions

As one of the major European utilities, we are deeply involved into energy transition. As previously mentioned, the main pillars of these transitions are energy efficiency, renewables (not only for electricity, also for heat,...), and nuclear : CCS is unlikely to be available in the foreseeable future.

We have not been waiting for the new French law about green transition to develop our positions and our solutions:

- Our main assets are nearly CO2 free and highly competitive. It's a huge opportunity for EDF, and not only for France but also for UK. We bring indeed flexibility to these countries to manage their transition. It wouldn't make sense to see our nuclear fleet as an obstacle to the development of renewables : developing renewable in France, its cost put aside, will enhance the competitiveness of the French mix and its role as the first low carbon European asset.
- A few years ago we bought all the shares of EDF Renewables (EDF EN), and we have constantly developed our subsidiary : for the time being, we commission much more renewable GW than nuclear ones ...
- One year ago, we became full owner of Dalkia France, enlarging significantly our energy services portfolio: it complements our set of solutions, allowing us to be offensive in the three directions I've already mentioned: nuclear, renewable and energy efficiency solutions for our customers.

I'm convinced electricity – carbon free electricity of course – can be the major lever for the energy transition, combining energy efficiency and fossil fuel substitution (heat pumps, electric mobility ...).

In 2030 or 2040, this electric and energy system will be for sure different from now, based on a mix of large facilities and of decentralized solutions (renewable, demand management, ...) using smart optimization and grids. The revolution, if any, will likely occur more in innovation on the internet of things where electricity should however keep and even enhance its major role in our economic efficiency and our social welfare.