FORATOM response to the EC public consultation on a new energy market design

The European Atomic Forum (FORATOM) is the Brussels-based trade association for the nuclear energy industry in Europe. The membership of FORATOM is made up of 16 national nuclear associations. Through these associations, FORATOM represents nearly 800 European companies working in the industry and supporting around 800,000 jobs.

General statements

Clear priorities have been assigned to the Energy Union:

- Enhance energy security, notably through the completion of the internal energy market,
- Ensure competitive and affordable energy prices for business and consumers,
- Reduce GHG emissions by 40% by 2030 and by 80% to 95% by 2050,
- Improve energy efficiency,
- Promote EU leadership in low carbon technologies.

The 2030 Climate and Energy Framework is intended to promote an investment policy for low carbon technologies. However, the current electricity market is discouraging investments in any new generating plant and EU is more and more locked into a combination of fossil fuelled plants and intermittent renewable sources which is not apt to deliver fully decarbonised electricity in the long run.

FORATOM firmly believes that investment in all forms of electricity generation, not just in renewables, should be driven by market signals. This means that market distorting subsidies should be progressively removed so that the market price reflects the actual cost of generation, including system costs and back-up. In the absence of an effective ETS carbon price, the need for alternative investment signals is particularly important for low-carbon generation, i.e. nuclear, renewables and eventually CCS.

FORATOM supports a technology-neutral approach whereby the new market design should enable nuclear, renewables and CCS to compete on a level playing field, so that decarbonisation objectives can be achieved at lowest cost.

Diagnosis of the EU electricity market

The large increase of power generation from renewable sources, a key component of the current EU energy and climate policy, has been made possible by public subsidies. But the massive introduction of intermittent renewables on the European system has resulted in three side-effects:

- An overcapacity due to low economic growth and subsidised injection of renewables into the system;
- The decrease of average spot prices on the wholesale market, when renewables are generating, because their marginal cost of generation is zero;
- A reduction in average annual utilization of conventional thermal power generation because the low wholesale market price does not even cover their marginal costs.

These three effects directly hit thermal plants and especially mid-base plants such as CCGTs[1]. As a result, according to the Magritte Group[2], 51 GW of gas-fired plants have been mothballed in Western Europe since 2012. It raises concerns about potential blackouts in the medium term because of the lack of firm capacity investments. The nuclear fleet is also impacted, with the threat of early shutdowns and the postponement of new builds.

The second effect will also hit renewables when they are no longer protected by feed-in tariffs since at very high shares of low-carbon generation, prices may be very low for extended periods. Renewables can also not expect significant revenue at periods of peak demand, since price peaks will most likely happen when there is neither wind nor sun.

The Commission states that some of its key objectives now are “to integrate renewables into the market” and make the internal energy market the driver for investments. However, investors in low-carbon technologies are exposed to significant price volatility risk. To attract financing, market participants need to have confidence that low carbon generators will receive sufficient revenue to cover the large, upfront capital costs. This is especially acute for nuclear and offshore wind projects due to the large investments required as well as significant construction risks. The revenue from generated energy, at a price based on marginal cost, will not be sufficient since it is bound to decrease with the increasing share of low carbon energy sources. Low carbon generation investments will thus still need a complementary market source of revenue to cover the total lifecycle cost of electricity.

The market design should be revised in order to mitigate the risk for investors in capital-intensive low-carbon generation, by guaranteeing revenues above the short-term market price in a transparent and cost-effective way.

Principles for a new market design

It would be a serious mistake to design the electricity market with only one **single** objective, namely to adapt it to the intermittency of renewable energy sources. Flexibility will have to increase, but long-term generation adequacy is important too; and market failures will have to be rectified via appropriate regulatory instruments if the market is to be capable of achieving both EU energy and climate policy objectives.

[1] Combined cycle gas turbines

[2] http://www.engie.com/en/journalists/press-kits/magritte-group-european-energy-policy/

In that perspective, some basic principles should be respected in the future improved market design:

General framework

- Right of Member States to choose their energy mixes;
- Ability to deliver the most affordable decarbonisation solutions, which may vary from one Member State to another;
- CO_2 climate cost internalized in electricity prices through the ETS; effective carbon price driven by a structural and predictable step-by-step reform of the European carbon market;
- Technology neutrality;
- Full system costs internalized by each supplier;
- Sustainable long-term price signals *or* predictable market-driven investment climate.

Security of Supply

- Security of supply should be recognised and rewarded;
- We need a new definition of generation adequacy (security of supply);
- Putting a value on long-term security of supply: diversity means resilience to fossil fuel supply disruption.

Regulatory

- Regulatory stability;
- EU-level harmonized framework, if and when necessary;
- Harmonisation of fuel and energy taxes with no nuclear-specific taxes.

Market instruments

- Long-term contracts supported: allowing technology neutral competitive processes (call for tender, auctioning) and bilateral agreements negotiated between consumers and generators;
- End of priority dispatch for RES;
- Market prices should reflect full costs of production and transport;
- Backup for variable RES needs to be incentivised (capacity markets).

The current wholesale electricity market is governed by short-term views and parameters, since pricing based on short run marginal cost is ensuring only the cost efficient dispatch of available capacities. In parallel, outside the market, increasing RES capacities are being installed with ambitious long term objectives, but at a high cost to end consumers and losing sight of the ultimate objective, decarbonisation.

This review is an opportunity to resolve this contradiction by integrating the long-term view into market investment decisions. That can be helped by the ENTSO-E 10 Year System Adequacy Assessment, if it is improved (need for harmonisation of adequacy criteria between the MSs) and extended to longer horizons. That also means adequate market instruments have to be introduced.

FORATOM answer to relevant questions in the EC consultation

5) Are long-term contracts between generators and consumers required to provide investment certainty for new generation capacity? What barriers, if any, prevent such long-term hedging products from emerging? Is there any role for the public sector in enabling markets for long term contracts?

Yes, market-driven instruments including long-term contracts can offer revenue stability and are needed if Europe is to meet its goals to decarbonise its power system at an affordable cost while ensuring security of supply.

The current market design does not incentivise investments in low-carbon generation, including in renewables, and needs to be revisited.

With a growing share of variable renewable energy sources (VRES) in the power system, short-term electricity markets will be unable to provide an efficient signal for long-term low-carbon investments, even if the wholesale electricity prices are uncapped to reflect scarcity of supply:

- The more VRES, the lower the wholesale price when these renewables are actually producing. At very high shares of renewable generation, characterized by very low marginal costs, short term prices can be expected to plunge to almost zero for extended periods of time or even become temporarily negative.
- Price peaks will most likely not happen when VRES are producing but instead when there is neither wind nor sun. VRES may thus not benefit from future price spikes.

A business plan based on rare occurrences of high prices will exhibit strong risks and uncertainties that may ultimately deter any investment decision in capital intensive generation. Given that the revenues from the energy market can only decrease with higher share of VRES, it will make it impossible, without additional revenue streams, to pay back the initial investment in any kind of dispatchable generation.

As a consequence, the market design, even with a well-designed short-term market and effective carbon price, needs to be supplemented by additional instruments to secure investments.

The new market design should include instruments able to mitigate the revenue risk over 20-30 years, so that investments in new low carbon generation are actually driven by the market.

In particular, long-term contracts allow the use of project finance or hybrid financing approaches supporting higher leverage and thereby reducing the cost of financing. This aspect is especially important for low carbon technologies that are characterized by high up-front costs.

Three main types of contract can be considered to involve medium/long term commitments:

1. Contracts based on the ”forward wholesale market”*:* Current forward markets are well suited for financial hedging but unable to provide an efficient investment signal. While market products such as Futures or Forward are well-suited for portfolio hedging strategies, they do not so far meet the needs of investors:
    - Some low carbon technologies have construction times of over 5 years (biomass, nuclear, offshore wind) for an operational lifetime up to 25 years (offshore wind) or above 30 years (biomass or nuclear); and
    - Electricity markets do not have liquid future products beyond 3 years in general.

2. Co-investments which entail a contractual sharing of risks: Examples are Blue Sky (Belgium), Mankala model (Finland), Exeltium (France). However few market players, even among large consumers, would be spontaneously interested in such commitments when prices on the short term wholesale market are as low as today, with no bouncing back expectations.

3. Long-term contracts based on average cost pricing, called through tendering: In line with the paper released by DG ECFIN in July 2015[3], FORATOM believes that the implementation of an EU-wide market for long-term contracts based on average cost pricing may be a suitable and relevant option to ensure a well-functioning decarbonised power system in the long-term.

The latter model allows shifting from a competition "in the market" to a competition "for the market"[4]. Competitive pressure may be ensured by tenders based on what matters, i.e. full cost, which, in the case of low carbon technologies, is most often driven by the initial investment. The Contracts for Difference model in the U.K., following competitive auctions between technologies of the same maturity, is an example of such a market design based on long-term contracts. Other countries outside the EU have successfully developed such approaches to support investment in low carbon capital-intensive technologies: e.g. Brazil, Canada (Quebec).

[3], [4] „Investment perspectives in electricity markets“– DG EcFin institutional paper (July 2015)

Three separate strands of market arrangements could be further explored in view of a future fully decarbonized power system:

- *Reinforcing the price signal through scarcity pricing*
- *A wholesale market complemented by an EU wide capacity market*
- *An EU wide market for long term contracts based on average cost pricing*

Reinforcing the price signal through scarcity pricing

Reinforcing the price signal through scarcity pricing will become essential in decarbonised power systems as the high share of low carbon technologies coupled with high demand response will tend to result in very low prices during most part of the time. Prices should then be allowed to indicate accurately and visibly through scarcity prices the specific needs for the proper functioning of the power system in the short run for periods of scarcity (e.g. to trigger demand response, storage and other forms of flexible solutions) and in the long run (e.g. to foster investments).

A wholesale market complemented by an EU wide capacity market

The main feature of such a market arrangement would be to develop, besides the wholesale market, a market for capacity where producers would contract out and be able to get a return on the availability of their capacity. Under this configuration, the wholesale market is kept to ensure efficient short-term dispatching and as an indicator of the real time value of each energy assets for signalling specific investment gaps (e.g. in peak or base load, flexible etc.).

An EU wide market for long term contracts based on average cost pricing.

The main feature of this market arrangement is to shift competition from the spot market - competition in the market - to a long-term contract market - competition for the market. Under this configuration, suppliers are required to cover their forecasted demand through *long-term contracts with low carbon generators and flexible solution providers. In exchange, generators receive long-term contracts with conditions and terms allowing them to recover the total costs of their investments. The short-term market in this context acts as a balancing market to settle imbalances arising from contractual differences between generators and suppliers.*

Some regions of the world such as Latin America, where power systems are dominated by low carbon technologies, namely hydropower, have adopted markets for long-term contracts. One of the main reasons often cited for this change in market structure is related to the effect of hydropower plants on price signals. Under power systems dominated by hydropower, it was observed that prices mask structural supply problems. As a result, price increases only when the power system is about to fail, for instance due to a drought that reduces the outputs of hydropower plants, which does not allow enough time to make investments. Such market form shows noticeable difference with today's EU markets as, in particular, it replaces the wholesale market and there is no carbon market.

Box no.1 – From „Investment perspectives in electricity markets“– DG EcFin institutional paper (July 2015) – page 72

6) To what extent do you think that the divergence of taxes and charges levied on electricity in different Member States creates distortions in terms of directing investments efficiently or hamper the free flow of energy?

In FORATOM's view, the Commission should take further steps to reveal the drivers of recent wholesale price increases, provide more transparency, and communicate to national governments and regulators the urgent need to free the power bill from unrelated taxes and levies.

The EU is promoting low carbon energies but the Member States' taxation systems are frequently at odds with this objective.

Member States apply a large variety of taxes and levies in the energy sector. Market intervention through taxes on power generation and storage interferes with the development of the internal electricity market, influences dispatch decisions, hampers investments in existing and new power plants and distorts competition between technologies. Introduction of a new tax also increases regulatory risks. Examples of taxes, levies and charges that distort the functioning of the wholesale markets include:

- Additional carbon taxes in some Member States;
- Capacity-based nuclear tax in Sweden, annually 1,4 M€/1000 MWth. Companies are considering early closure of up to four nuclear units in Sweden due to increase in the tax and low power prices, which definitely goes in the wrong direction, as they will certainly be replaced by a mix of RES and fossil fuel, consequently increasing the overall emissions;
- Nuclear tax in Belgium (around 550 M€/year) which is considered by the electricity producers as discriminatory because it puts nuclear energy at a disadvantage over other power generation technologies;
- Higher property taxes than generally applied, e.g. for hydro and nuclear power in Finland and Sweden;
- Some Member States impose taxes or levies on energy products used for power generation (gas, coal and even hydro and nuclear power generation). These include, nuclear fuel rod tax in Germany;
- Charging power plants with ancillary costs (e.g. Austria) versus no ancillary costs for generators in other Member States;
- Pumped storage in Belgium and Austria is subject to double grid fees and other charges such as policy support costs;
- Fiscal measures to reduce tariff deficit benefit Spanish generators versus competitors;
- Different grid injection charges for power plants (€/MW) both between Member States (e.g. Belgium and Slovakia apply G-charges) and inside MS (e.g. locational signals in UK).

The more interconnected the markets are (both physically and operationally), the more sensitive they become to distortions in cost structure and pricing. As the further integration of electricity markets is a key European objective, the minimisation of these distortions should be a priority. The Energy Union process should provide more transparency and dialogue on taxes to help Member States understand the consequences of different taxes and levies.

With regard to taxes and charges levied on final customers' electricity bills, electricity as final energy supply is easier to decarbonise than other forms of energy. Taxes and levies in the final consumer's bill are a barrier to the electrification necessary for delivering decarbonisation of heating and cooling.

7) What needs to be done to allow investment in renewables to be increasingly driven by market signals?

FORATOM sees technology neutrality and competition in the market as key principles in a cost effective transition. In our view, the EU and the Member States should strive to develop the regulatory framework in such a manner that investments in *all mature low carbon* technologies can take place under the same market rules.

Policies should be immediately reformed to make RES fit for market. This means applying to RES the same rights and obligations of market participation as other market participants (operational integration of RES). For the period after 2020, subsidies should be phased out for all mature low carbon technologies, accompanied by dedicated support to emerging technologies primarily through research, development and demonstration support.

ETS also has to play a greater role by delivering a clear carbon price signal. Together with the recent agreement to establish a Market Stability Reserve, the legislative proposal to reform the ETS Directive will enable the EU ETS to provide additional incentives to reduce greenhouse gas emissions, to improve energy efficiency and to invest in low carbon technologies. However, to do this, the Directive needs to effectively contribute to setting a clear, consistent and credible carbon price signal.

Should some support schemes for mature renewable technologies remain after 2020, the impacts of these measures should be assessed and discussed with neighbouring countries and the Commission, to ensure consistency with other measures, e.g. the ETS, to maximise cost efficiency, and minimise market distortions.