Position paper ESTELA/DCSP/Protermosolar – New Electricity Market Design

The European Commission has published recently a Consultation on the Electricity Market Design. The Commission is particularly concerned about high electricity prices and has the objective to ensure consumers – both households and companies– can access affordable and secure energy from sustainable and renewable sources both now and in the long term. ESTELA, DCSP and Protermosolar welcomes the efforts of the Commission to ensure affordable prices for all customers but want to put the emphasis on the fact that the electricity market is facing a fundamental transformation in the following years which effects should also be included in the Electricity Market Design reform now.

1. The challenges of the current market design

The European power market is facing a fundamental transformation in the following years. The main challenges for the current market design are decarbonisation, security of supply and cost-effectiveness.

- *Decarbonisation:*

The power sector has to decarbonize in order to reach net zero carbon in 2050. Dependence on fossil fuels has to be reduced and the share of renewable generators has to increase. This has profound implications on the electricity system. With the rapidly increasing share of intermittent renewable energy, the European electricity transmission system faces higher and more volatile flows. Bulk volumes of electrical power need to be transported over larger distances. This is mainly driven by the rapidly increasing share of intermittent renewable energy, which is often produced far away from consumption centres on remote locations with favourable meteorological conditions. Due to the firmness and inertia decrease, the electricity system may be at risk to be increasingly confronted with grid and stability congestions, redispatch measures (including RES curtailment) and loop flows. Electricity market design is today based mainly on production price for the generation, disregarding the flexibility or the intermittence of the different generators.

- *Security of supply*

With the rapidly increasing share of intermittent renewable energy, the European electricity transmission system faces also problems for security of supply. Reliable supply and system resilience have to be maintained by ensuring capacity adequacy and operability. To achieve this, the market design will need to ensure that there are sufficient firm, flexible renewable assets on the system like CSP to meet peak demand, particularly at times of low renewable output. Renewable generators should be incentivised to provide operability services as well as energy output

- *Cost-effectiveness*

Cost-effectiveness of the transition to a decarbonized power system will be key for Europe.

Due to the rapidly increasing share of intermittent renewable electricity un the system and the firmness and inertia decrease following this increase, the electricity system may be at risk to be increasingly confronted with grid and stability congestions, redispatch measures (including RES curtailment) and loop flows. The need of more inertia, firmness and redispatch measures increase the cost of the system and diminish the market welfare. The market design should address these important points and ensure that the cost of operating the system is minimised.

On the other hand, due to the cost structure of renewables, capital costs will become an increasingly large proportion of total system costs, so the market design should address both financing costs and wider system costs.

2. The case of CSP

Concentrated Solar Power (CSP) or Solar Thermal Electricity (STE) comprises various technologies that convert concentrated solar radiation into heat to produce electricity. Mirrors focus direct solar radiation onto special receivers, in which fluids are heated up beyond 400°C. This heat is converted into mechanical energy by means of a thermodynamic cycle and then into electricity by the alternator. CSP/STE has a unique value proposition when compared with other renewable energy sources:

- Predictability and reliability of production
- Dispatchability due to proven and highly cost efficient thermal storage
- Grid stability due to the inertial features of STE power blocks
- Long-term supply security and independence from gas prices
- High share of local content
- No use of Critical Raw materials in the manufacturing of the mirrors

Hybrid power plants, in which solar thermal power plants are coupled with PV or other technologies, are becoming increasingly important: During the hours of sunshine, PV power plants supply cheap solar power. At the same time, CSP power plants feed the heat into thermal storage. After sunset, this is then ready for power generation. By combining the two solar technologies, controllable and cost-efficient green electricity can be generated offering an alternative to any fossil power plant and helping to reduce the curtailment of intermittent renewables om moments of excessive production.

3. The renewed market design should enable a decarbonized and reliable electricity system, dispatchable renewables can contribute to that

The renewed market design should enable a decarbonized and reliable electricity system, dispatchable renewables like CSP can contribute to that. In order to achieve a decarbonized power system and to incentivise the deployment of dispatchable renewables, the market design should address the following challenges:

- *Increasing the pace and breadth of investment in renewable generation capacity.* The European power system will require a significant amount of new renewable electricity capacity in order to meet decarbonisation targets. Given the need to decarbonize the power system in a relatively short period of time, there is a need for stronger long term investment signals. The increasing volume of low marginal cost renewable generation is creating downward pressure on wholesale prices during periods of high renewable. As a consequence, wholesale prices will become increasingly volatile – switching between periods of very low prices and very high prices, and less periods in between these two extremes. This increase in volatility will reduce generators' ability to recover their construction costs in the current wholesale market. The regulatory framework should help to de-risk investments in dispatchable renewables and increase the access to long-term bilateral contracts such as Power Purchase Agreements (PPAs) in order to provide stability of revenue for the generators. Long-term contracts facilitate financing and reduce the cost of capital, thereby reducing the total cost of investments and benefitting the entire electricity system.

- *Stimulation of investments in dispatchable renewables in order to achieve long term resource adequacy*. A system dominated by cheaper, variable renewables will present a new challenge for balancing supply and demand of electricity. In order to achieve long term resource adequacy, the necessary investments in dispatchable renewables must be stimulated. In order to accommodate more variable electricity production, markets need to be improved to attract investment in the resources, like non intermittent electricity production like CSP or energy storage, that can compensate for variable electricity production. This incentivation is key to security of supply and allow a non-intermittent and synchronous production of electricity, reducing the redispatch costs and increasing market welfare. This contribution to security of supply and the increase of market welfare should be reflected in the auctions organised by each Member State. Capacity remuneration mechanisms are needed for an electricity system dominated by weather dependent generation without large scale long-duration flexibility in periods where the resources are insufficient to cover demand as short-term markets do not deliver sufficient incentives for investments in secure, reliable renewable electricity sources . Capacity mechanisms can be used to provide incentives for deployment of secure and reliable generation capacities like CSP, energy storage or Demand Response solutions. Dispatchable renewables should be eligible to participate in this capacity remuneration mechanisms.

- *Maintaining system operability* Alongside balancing supply and demand nationally and locally, there are a range of other challenges in managing the electricity system. System operability is achieved by the procurement of ancillary services but the system operator. Dispatchable renewables should be incentivized to participate in flexibility markets, balancing and ancillary products, even if long term contacts are in place.