RESOLUTION

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Climate Alliance

A MARKET MODEL FOR THE ENERGY TRANSITION – A NEW ENERGY SYSTEM DESIGN

Submitted by city of Frankfurt am Main (Germany)

BACKGROUND

A future-oriented energy system design must take market economics and climate policy into account in addition to physical and technical factors. On 25 February 2015, the European Commission presented its framework strategy for a resilient Energy Union. Within the scope of the current debate, Climate Alliance is calling for EU-wide energy transition with the aim of a 100% renewable energy supply by 2050. To this end, a market model including the key points detailed below must be implemented.

Market conditions must ensure access by a **diversity of providers** and impede domination by oligopolies or regional monopolies. In terms of climate protection, **future supply infrastructure should be based on fuel-free energies** and converted entirely to renewable energy. This means that both the demand for energy and the structures for the supply of residual energy must be based on the fluctuating fuel-free energies. For the electricity supply from a physical and technical perspective, this means that the challenge of keeping supply and demand in equilibrium at all times at each location will grow. As the fuel-free energy options available at each location vary widely, the electricity market cannot be guided by a central price signal (from an electricity exchange). Instead, so-called **"energy brokers"** must ensure that the most affordable offer is made available at each location according to the respective demand by means of diversified and decentralised concepts.

An energy supply based on renewables should have a largely **decentralised** structure. Local, fluctuating, versatile potential requires smaller plants that can be combined with one another as well as shorter distribution routes. Decentralisation strengthens resilience to climate change-induced extremes and large-scale blackouts. Decentralising our energy supply will not only require **widespread acceptance**, but also a broad willingness to contribute by making space available for and investing in renewables. Therefore the role of the citizen

in new energy system, including energy investments, will be essential. The new energy system will become an engine for **employment, regional added value and social prosperity.**

RESOLUTION TEXT

The energy market of the future – a market-oriented organisation of energy supply and energy services

The energy supply in Europe today is mostly not organised according to market economic principles. Oligopolistic structures prevail to varying degrees in the supply of fuel, heat and electricity. The only outcome of the so-called "liberalisation" of the electricity market has been an increase in market actors throughout the electricity value chain. In terms of electricity generation, liberalisation has unfortunately provided virtually zero stimuli for a diversification of providers.

Unlike fossil fuels, renewable energy sources are available all over the world. The energy transition thus offers the opportunity for 100% supply with renewables as well as the opportunity for a **market-oriented reorganisation of energy supply and energy services**. A prerequisite for the latter is the participation of many different market actors. A market for energy services means that generation and consumption will be organised across all energy providers according to economic principles. It will therefore no longer merely be a question of the kilowatt-hour sale of electricity, gas, or fuel – instead, several energy service providers will supply their various customer groups with a variety of offers tailored to these customers' energy needs. Specifically, the electricity market design must ensure that the competition for electricity generation, storage and load management is fair and complementary.

Key aspects of a sustainable future energy market model:

- **A switch to a completely renewable-based energy supply by 2050**. This is needed in order to reach the Climate Alliance targets.
- **Fuel-free renewables to form the basis for 100% supply from regenerative energies**. The fuel-free renewables, above all solar and wind energy, take priority over fossil fuels, as they are the most environmentally-friendly forms of energy. However, their dependence on the weather means that their availability fluctuates. Supply and demand must therefore be safeguarded by means of load management, energy storage and time-controlled energy forms.
- **Integration of energy supply and usage for electricity, heat and mobility into an energy services market.** With regards to energy conservation and the growing proportion of fluctuating energy sources, the technology, organisation and conditions for the supply and use of final energy such as electricity, heat and transport energy should be meaningfully linked. This

linkage will go significantly beyond the combined heat and power already practised today. In terms of organisation, this can only be achieved with tailored energy services. The sale of energy alone cannot meet these requirements. Given that electricity, heat and mobility provisions were historically kept separate for the large part and that only the sale of energy was organised, all guidelines, laws and regulations relating to the integration of final energy and the restructuring of energy sales infrastructure to energy services must be reviewed and adjusted accordingly.

Adjustment of electricity market guidelines, laws and regulations for a future-oriented market model

Electrical power will, in the future, be the dominant form of secondary energy as most of the fuel-free energy technologies generate electricity. Electricity thus constitutes a suitable starting point for the energy transition. Significant parts of the present-day economic structures in the electricity industry are characterised by the procurement of fuels. In their current form, futures markets and spot markets are unsuitable for fuel-free, fluctuating energies.[1] Regulation of how weather-dependent energy is fed into the grid, how it can be distributed and marketed, how the required grid restructuring and expansion can be organised, and how the necessary capacity and flexibility to counteract fluctuating generation can be ensured is required. Climate Alliance therefore calls for all EU guidelines, national laws and regulations in the field of electricity to take the following points into account:

- **Development of electricity distribution companies into central market actors who strive for a balance in supply and demand according to their customers' needs.** Electricity distribution companies have the role of organising the most affordable and most appropriate (increasingly regenerative) energy mix for their customers. As an intelligent combination of electricity and heat is already the most economical solution for certain customers today, more comprehensive energy services will increasingly be offered.
- **Obligation of the electricity distribution companies to integrate an ever-growing proportion of electricity from renewables into their products and to adhere to an ever-decreasing CO_2 limit.** Electricity distribution companies are the central actors in the market model. By obligating them to integrate increasing amounts of renewables and generate decreasing amounts of CO_2, a switch to renewable-based energy supplies with minimal CO_2 emissions in accordance with the market principles can be

[1] The price of electricity on the spot market is determined on the power exchange (e.g. EPEX) by the marginal costs of the most expensive power plant required to meet the demand at that moment. Marginal costs are the costs arising during generation of an additional kilowatt-hour of electricity. In fossil fuel plants, the marginal costs are essentially equal to the fuel costs. In contrast, the marginal costs for fuel-free energies are nearly zero.

achieved. The electricity distribution companies must then procure this electricity themselves. Restrictions to the expansion of renewables are not necessary in this system, as the expansion dynamics arise from the demand on the electricity market beyond the minimum quota. Potential added costs are borne directly by the customers opting to be supplied with this additional green electricity.

- **Correct structuring of grid financing by usage.** Today's grid usage fees mostly have an apportionment character. Particularly in the case of private households, the grid costs are determined by kilowatt-hour. The prices therefore do not reflect the actual costs for grid usage and provision. This should be changed so that a proper incentive for the fee structure can develop. Grid usage over long distances should therefore be more expensive than local usage, as the latter makes less use of the grid. The national grid expansion otherwise necessary can thus be reduced. Moreover, all electricity customers should pay a service fee per kilowatt for being connected to the grid, irrespective of their actual usage (kilowatt-hours), as this constitutes a measure of capacity of the connection.

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ABOUT CLIMATE ALLIANCE

The "Climate Alliance of European Cities with Indigenous Rainforest Peoples" is a European network of cities, municipalities and districts committed to protecting the global climate. The member municipalities strive to reduce greenhouse gas emissions locally. The indigenous peoples of the Amazon rainforest are their alliance partner. **www.climatealliance.org**