

Efficient cross-border electricity trade increase regional market integration. For more benefits from electricity trade we need more investments. Regional energy market is about investments, economic development, security of energy supply and social stability. Interactions between decentralized decisions of participants and mechanisms have different costs and benefits for participants. The objectives defined in the regional energy strategy are creating competitive integrated energy market, attracting investments in energy and providing secure and sustainable energy supply. Improving energy security implies, among others, to promote diversity, efficiency and flexibility within the energy sectors of the areas in region, to be prepared to respond to energy related emergencies, and not least to promote regional cooperation with all players in the energy markets. Energy security is closely associated with timely investments in energy supply in line with economic development and environmental needs. That includes connecting new generation and transmission capacities, integrating energy markets, enhancing the security of supply, and improving the reliability and quality of energy services provided. Security of supply is the ability of a power system to provide an adequate and secure supply of electricity in normal conditions, in a specific area. Security of supply indicator is deriving an estimation of security of supply improvement from the market based simulation results when a generation or transmission investment project is implemented. Tighter and stronger coordination between regional market participants should improve all this mechanisms and regional cooperation should improve investment levels and security of supply.

EU Directive 2005/89/EC establishes measures aimed at safeguarding security of electricity supply so as to ensure the proper functioning of the EU internal market for electricity, an adequate level of interconnection between Member States, an adequate level of generation capacity and balance between supply and demand. When adopting policy implementation measures, Member States must take certain elements into account, in particular the need to [18] ensure continuity of electricity supplies, study the internal market and the possibilities for cross-border cooperation in relation to security of electricity supply; reduce the long-term effects of growth of electricity demand; introduce a degree of diversity in electricity generation in order to ensure a reasonable balance between different primary fuels; promote energy efficiency and the use of new technologies; continuously renew transmission and distribution networks to maintain performance.

The Electricity Directive 2009/72/EC already envisages Tender Procedures for new generation capacity in the interest of security of supply. So, security of supply consists of five "A" elements:

- availability: availability and physical existence of sufficient energy sources; giving priority to domestic energy resources,
- accessibility: access to cross-border interconnectors, domestic infrastructure, storage facilities and supply routes with sufficient capacity and non-discriminatory access,

- affordability: prices for energy supply and transport services shall be transparent at reasonable costs,
- acceptability: exploration and exploitation must be environmentally sound and taking into account sustainability,
- adaptability: ensuring of technical integrity (codes and standards) and quality of energy (physical and chemical composition) among interconnected energy systems.

In short-term security focus mainly on the risk of technical failure in the system (operational), extreme weather conditions or sudden import disruptions – quantifying supply disruptions. In medium-term: A supply disruption from major supply sources and recurring or chronic supply shortages, such as those for electricity – assessing system adequacy to serve demand. In long-term: strategic long-term planning of resources, such as available gas reserves, import routes, etc. – devising strategies and policies for the next 10-20 years. All indicators need to have weighted average which says how much impact it has on security of supply. The best test of these indicators is scenario when we have maximum load with extreme cold weather conditions (winter) or extreme hot weather conditions (summer) or when we have minimum load (during spring). So, combinations of these aggregate indicators with weighted average for each of them could give the best performance for security of supply.

Investors have confidence in a stable policy and regulatory regime, that policymakers and regulators will resist the temptation to intervene when prices reach and remain at very high levels, investors are satisfied that the return to their investment comes from infrequent price spikes. As long as these conditions are not met, there is no guarantee, even once the EU electricity market integration process is completed, that an energy-only market will be able by itself to deliver the required level of resource adequacy and system flexibility. The full compatibility of any capacity remuneration arrangement with the internal energy market should be ensured. An enabling investment climate should promote the participation of new technologies and demand response in ancillary services markets.

With higher risk profiles, investors are looking for earnings based on both the value of interconnector capacity driven by underlying price differentials (intrinsic) and volatility (extrinsic) to justify higher returns. In addition, at the more conservative end of the lending spectrum, investors will want to be exposed to very few market risks but, at the same time, there is inevitably higher risk in the extent to which extrinsic value will be realized. While market coupling is an unequivocally good thing for cross-border trading efficiencies, it poses an additional challenge for investment projects since the revenues for interconnector owners will stem directly from the uncertain and volatile price differentials in the day-ahead auctions typically used to couple markets. Market coupling without accompanying hedging or long-term contracting options has a significant impact on attracting investment and financing, as well as covering costs. VOLL (value of lost load) is presenting price of not

supplied kWh. Estimation of VOLL in international studies is from minimal 3 €/kWh till 12 €/kWh (fig. 6). In South East Europe Region we can estimate that VOLL is minimal 4 €/kWh. An FTR (financial transmission right) relates to a zone-to-zone transaction, without having to specify by what route the electricity travels from one zone to the other. This benefits both the TSO in being able better to calculate ATC, and the user, as not having to worry about the specific route either. A market in financial derivatives organized by third parties can offer cross-border hedging possibilities for market participants like CfD (Contract for Differences). A contract for differences (CfD) means that two counterparties voluntarily agree an equalization payment between themselves that converts future exposure to a variable price into a fixed price. CfD can be purchased to hedge spatial price differences between price areas. It is also possible to hedge the price area risk by trading a set of CfD for the difference between the system price and the different area prices.

Financial transmission rights (FTR) obligation is right to collect payment from (or an obligation to pay) the price difference associated with transmission congestion between destination and origin for a specified contract quantity. Financial transmission rights (FTR) option is right to collect payment from the price difference associated with transmission congestion between destination and origin for a specified contract quantity. If the price difference is negative the payoff is zero. CfD cannot replace transmission rights because there is not a natural balance between supply and demand in all bidding zones and therefore no balance between natural buy ers/sellers of CfD. TSOs are natural sellers of transmission capacity and shall sell transmission rights between all bidding zones. A system of financial transmission rights (FTR) is created to enable generators to hedge uncertainty in congestion costs. These rights would be defined as point-to-point or point-to-region rights that would pay the difference between one location's price and the price at the second location or a weighted average of prices for several locations, respectively.

A measure to solve this issue would be a Financial Transmission Right compensating the price differential between one locational area price and a system price for the coupled market area (usually a volume weighted average of the locational prices in the area). However such a solution would require a strong cooperation as receivers of individual congestion rents and payers to FTR holders would fall apart. A joint collection and compensation mechanism of all TSO involved in the flow based market coupling would be needed. An FTR is a right to claim a sum of money equivalent to the value of the congestion surplus. If you are a generator located in the low price area, you are indifferent between actually exporting into the high price area, or selling at the lower price and taking the value of the FTR. If you are a load customer in the high price area, you are indifferent between importing from the low price area, or buying in the high price area and earning the value of the FTR. Thus an FTR is equivalent to a financial product that is equal in value terms to having access to the interconnector. But it only works well to the extent that robust market

prices are established on either side of the link, and there is a coupling process to link the two markets. The payout of the FTR is the price differential between the sink and source times the FTR volume (MW). In the case of the FTR options if the sink source price differential is negative then the FTR payout is zero. On the other hand, FTR obligations can either have a negative or positive payout depending on the area price difference and the directional definition of the FTR.

European solution for electricity market integration is converting to one possible solution with its positive and negative implications on cross border electricity trading development. Additional criteria for power system expansion are defined with best performance of their combination and especially taking into account social welfare and socio-economic congestion costs. Choice of additional criteria for optimal power system expansion depends on several indicators like number of congested hours, congestion costs, maximization of social welfare, complex and simple investment indicator, optimization of the distribution of transmission capacities among the different timeframes, improved security of supply and others. It is possible to use combination of incentive schemes into one index for cross-border trade. Combination of aggregate indicators with weighted average for each of them could give the best performance for security of supply in regional electricity market. , transmits Serbia-energy.eu