

P2P Trading:

The Next 'Non-Platform' for Energy Trading



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The renewable energy sector has always been thought of as a supplementary source of energy to the existing infrastructure set up by most countries. The infrastructure deployed by many governments utilise a combination of hydro-power, fossil fuels, nuclear energy, wind turbines and solar panels to generate electricity. This energy is then supplied to consumers via networks known as grids. Traditionally, a large percentage of the electricity supply has been from nonrenewable sources of energy. However, with increasing consumption, especially over the last 200 years, relying mainly on fossil fuels as a primary energy source did not make any more sense from a sustainability and cost perspective.

Recent advancements in technology have enabled individuals to efficiently harness solar, wind power and biogas to generate electricity off the grid. The main enabler for this has been the reduced cost of solar panels and wind turbines. The installation cost of PV (Photovoltaic) systems for solar power ranges from USD 15,000 – 20,000 for a 7.5 kW system while a wind turbine with a 2.5kW size can cost roughly USD 17,000. While there is scope for further reduction in costs, the installation cost pays for itself over time.

By placing these systems onto the existing grid infrastructure to measure the electricity being produced can enable individual users to minimise their electricity bills while also helping them 're-sell' their excess power via the grid to other users. Over time, it is expected that many individual users will be able to produce surplus power, thereby enabling them to trade electricity as a commodity. This will usher in a greater level of



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transparency and price elasticity that has never been witnessed in this sector before.

This model is known as a P2P (peer to peer) model. It is essentially a trading model that enables consumers and producers of electricity to 'trade' and 'purchase' excess electricity at a suitable price. Online platforms such as AirBnB and Etsy have enabled home-based producers and individuals to become entrepreneurs by enabling them to list their products to other users at a price agreeable to both parties based on demand and availability.

In many countries such as Netherlands & Australia this new model of consumption and production is already in full swing. This model enables self-sustenance for communities as will create more producerconsumers – known as 'prosumers'. The technological platform that calculates the energy production and availability adds an interesting dimension to the pricing of the electricity – making it dynamic. The platform empowers the prosumer to 'sell' the surplus energy to another user at a specified price that can be accepted, declined or defined by the seller.

Countries across Europe and Australia that are already operating on this model can be studied to identify the best-suited, implementable model for India, with its complexities – in terms of population, geographical & financial diversity, differing state-wide regulatory policies and more.

Globally, India is an important example, mainly because it is the third largest producer and consumer of electricity with an installed capacity to produce 364.17 GW as per latest government figures (October 2019). India's renewable energy sources which include solar and hydro power plants contribute nearly 35% towards the country's energy needs with an alarmingly high rate of fossil energy being generated even today. Thankfully, because of government intervention and initiatives to promote the use of solar power have helped reduce the cost of installing PV systems by 80% in the last 10 years. This makes the market conditions ripe for implementing this new system across the country.

It can be foreseen that this new P2P model will become increasingly linear, reducing the need for mid-level suppliers



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for a particular area, since more and more consumers will be producing enough electricity to supply to one another. This will further contribute to the cost reduction on the distribution infrastructure in the country.

One of the major drivers of success in implementing this system in India will be based upon the energy trading platform that is deployed all across. The right platform will feature the right metrics that are important to the Indian prosumer and will intuitively drive the trading behaviour in a fruitful direction.

The key consideration for the government in driving such a major infrastructural change is cost effectiveness, measuring the environmental impact & benefits, the cost & ease of implementation, consumer acceptance & readiness, future readiness to name a few.

Challenges of electricity storage, dissemination, identifying the key technology, billing will need to be effectively addressed. The cost and timely implementation of newer infrastructural changes in support of electric vehicles for example, must also be considered.

The role of technology here is the key driver in the adoption of the P2P model. Both Blockchain and AI technologies are being combined globally to create a solution that will not only record electricity consumption data in real time, but will intelligently redistribute the same across the grid and calculate the excess consumption or surplus and seamlessly link it to the billing system in order to charge or pay out the prosumer on actual consumption or sale of electricity to the grid.

The installation of 5 lakh Smart Meters in UP, Delhi, Haryana, Bihar and Andhra Pradesh is an important step in conveying the government's vision to overcome inefficiencies in the usage and billing and to promote real time data, monetisation of energy savings and prevention of energy theft is a step in the right direction. These Smart Meters are compatible with solar panels and will be able to measure electricity generation going forward.

