Renewable electricity: a hope for the future

Santanu Bandyopadhyay¹

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Renewable electricity has been projected as the most important step towards reducing emission and achieving overall sustainability in the electricity sector. There is no doubt that the potential of renewable energy is sufficient for the present consumption (conversion of a small fraction of the available solar radiation to electricity is sufficient to meet the present need of the entire world). However, the levelized cost of renewable electricity, primarily due to huge capital investment, is seen as a hindrance towards achieving this goal. A recent comprehensive report from the International Renewable Energy Agency highlights an opposing, yet welcomed, portrait on the cost of renewable electricity. It reports that the renewable power generation costs have achieved grid-parity for many renewables and for others, it will continue to fall and touch the rope in near future (IRENA 2018).

Renewable energy-based system has already been demonstrated to be a cost-effective solution for remote locations where the extension of the existing grid is uneconomic. In many remote locations, especially for islands, cost of renewable electricity is much lower than the electricity produced from fossil fuels (Bandyopadhyay and Desai 2016). This is in purely economic terms, without even considering the social cost of emissions from the fossil fuel-based power plants. There is a relation between the high capital investments associated with renewable energy and the overall economic growth of a country, especially developed countries. In a recent article, Saad and Taleb (2018) discussed the Granger causality between the renewable energy consumption and the economic growth. Based on the data for 12 countries in the European Union, it was demonstrated that, in the short run, economic growth helped in establishing the renewable energy sectors. This is definitely catalysed by the favourable governmental policies and tax rebates in these countries. However, in the long run, there exists a

bidirectional causality between the renewable energy consumption and the economic growth (Saad and Taleb 2018), highlighting the fact that capital investment in renewable sector pays off over a long time horizon and even helps in economic growth. The International Renewable Energy Agency observed that globally competitive procurement and auctions are very rapidly driving down the costs of renewable electricity through best project development practices, innovations in the conversion technologies, and reductions in the project risks (IRENA 2018). In essence, economic activities, along with appropriate policies, play an important role in reducing the cost of renewable electricity.

In the present time, fossil fuel dominates the overall fuel mix for electricity generation. The International Renewable Energy Agency estimates the cost in the range of 5¢–17¢ per unit of electricity for fossil fuel-based power plants in the developed countries. The report observed that the grid-parity has been achieved by renewable projects, commissioned in 2017. These projects are based on hydro (5 ¢/kWh), wind (6 ¢/kWh), biomass (7 ¢/kWh), and geothermal (7 ¢/kWh) sources. The global weighted average cost of electricity from solar photovoltaic is almost there with a present cost of 10 ¢/kWh (IRENA 2018). In specific locations, the levelized cost of renewable electricity is lower than these global average values. With favourable policies are in place, the effective costs for renewable electricity are expected to be even lower in the near future. With such a positive trend, future is not very far away, when we are expected to achieve the total renewability in the electricity sector.

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✉ Santanu Bandyopadhyay
santanub@iitb.ac.in

¹ Department of Energy Science and Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India