

Role of New Renewables in the Sustainable Energy Development of India*

*Prof. Ramprasad Sengupta***

Distinguished Fellow, India Development Foundation, Gurgaon

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Professor Emeritus, Jawaharlal Nehru University, New Delhi

The Abstract

The process of development since the days of industrial revolution in the eighteenth century has been mainly based on the development and use of fossil fuels. However, fossil fuel based economic development has given rise to the alarmingly large accumulation of unabsorbed wastes and pollution in the ecosystems of the earth resulting in global climate change and many other adverse consequences.

The need for transforming the global economy and society to control climate change and clean up the environment at local and global level has led to the development of the vision of a new industrial era based primarily on the development of renewables and hydrogen to replace fossil fuels in the electricity and the transport sector. Since the sources of supply of renewables (particularly the new renewables, i.e., excluding large storage hydro) and the load centres of demand are widely dispersed and subject to fluctuations, the development of energy internet of smart grid for power flow is an imperative.

The paper focusses on the potential role of the renewables in the future development of India's power system and describes resource wise estimates of potential of power capacity, their determinant factors, and the constraints or challenges in their development. It also discusses some of the cost trends and shows how the true cost of the main competing coal thermal power would compare with those of such new renewable resource based supply. It concludes by making observations on the attainable level of penetration of new renewables and policies that need to be in place for this purpose within the horizon of 2031-32.

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