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Solar energy - technologies, policies and economics

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Solar energy is the most common and abundant source of energy for the mankind. However, it has not been utilized to supply basic energy services (e.g. light, heat and motive power) until recently because of its high costs and lack of proper technologies to store and convert to useful energy services. Over the last two decades, solar energy has experienced unprecedented advances in terms of technological innovation and its deployment to produce major energy services/commodities (i.e. heat and electricity). Global capacity of energy generation using solar heat and radiation expanded by hundred folds over two decades. Technological innovations have caused costs of solar energy production to drop by hundred times in four decades. None of the other sources of energy have exhibited this type of development momentum in very short period of time. The growth of solar and also other renewable technologies are driven by mainly government policies. Almost every country in the world are interested in developing solar energy and all major economies around the world have not only introduced policy instruments to stimulate the expansion of solar energy but are also sustaining the policies for a long time. However, solar energy development is still facing challenges because it is still not favored economically to conventional sources of energy with some exceptions. The intermittency is another big hurdle for solar energy to compete with conventional sources of energies. For a sustained future of solar energy, the costs of technologies need to be cut further and innovations are required in storage technologies so that the limitation caused by intermittency can be resolved.

Biography

Govinda R Timilsina is a Senior Research Economist at the Development Research Group of the World Bank, Washington, DC. He has more than 22 years' experience across a board range of energy and climate change economics and policies at the international level. His key expertise includes green energy, climate change policies, macroeconomic and sectoral modeling for policy analysis. Prior to joining the Bank, he was a Senior Research Director at the Canadian Energy Research Institute, Calgary, Canada. At present, he is leading a number of studies including economics of green or renewable energy, carbon pricing, sustainable urban planning.

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