

Making Solar and Wind Power Reliable

What is the issue?

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- Union government is taking various initiatives on grid parity for uninterrupted power supply.

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- A solar- and wind-powered micro grid will be a reliable way for lighting up the remote areas.

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What is grid parity?

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- Electricity grid is a very complex system which involves long-distance transmission of electricity at high voltage, step-up and step-down transformers, and a distribution network at load centres.

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- Various electricity generators and consumers are connected to it.

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- Grid parity can be seen in two different ways:

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1. **Generator-end grid parity** - Generator-end grid parity is limited to the plant boundary and does not include the cost of the grid system.
2. **Consumer-end grid parity** - To ensure that electricity is always available to consumers on a reliable basis, a grid manager has to contract enough electric supply from generators available on demand at all times.

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What are the issues with power distribution in India?

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- In India, there are still communities that have no access to the central electricity grid, or the supply from the central grid is unreliable.
- The cost of the grid system is, therefore, more than the cost of towers, wires, and transformers.
- It also includes capital and operating cost of storage capacity when provided for and capacity charge paid by the grid manager to meet the peak load.
- When a grid manager is not able to pay adequate capacity charge, the result is load shedding.

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What are few practical constraints in solar and wind power?

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- The solar and wind forces has detachable generators which as lower electricity output despite their capability to continue operation at full capacity.
- Despatchable generators have to suffer loss of generation because of intermittency of solar and wind, and this is an aberration for a capital-scarce country like India.
- To compensate for intermittency of solar and wind, despatchable generators have to ramp up generation or back down, and the frequent change in generation level causes wear and tear of machines and increases maintenance costs.
- All costs are ultimately paid by the consumers or as subsidy by the government.

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What innovative measures can be taken?

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- The capacity of generators capable of despatching electricity on demand, i.e. despatchable sources, connected to the grid should be more than the peak load.

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- In India solar and wind have reached generator-end grid parity and more research and development is needed before they achieve consumer-end grid parity.

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- Appropriate ways to deploy solar and wind can be decided by recognising their three characteristics zero fuelling cost, low capacity factors and intermittency.

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- Solar- and wind-powered micro grid is the way forward for rural and remote communities.

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- Research in battery technologies will bring down the cost of electricity storage and improve safety of storage.

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- Along with investment in solar and wind, the government must plan for increased investment in both hydro and nuclear.

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Source: The Hindu

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