



Solar Feeders for Powering Agriculture

What is the issue?

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The crucial need for uninterrupted and affordable power supply for agriculture makes solar power a viable option.

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How significant is electricity for agriculture?

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- Agriculture is a major consumer of electricity, accounting for one-fourth or one-third of consumption in many States.

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- Two-thirds of the total irrigated area in India uses groundwater pumping, powered by more than 2 crore electric and 75 lakh diesel pumps.

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- So access to groundwater largely depends on reliable and affordable electricity supply.

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- This is an important issue as it concerns livelihoods of the rural poor and food security of the country.

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What is the complexity and challenge?

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- Since the 1970s, agriculture in many States has been receiving electricity at either low tariffs or for free. Much of this supply is un-metered.

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- Due to lower tariff and poor revenue collection, agricultural sales are often

seen as a major reason for distribution companies' (discoms) financial losses.

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- Part of this loss is then recovered through higher tariffs for other consumers like industry and commercial (called cross-subsidy).

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- The remaining loss is made up through direct subsidy from the State governments.

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- So being seen as a loss-making sector, agriculture often gets poor quality supply leading to problems such as frequent pump burn-outs and power failures.

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- Restoring supply takes a lot of time and so does getting new connections.

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- Further, the supply is unreliable and often available only during late nights. All these factors make farmers distrustful of discoms.

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- Further, electricity demand for agriculture is expected to double in the next 10 years.

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- Also, as the average cost of supply keeps increasing, the problem of agriculture subsidies will become worse.

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What are the possible solutions?

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- Any solution must first provide reliable, adequate day-time electricity supply to farmers at reasonable tariff.

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- This should lead to a gradual increase in the mutual trust between the discom and the farmer.

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- This should also reduce the subsidy requirement for it to be truly scalable across the country.

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- Three ongoing developments allow for encouraging possibility in this regard

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1. low cost electricity from solar, at Rs. 2.75-3/unit and at a fixed price contract for 25 years
2. States exponentially increasing their solar procurement to fulfil the national objective of increasing the use of solar power
3. the grid has reached every village; agriculture feeder separation (lines carrying electricity to pumps and villages are physically separated) has progressed significantly

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What are the schemes in this regard?

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- **Maharashtra** - The 'Chief Minister's solar agriculture feeder programme' is a programme that takes advantage of the above developments.
- A solar agriculture feeder is essentially a 1-10 MW community scale solar PV power plant, which is interconnected to the 33/11 kV sub-station.
- A 1 MW solar plant can support around 350, 5 hp pumps and requires around 5 acres of land to set up.
- The plant can be set up in few months and there is no change at the farmer's end.
- Pumps need not be changed and farmers do not have to take responsibility of installation and operation.
- All the pumps connected to the separated agriculture feeder will be given reliable day-time electricity for 8-10 hours between 8 am and 6 pm.
- When solar generation is low, balance electricity can be drawn from the discom; when pumping demand is low, excess solar electricity will flow back to the discom.
- Project developers are selected through a competitive-bidding process.
- The entire electricity would be bought by the discom through a 25-year

contract.

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- **Central scheme** - The Centre has proposed a similar scheme at the national level, namely, KUSUM, with a 10,000 MW target.

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- The KUSUM scheme (Kisan Urja Suraksha evam Utthaan Mahabhiyan) provides for -

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- i. installation of grid-connected solar power plants each of capacity up to 2 MW in the rural areas
- ii. installation of standalone off-grid solar water pumps to fulfil irrigation needs of farmers not connected to grid
- iii. solarization of existing grid-connected agriculture pumps (make farmers independent of grid supply, enable them to sell surplus solar power generated to discom and get extra income)
- iv. solarization of tube-wells and lift irrigation projects of Government sector

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What are the advantages?

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- The electricity grid availability in every village along with national feeder separation programme makes it a cost-effective and rapidly scalable approach.
- Apart from ensuring day-time reliable power for the farmers, it requires no capital subsidy from the government.
- Rather, it is cost-effective, thereby enabling reduction in subsidy.
- Also, no new large transmission lines are needed (has been a bottleneck for various large scale wind and solar power tenders).

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- Deployment is possible under the existing regulatory framework.
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- This approach can also provide distributed jobs to local youth in construction, operation and maintenance of the plant.
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- Furthermore, the future programmes could link deployment of such solar feeders to -
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- i. reduce unauthorised use/connections
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- ii. improve metering and tariff recovery
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- iii. facilitate energy efficient pumps and water saving approaches, etc
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Source: Business Line

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