

Reaching India's Renewable Energy Targets Cost-Effectively



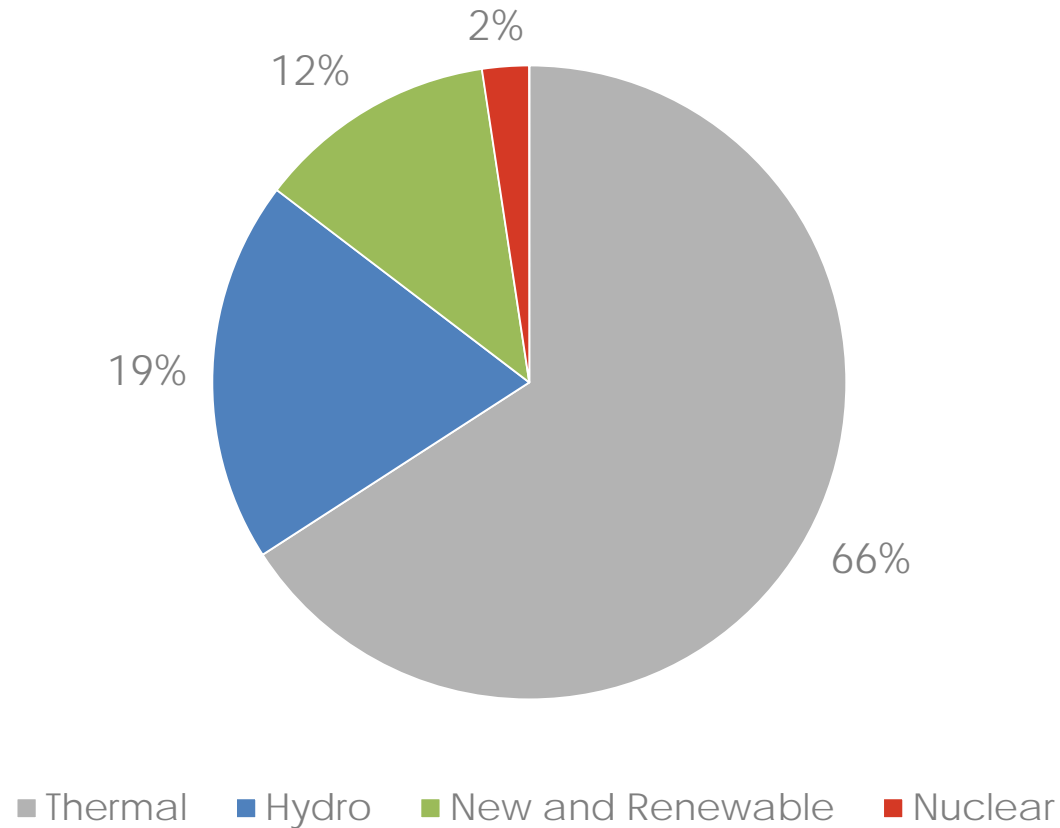
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Climate change and energy security

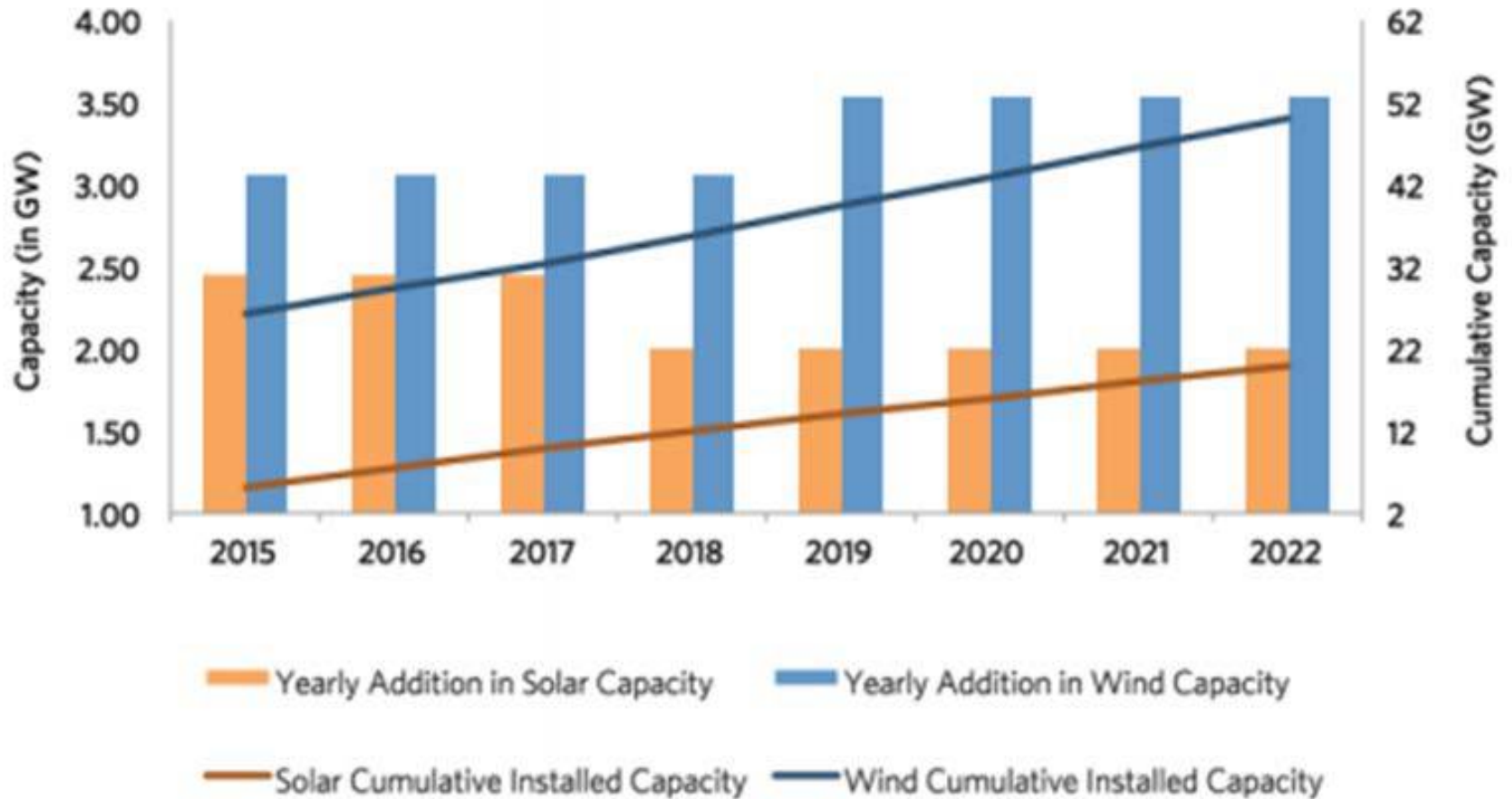
Installed Generating Capacity of Electricity Utilities in India (2012)



Source: Energy Statistics, 2013, Ministry of Statistics and Programme Implementation, Government of India

100 GW solar and 30 GW wind by 2022

Yearly and Cumulative Capacity Deployment Targets of Renewable Energy

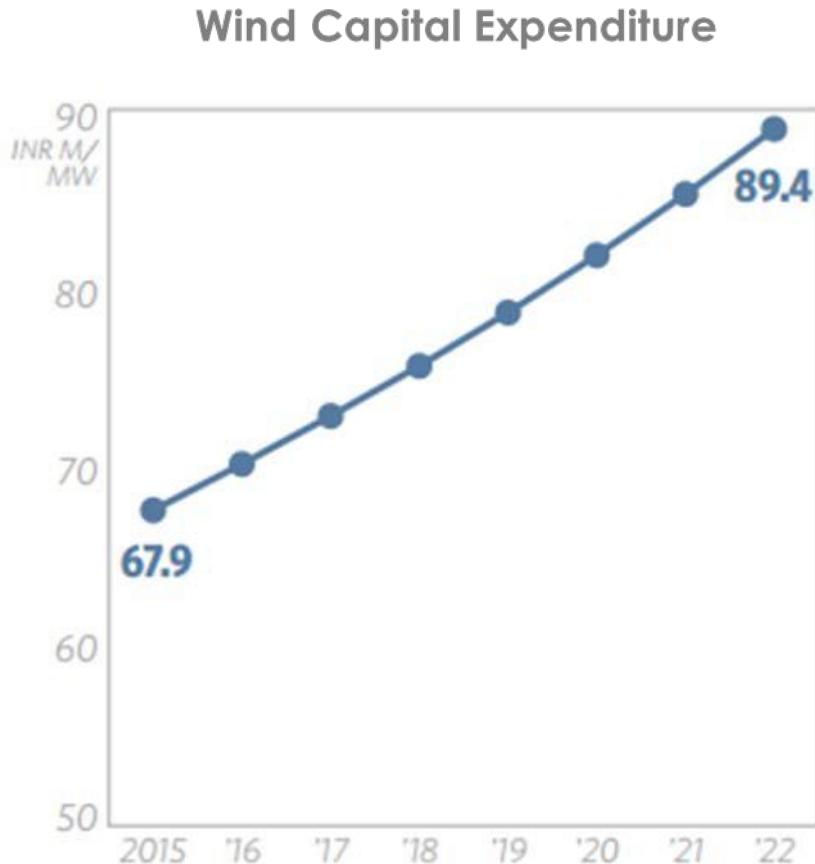


How much will it cost the government to achieve these targets?

Renewable energy will likely replace imported coal

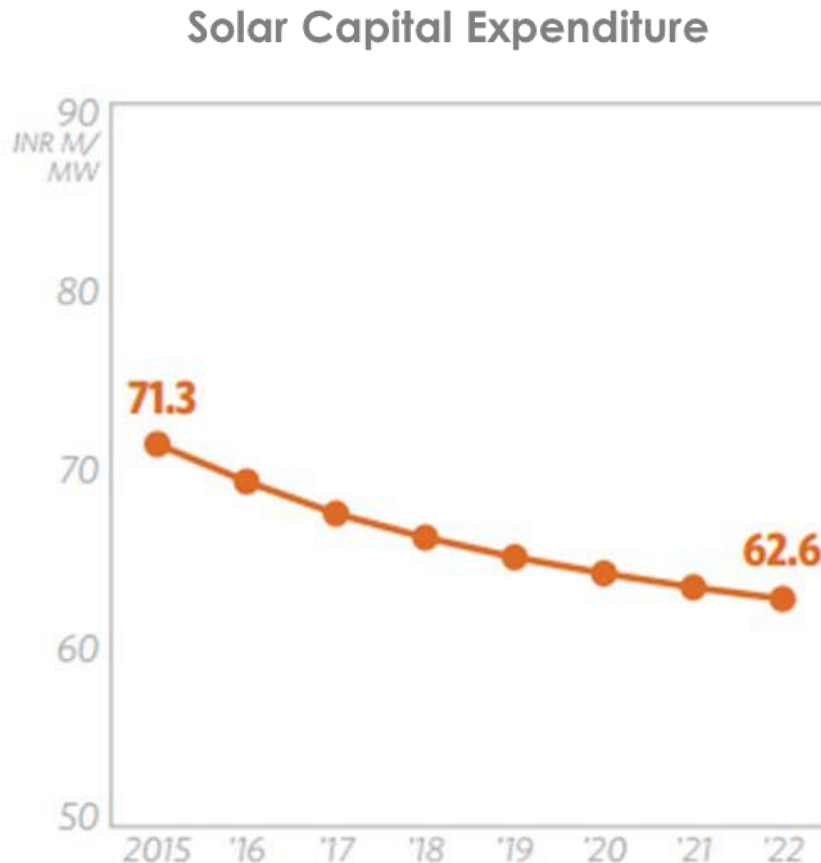
- Government support is required if additional renewable energy is more expensive than the fossil fuel it would replace – the most expensive.
- Natural gas has limited supply.
- Imported coal is more expensive than domestic coal.
- Imported coal accounts for 18% of electricity.

The cost of wind power



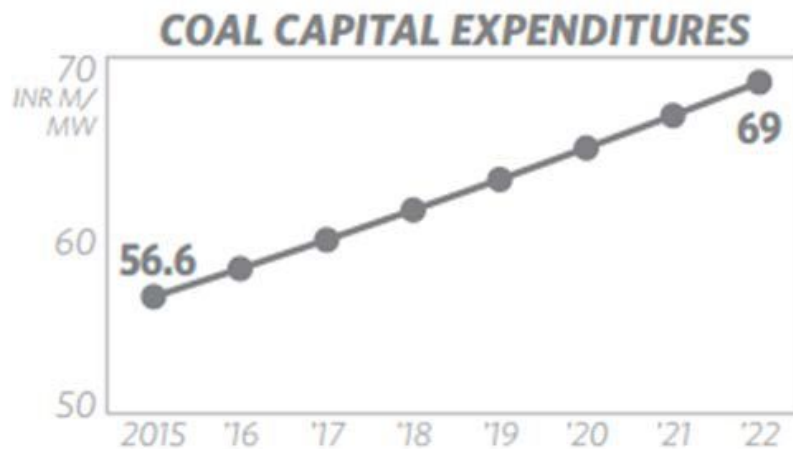
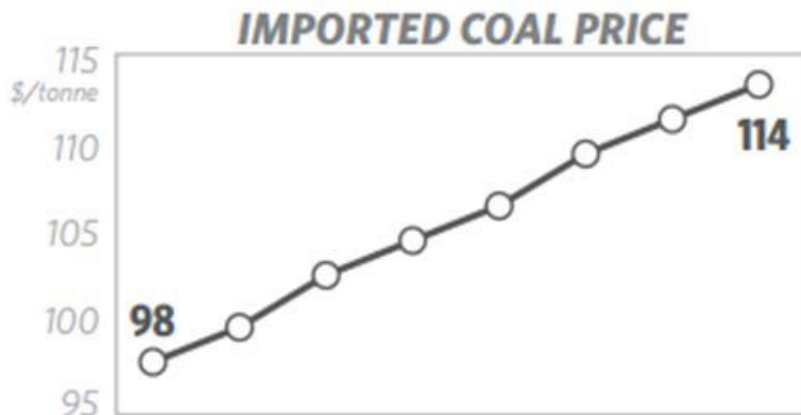
- Capital expenditure for wind power will increase, driven by inflation.
- Capacity utilization for wind power will rise from 25% to 29% due to an increase in hub height.
- Overall increase in the levelized cost of electricity for wind power.

The cost of solar power



- Capital expenditure for solar power will continue to decrease.
- Capacity utilization for wind power will remain at 20.5% due to abundant resource availability.
- Overall decrease in the levelized cost of electricity for solar power.

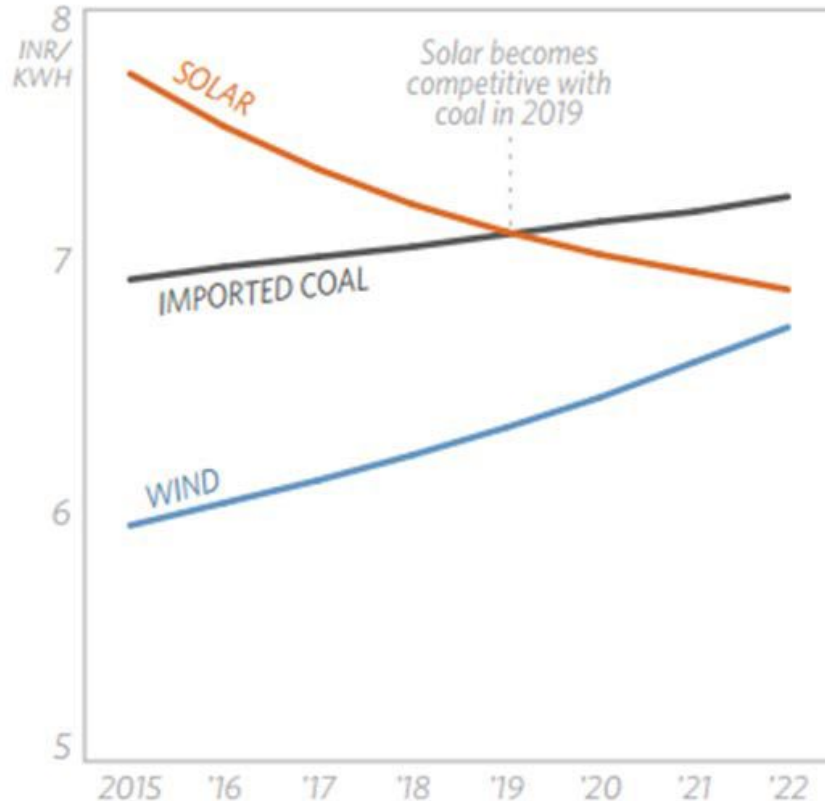
The cost of imported coal



- Capital expenditure for imported coal power will increase, driven by inflation.
- Fuel cost will also rise, but at a lower rate than the capital expenditure.
- Overall increase in the levelized cost of electricity for imported coal power.

Comparing costs

Forecast of Levelized Costs of Electricity



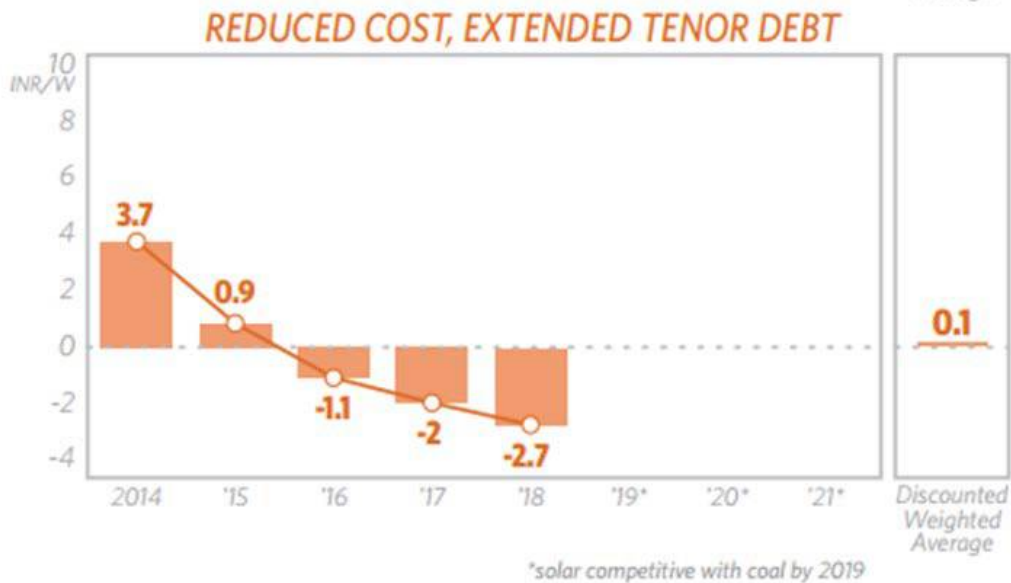
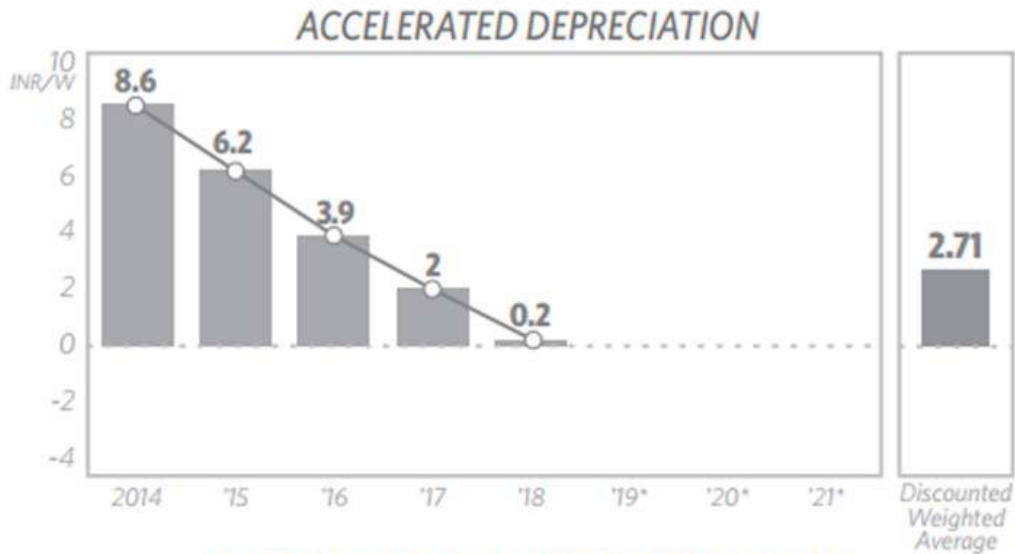
- Wind power is already competitive with imported coal, and will continue to be competitive beyond 2022.
- Solar power will be competitive with imported coal by 2019.

The cost of government support

- Since wind power is already competitive, no government support is required.
- Solar power will require support up to 2019.
- Under the current policy of accelerated depreciation, the cost of support for solar power is an average of **INR 2.71/W**.

How can the cost of
government support
be reduced?

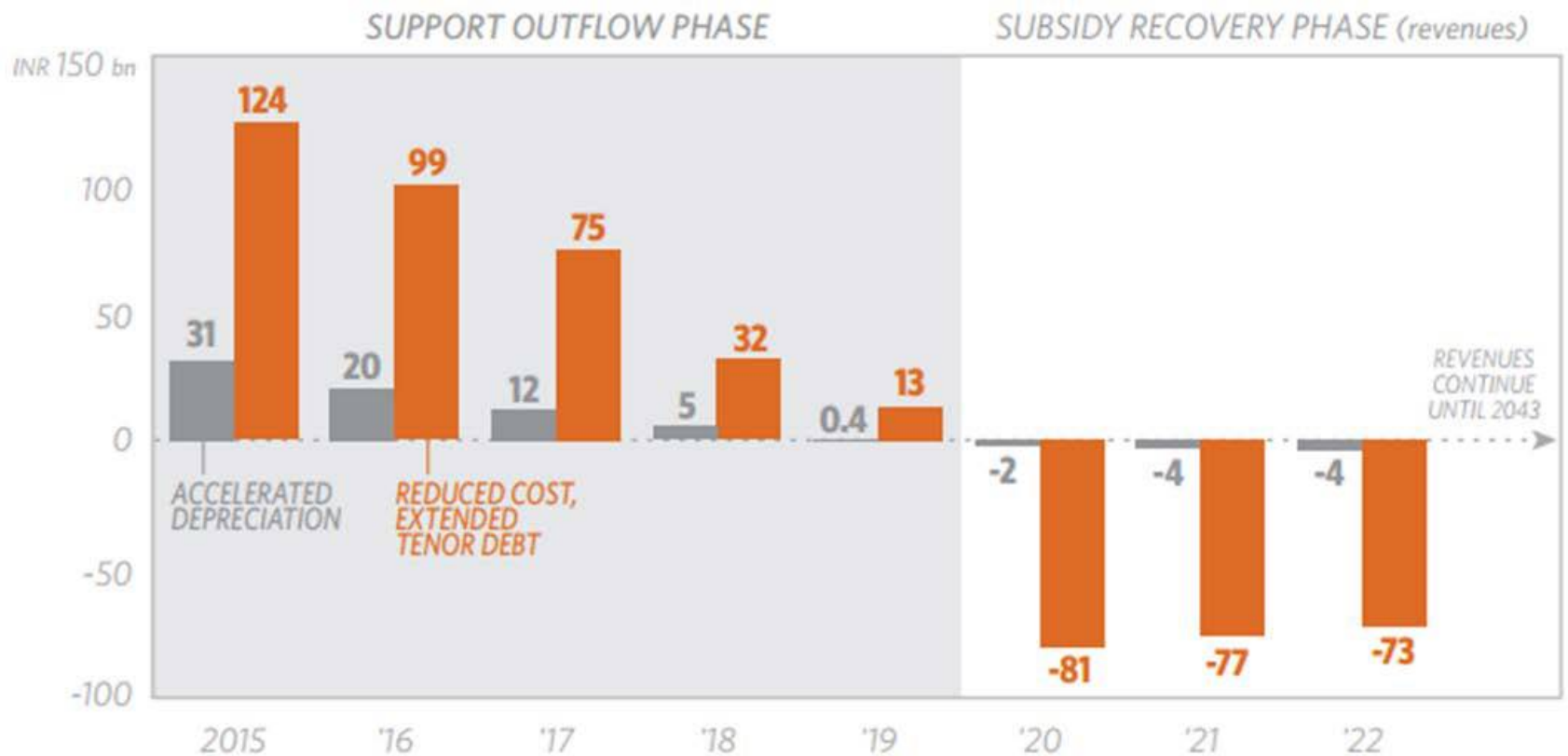
Reduced cost, extended tenor debt



↓ 96%

Higher initial costs, but lower lifetime costs

Nominal Cost of Support for Solar Energy



Policy Implications

- Wind power is already competitive with imported coal, and can be deployed quickly with minimal government support.
- Solar power will be competitive by 2019, and will require some support until then.
- The cost of government support for solar power can be reduced 96% by using reduced cost, extended tenor debt instead of accelerated depreciation.
- The total cost of support can be further reduced if the government focuses on accelerating deployment of wind power now, and gradually ramps up deployment of solar power.

For more information and
to download the full report:

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