Moving away from Coal

Why in news?

Decline in coal stocks and the resulting power outages in several States have spurred queries of renewable energy's potential to fill in for the conventional resource.

What is the issue?

- Earlier this week, coal stocks in more than 100 thermal power plants in India fell below the critical mark (less than 25% of the required stock).
- Tamil Nadu Chief Minister wrote to Prime Minister Narendra Modi, requesting him to ensure adequate supply of coal to the power-generating units in the State.
- In Maharashtra, Deputy Chief Minister said the State government planned to import coal to cope with the power crisis.
- The other top power-consuming State in the country, Gujarat, is also planning to import coal.

Is there a coal crisis?

Coal accounts for 55% of the country's energy needs.

- **Demand-** The India Energy Outlook 2021 report of the International Energy Agency (IEA) said energy use in India has doubled since 2000, with 80% of demand still being met by coal, oil and solid biomass.
- **Reasons for high consumption of coal**
  - Abundant availability
  - Has shorter gestation periods
  - Have lower capital costs than hydel and nuclear plants
  - Stability in energy production
  - Most viable enabler of energy security
- **Reasons for the current crisis**
  - Pandemic-related disruptions prevented the mining and stock-up of coal.
  - Monsoons hampered the mining operations and delayed the arrival of stocks.
  - With household demand for power picking up and the arrival of summer, combined with the sudden acceleration in economic activity, it has resulted in a demand-supply mismatch.
- The IEA estimates that despite the shock from COVID-19, India's demand is expected to grow by almost 5% a year till 2040.

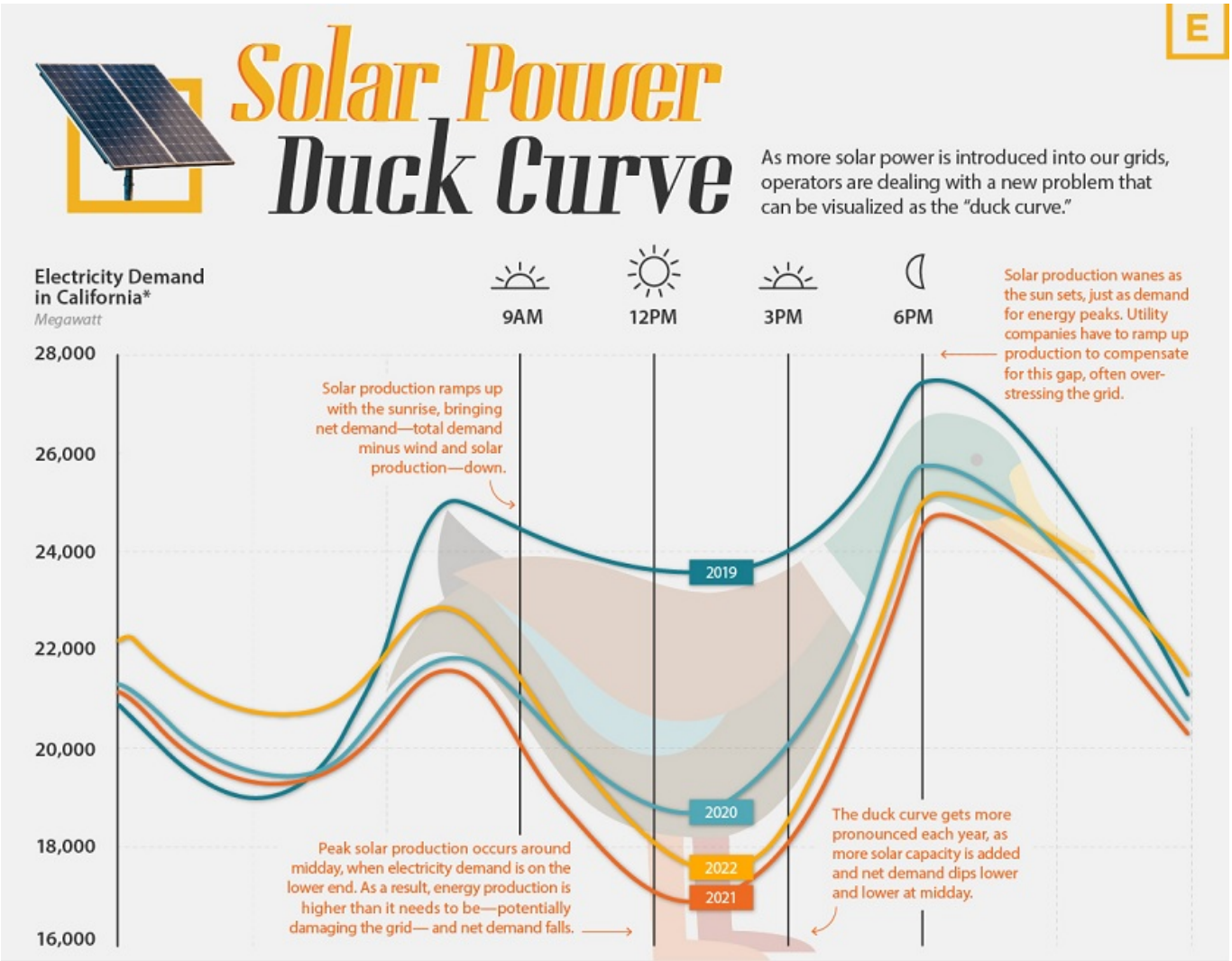
To know more about the coal shortage in India, click here

Where does India stand on renewable energy sources?

- A total of 152.90 GW of renewable energy capacity has been installed in the country as on February 2022.
- In accordance with the Prime Minister's announcement at COP26, the Ministry of New and Renewable Energy aspires to install 500 GW of electricity capacity from non-fossil fuel sources by 2030.
- In 2020-21, as per the Central Electricity Authority (CEA), renewable energy sources' share represents 21.5% of the overall generation and is expected to reach 40% by 2029-30.

What are the challenges?

- **Losses**- The capacity of a plant does not necessarily translate into the actual power it generates for the grid as some of it may be lost due to external factors such as heat or transmission losses.
- **Variability**- Solar and wind energy are variable resources.
    - **Seasonal variability**- In monsoons, solar energy is barely available with wind energy available in abundance creating a seasonal variation.
    - **Spatial variability**- Regions near coastal areas like Gujarat possess greater ability to produce wind energy, in comparison to States like Rajasthan which are drier.
- **The duck curve issue-** Solar energy is abundantly available during daytime in summers.
- However, the domestic consumption peaks in the evenings when we turn on the air-conditioner after returning from work.
- This discrepancy results in a net demand curve that takes the shape of a duck, and the duck curve gets more pronounced each year



What is the need of the hour?

- **Energy-efficient behaviour**- Transition to renewable energy would depend a lot on inculcating energy-efficient behaviour such as operating ACs more flexibly through the day and opting for energy-efficient products.
- **Lifestyle changes**- Models such as **Japan's 'Cool Biz Campaign'** permitting employees to wear light and casual clothes at work instead of the conventional jackets and tie in order to reduce the need for air-conditioning can be inculcated.

References

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2. https://elements.visualcapitalist.com/the-solar-power-duck-curve-explained/

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