Indian Economy · GS - III

Examine how fluctuations in renewable energy generation can affect electricity prices and energy security. Suggest measures to ensure reliable and affordable power supply during the energy transition.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 09/11/2026	GS - III	Indian Economy

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Variable renewable generation, intermittency, gas-based balancing, wholesale electricity markets, energy storage, grid modernisation, demand response, regional interconnections, energy diversification.

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Model Answer

Introduction

Renewable energy is essential for decarbonisation, but sources such as wind and solar are variable. Sudden declines in generation can create supply-demand imbalances and increase electricity prices.

Impact on Electricity Markets

When wind or solar output falls, grid operators may depend on dispatchable sources such as gas-fired power plants. If gas prices are high, electricity generation becomes more expensive. During periods of peak demand, limited supply flexibility can further intensify price volatility.

Measures for Reliable and Affordable Supply

1. **Energy storage:** Expand battery storage and pumped-storage hydropower to manage fluctuations.

2. **Grid modernisation:** Strengthen transmission infrastructure and smart-grid systems.
3. **Diversification:** Maintain a balanced mix of renewable, hydro, nuclear and other reliable generation sources.
4. **Demand response:** Encourage consumers to shift electricity use away from peak periods.
5. **Regional cooperation:** Improve cross-border electricity trade and grid connectivity.

Conclusion

A resilient electricity system requires combining renewable expansion with storage, flexible generation and efficient grid management. This can strengthen energy security while supporting an affordable clean-energy transition.

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