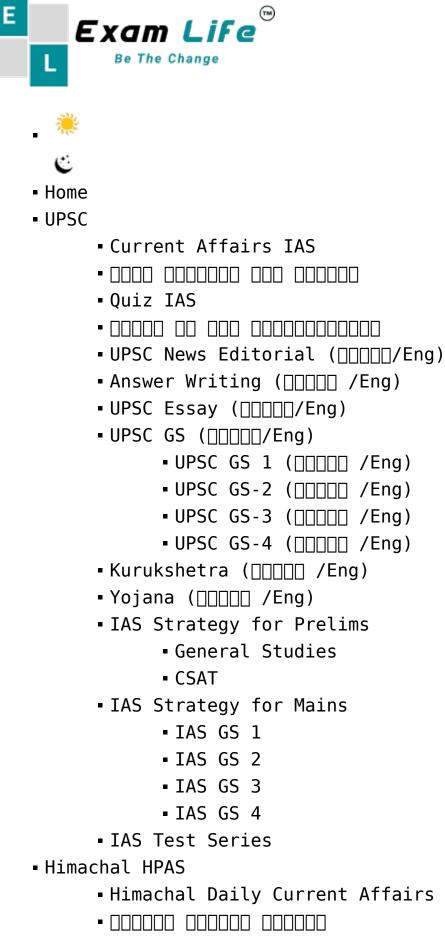
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- Geography Quiz (<u>[]]</u>/Eng)
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- Science and Technology Quiz (<u>DDDD/Eng</u>)
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**Topics Covered** 

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- Summary:
- What is the news?
  - Solar's Ascension in India:
  - Global Solar Growth Trends:
  - A Global Shift Towards Solar Energy
  - India's Ambitious Renewable Energy Goals
  - The Road Ahead for India's Solar Power Sector
  - QuizTime:
  - Are you Ready!
- Read the Below Instructions Carefully:
  - Please Rate!
- Mains Questions:
  - Question 1:
  - Model Answer:
  - Question 2:
  - Model Answer:
  - Relevance to the UPSC Prelims and Mains syllabus under the following topics:
  - Prelims:
  - Mains:

Summary:

- India's Solar Milestone: India has surpassed Japan to become the world's third-largest solar power generator in 2023, as reported by Ember, a global energy think tank.
- Solar Growth: India's solar energy production jumped from 0.5% in 2015 to 5.8% by 2023, reflecting a strong commitment to clean energy and climate change mitigation.
- Global Trends: Solar energy's share of global electricity production reached 5.5% in 2023, with a forecast of 22% by 2030, indicating a significant shift towards solar power worldwide.
- Future Outlook: To maintain its leading position, India needs to invest in grid infrastructure, energy storage solutions, and solar technology innovation.

#### What is the news?

 India has achieved a significant milestone in its clean energy journey, surpassing Japan to become the world's third-largest solar power generator in 2023. This remarkable feat is highlighted in a recent report by Ember, a global energy think tank.

#### Solar's Ascension in India:

- Rapid Growth: India's solar energy deployment has seen a significant increase, moving from 10th place in 2015 to a leading position by 2023.
- Increased Solar Power Generation: Solar energy production in India has risen from a mere 0.5% of its electricity generation in 2015 to a substantial 5.8% by 2023.
- Commitment to Clean Energy: This impressive growth reflects India's dedication to adopting clean energy sources and reducing its dependence on fossil fuels.
- Climate Change Mitigation: By increasing its reliance on solar power, India is actively contributing to the fight against climate change by reducing greenhouse gas emissions.

#### **Global Solar Growth Trends:**

 According to Ember's analysis, solar energy has increased dramatically over the world, with solar power in 2023 exceeding six times that of 2015. 75% of this growth was accounted for by the top four solar-growing nations, including India, highlighting the extensive use of solar power around the world.

#### A Global Shift Towards Solar Energy

• The report, titled "The Global Electricity Review 2024," provides a comprehensive analysis of global power generation systems in 2023. Accompanying the report is the world's first open dataset on electricity generation, encompassing 80 countries and representing a staggering 92% of global electricity demand. This data paints a clear picture: solar power is on the rise. The report reveals a record surge in solar energy's share of global electricity production, reaching 5.8% in 2023. This upward trend aligns with the International Energy Agency's (IEA) forecast, predicting solar power to constitute a significant 22% of global electricity generation by 2030.

#### India's Ambitious Renewable Energy Goals

 The report also emphasizes the ambitious goal set at COP28, the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change. This target aims to triple global renewable energy capacity by 2030. The report suggests that achieving this goal holds immense potential to steer the world towards a more sustainable energy future. India stands out as a leader in this global endeavor, being one of the few countries actively pursuing this ambitious target of tripling its renewable energy capacity by 2030.

#### The Road Ahead for India's Solar Power Sector

 India's emergence as a leading solar power generator is a testament to its commitment to clean energy and climate action. The country's rapid solar deployment has not only contributed to reducing its dependence on fossil fuels but also serves as an inspiration for other nations. However, further efforts are crucial to maintain this momentum. Investing in grid infrastructure, promoting energy storage solutions, and fostering innovation in solar technology will be key to solidifying India's position as a global solar leader and achieving its ambitious renewable energy goals.





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#### QuizTime:



#### Are you Ready!

Thank you, Time Out !

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- After Attempting Last Question.
- Enter Name & Email
- Click on Check Result
- Scroll down Check out Solutions too.
   Thank you.

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Category: General Studies

#### A key factor contributing to India's emergence as the world's third-largest solar power generator in 2023 is most likely:

 $\odot$  The discovery of vast new reserves of fossil fuels within

the country.

 The imposition of heavy taxes on the use of renewable energy sources.

 The implementation of government policies promoting solar power adoption.

 A significant decrease in the average price of imported coal.



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Category: General Studies
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#### A major challenge that India needs to address to maintain its momentum in the solar power sector is:

 The increasing scarcity of land suitable for large-scale solar power plants.

 The limited availability of skilled manpower for solar panel installation and maintenance.

 The lack of public awareness about the benefits of solar energy.

0	The	substantial	rise	in	the	cost	of	sol	ar	panel	imports	
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Category: General Studies

#### The potential benefits of achieving the COP28 target of tripling global renewable energy capacity by 2030 include:

 Increased dependence of developed nations on energy imports from developing countries.

 $\odot$  A significant reduction in global air pollution levels,

especially in urban areas.

 A potential rise in global energy prices due to the high cost of renewable technologies.

 A decrease in the availability of fossil fuels for future generations.

Prev Finish Next

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Category: General Studies

#### India's ambitious target of tripling its renewable energy capacity by 2030 aligns with the goals set at:

 The Kyoto Protocol, a landmark international treaty on climate change.

 The Paris Agreement, an international agreement on reducing greenhouse gas emissions.

 The World Summit on Sustainable Development, focusing on environmental and social issues.

 The Montreal Protocol, an international treaty on protecting the ozone layer.

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Category: General Studies

# The report by Ember on global electricity generation in 2023 suggests that:

 Nuclear power remains the dominant source of electricity generation worldwide.

 Solar power's contribution to global electricity production has reached a record high.

 Coal-fired power plants are being rapidly phased out in most developed countries.

O The global demand for electricity has significantly
decreased due to energy conservation efforts.
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### Mains Questions:

# Below Mains Question



Write in Comment Section

#### **Question 1:**

India's emergence as the world's third-largest solar power generator signifies a significant development in the country's clean energy journey. Discuss the factors that have contributed to this achievement. Analyze the challenges and opportunities that lie ahead for India's solar power sector. (250 Words)

#### Model Answer:

Factors Contributing to India's Rise:

- Government Policies: Supportive policies like the National Solar Mission, subsidies for rooftop solar installations, and setting ambitious renewable energy targets have provided a strong impetus for solar power growth.
- Falling Solar Panel Costs: Significant reduction in the cost of solar panels over the past decade has made solar energy a more economically viable option compared to traditional fossil fuels.
- Increased Awareness and Demand: Growing awareness about climate change and the benefits of clean energy has led to increased demand for solar power from both households and industries.
- Favorable Geographic Conditions: India's abundant sunshine hours provide a natural advantage for solar power generation.

Challenges and Opportunities:

- Grid Infrastructure: Upgrading and expanding the national grid is essential to efficiently integrate large-scale solar power generation.
- Energy Storage Solutions: Developing efficient and cost-effective energy storage solutions to address the intermittent nature of solar power is crucial.
- Domestic Manufacturing: Encouraging domestic manufacturing of solar panels and equipment can reduce dependence on imports and create jobs.
- Financing Mechanisms: Innovative financing mechanisms are needed to ensure continued investment in solar projects.

Opportunities:

- Job Creation: The solar power sector has the potential to create significant employment opportunities in manufacturing, installation, and maintenance.
- Energy Security: Increased reliance on solar power can reduce dependence on imported fossil fuels and enhance India's energy security.
- Technological Advancements: Investing in research and development can lead to advancements in solar technology, further improving efficiency and reducing costs.

Overall, India's achievement in the solar power sector presents both challenges and opportunities. By addressing these challenges and capitalizing on the opportunities, India can solidify its position as a global solar leader and achieve its clean energy goals.

#### **Question 2:**

The report by Ember highlights the ambitious target set at COP28 to triple global renewable energy capacity by 2030. Critically evaluate the feasibility of achieving this target and discuss the potential benefits and challenges associated with it. (250 Words)

#### Model Answer:

Feasibility of the Target:

Achieving the COP28 target of tripling global renewable energy capacity by 2030 is ambitious but achievable. Several factors can contribute:

- Falling Renewable Energy Costs: Continuing decline in renewable energy costs, particularly solar and wind, can make them even more competitive with fossil fuels.
- Strong Political Will: A global commitment to clean energy, with supportive policies from leading nations, is crucial.
- Technological Advancements: Breakthroughs in renewable energy technologies and storage solutions can further accelerate progress.

Potential Benefits:

- Reduced Carbon Emissions: A significant increase in renewable energy would lead to substantial reductions in greenhouse gas emissions, mitigating climate change.
- Improved Air Quality: Reduced reliance on fossil fuels can significantly improve air quality,

especially in urban areas.

 Energy Security: Greater reliance on renewables can enhance energy security for nations by reducing dependence on fossil fuel imports.

Challenges:

- Upfront Investment: The transition to a renewable energy-based system requires significant upfront investments in infrastructure and technology.
- Grid Integration: Integrating large-scale renewable energy sources into existing grids presents technical challenges.
- Political Will and International Cooperation: Sustained political will at the national and international level, along with global cooperation, is necessary to achieve this ambitious target.

In conclusion, the COP28 target is ambitious but holds immense potential for a sustainable future. Concerted efforts and international cooperation are key to overcoming the challenges and realizing the benefits of this global shift towards renewable energy.

Remember: These are just sample answers. It's important to further research and refine your responses based on your own understanding and perspective. Read entire UPSC Current Affairs.

Relevance to the UPSC Prelims and Mains syllabus under the following

#### topics:



#### **Prelims:**

• General Studies Paper I : Science and Technology: This section could include a question on:

Developments in renewable energy: Briefly mention India's achievement in solar power generation as an example of the country's progress in clean energy technologies.

#### Mains:

- Energy Sources: Discuss India's growing focus on solar power as a renewable energy source and its significance for energy security and environmental sustainability.
- Infrastructure Development: Briefly mention the challenges and opportunities associated with grid infrastructure development to integrate large-scale solar power generation.
- Government Policies and Interventions for Development: Discuss the role of government policies like the National Solar Mission in promoting renewable energy adoption and

achieving clean energy targets.

- Indian Economy and issues relating to Planning, Growth and Development: Briefly mention the potential economic benefits of India's rise in solar power generation, like job creation in the renewable energy sector.
- Optional Subjects (if applicable): The topic could be more directly relevant to optional subjects like: Science and Technology: Questions on the advancements and challenges associated with integrating renewable energy sources like solar power into the national grid.

Environment and Ecology: A discussion on the environmental benefits of solar power and its role in mitigating climate change.









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