

Renewable Energy | Important PYQ Topics

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INTRODUCTION

- Report titled, “**Investing for Impact: Renewable Energy & Cleantech,**” released by Aspire Circle, has projected that India can generate a staggering **\$212 billion in revenue and create 3.4 million jobs**, impacting 919 million lives by 2030 with an investment of USD 350 billion in several ventures and initiatives dedicated to renewable energy and cleantech.
- India is the **world's third largest producer of renewable energy**, with **40%** of its installed electricity capacity coming from non-fossil fuel sources.

WHY RENEWABLE ENERGY

- **Sustainable:** Energy generated from renewable sources will be cleaner and greener and more sustainable.
- **Employment opportunities**
- **Market assurance:** Renewable sources provide the market and revenue assurance which no other resources can provide.
- **Power supply:** Providing 24*7 power supply to 100% of the households, sustainable form of transports are some of the goals that can only be achieved through sustainable power that comes from renewables.
- **Zero Carbon Emissions**

TYPES

- Wind
- Solar
- Hydropower
- Biomass
- Ocean
- Geothermal

CHALLENGES

- **Higher Capital Costs:** their up-front costs can still be very high on a large scale.
- **Electricity Production Can Be Unreliable:** rely on natural unpredictable.
- **Energy Storage:** Despite falling costs, storage technology is still relatively expensive.
- **Carbon Footprint:** manufacturing, transport, and installation.

TARGETS AND INITIATIVES

- The **Net Zero Emissions target by 2030 by Indian Railways** alone will reduce emissions by 60 million tonnes annually.
- **UJALA LED bulb campaign** is reducing emissions by 40 million tonnes annually.
- **National Hydrogen Mission in 2013** to make India the world's largest hydrogen hub.
- **India's Per capita CO2 emissions** are much lower than the global average. US: 14.7 tonnes/capita, China: 7.6 tonnes/capita, **India's CO2 1.8 tonnes/capita.**
- **COP-21 in Paris in 2015**, India committed to a **40%** share of power generation from non-fossil fuel sources. Achieved this target a decade ahead of the 2030 timeline.
- International Solar Alliance and National Green Hydrogen Mission.
- **Net Zero Emissions by 2070**, in addition to attaining the **short-term targets** which include:
 - Increasing renewables capacity to **500 GW by 2030.**
 - Meeting **50% of energy requirements from renewables**
 - **Reducing cumulative emissions by 1 billion tonnes by 2030.**
 - Reducing emissions intensity of India's gross domestic product (GDP) by **45% by 2030.**

PYQ

Q. The Partnership for Action on Green Economy (PAGE), a UN mechanism to assist countries transition towards greener and more inclusive economies, emerged at

- a) The Earth Summit on Sustainable Development 2002, Johannesburg
- b) The United Nations Conference on Sustainable Development 2012, Rio de Janeiro**
- c) The United Nations Framework Convention on Climate Change 2015, Paris
- d) The World Sustainable Development Summit 2016, New Delhi

Q. Write a note on India's green energy corridor to alleviate the problem of conventional energy. (200 words)