Challenges in Renewable Energy

Why in news?

International Energy Agency (IEA) has called for government to commit to tripling global renewable capacity by 2030 ahead of COP 28, but some key players have not signed the pledge.

Global Renewables and Energy Efficiency Pledge
• **Led by-** US, European Union and UAE. • **Aim-** To achieve net zero emission by mid-century (2050). • **Coal phase-out-** The pledge calls for "the phase down of unabated coal power" and an end to the financing of new coal-fired power plants. • It is seen as a crucial step to limit global warming to 1.5°C above pre-industrial levels, as agreed in the Paris Agreement. • **Target-** - To triple worldwide installed renewable energy generation capacity to at least 11,000 GW. - To double global average annual rate of energy efficiency improvements to more than 4% by 2030. • **Signed-** At COP 28 in Dubai. • **Major non-signatory countries**- India and China • According to IEA projections, the global share of renewables in power generation is anticipated to jump from 28% in 2021 to 80 % by 2050, while coal's contribution will dwindle to 3%. • Primary renewable energy sources with their share in global power generation- - Hydroelectric- 16.1 % - Wind- 5.6% - Solar-3.8%

What are the challenges of increasing renewables energy?

- **Hydroelectric power**- Large dams are difficult to construct due to environmental and regulatory issues.
- **Unrealistic goal**-Around 57% of hydroelectric power is of renewable energy, but tripling its capacity by 2030 is unlikely.
- **Solar power**- It is limited by daylight hours, land availability, environmental impacts, and import dependence.
- **High cost**-Solar panels also need efficient and costly storage solutions to match peak demand and overcome intermittency.
- **Import dependency**- Amy countries depend on China for solar panels or raw

materials, it increases the import costs.

- **Wind energy** -It is affected by weather conditions, site availability, and material emissions.
- **Structural issues**- Wind turbines also face the problem of intermittency and require backup or storage solutions to provide stable power.
- To triple renewable energy by 2030 the solar and wind output must increase by at least 5 times.
- **Issues with fossil fuel**- The COP 28 pledge does not specify reducing fossil fuels, which cause over 80% of greenhouse emissions. The US and other countries still subsidize and use fossil fuels extensively.
- **Fund deficit**- The transition to renewables requires massive investments, which can burden poorer countries and affect their budgets for essential services.

Despite the challenges, renewable energy capacity has more than doubled globally in the past decade, with costs declining significantly. By 2035, renewable electricity generation is expected to surpass fossil fuel production.

To know more about the challenges in tripling global renewable energy capacity, click here

What is India's stand with respect renewable energy?

- **India's status-** India is the *3rd largest energy consuming* country in the world.
- As per *Renewables 2022 Global Status Report*, India stands
  - 4th globally in renewable energy installed capacity
  - 4th in wind power capacity
  - 4th in solar power capacity
- India has already achieved its target of *40% installed electric capacity from non-fossil fuels.*
- **Renewable energy target**- India has set an enhanced target of 500 GW of non-fossil fuel-based energy by 2030, which is the world's largest expansion plan in renewable energy.
- **Carbon neutrality**-India has also pledged to achieve net-zero emissions by 2070.
- **Tripling renewables proposal**- India didn't sign the pledge as a report has found that India would need an investment of about 293 billion dollars to triple its renewable energy installed capacity by 2030.
- **Reliance on coal**- India is not comfortable with the coal phase out target as it need to focus on poverty reduction and economic growth, hence it did not sign the pledge.

Steps taken by India to promote Renewable Energy

• **National Green Hydrogen Mission**- It focuses on direct and indirect employment, import substitution, and R&D for higher efficiency in renewable energy technologies.
• **PM KUSUM scheme**-It is aimed at ensuring *energy security* for farmers in India, along with honouring India's commitment to increase the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030 as part of Intended Nationally Determined Contributions (INDCs).
• **Investment-** India allows up to 100% Foreign Direct Investment under the *automatic route* for renewable energy generation and distribution project.
• **Production Linked Incentive (PLI)** - Scheme for high efficiency solar aims to enhance India's manufacturing capabilities and exports in the solar sector.
• **Green Energy Corridors-** It is established to create *intra-state transmission* system for renewable energy projects.
• **International Solar Alliance-** It is a joint effort by India and France to mobilize efforts against climate change through deployment of solar energy solutions with an aim of *One Sun, One World, One Grid*.
• **Green carbon credits-**It is proposed by India to create *carbon sinks* through people's participation.

References

1. Business Line- Limits to push renewables
2. World Economic Forum- Triple Renewables energy story