ENVIRONMENT

State of India's Solar Capacity

India added a record 10 Gigawatt (GW) of solar energy to its cumulative installed capacity in 2021.This has been the highest 12-month capacity addition, recording nearly a 200% year-on-year growth.

- India has now surpassed 50 GW of cumulative installed solar capacity, as on 28th February 2022.
- Of the 50 GW installed solar capacity, an overwhelming 42 GW comes from ground-mounted Solar Photovoltaic (PV) systems, and only 6.48 GW comes from Roof Top Solar (RTS); and 1.48 GW from off-grid solar PV.

What is the Significance of the Achievement?

- This is a milestone in India's journey towards generating 500 GW from renewable energy by 2030, of which 300 GW is expected to come from solar power.
- India's capacity additions rank the country fifth in solar power deployment, contributing nearly 6.5% to the global cumulative capacity of 709.68 GW.

Why is India falling short in Roof-top Solar Installations?

- **Fails to Exploit the Benefits of Decentralised Renewable Energy:**The large-scale solar PV focus fails to exploit the many benefits of Decentralised Renewable Energy (DRE) options, including reduction in Transmission and Distribution (T&D) losses.
- **Limited Financing:**One of the primary benefits of solar PV technology is that it can be installed at the point of consumption, significantly reducing the need for large capital-intensive transmission infrastructure.This is not an either/or situation; India needs to deploy both large and smaller-scale solar PV, and particularly needs to expand RTS efforts.However, there is limited financing for residential consumers and Small and Medium Enterprises (SMEs) who want to install RTS.
- **Lukewarm Responses from Electricity Distribution Companies (DISCOMS):**Lukewarm responses from electricity Distribution Companies (DISCOMS) to supporting net metering, RTS continues to see low uptake across the country.

What are the Challenges to India's Solar Power Capacity Addition?

- Despite significant growth in the installed solar capacity, the contribution of solar energy to the country's power generation has not grown at the same pace.
- In 2019-20, for instance, solar power contributed only 3.6% (50 billion units) of India's total power generation of 1390 BU.
- The utility-scale solar PV sector continues to face challenges like land costs, high T&D losses and other inefficiencies, and grid integration challenges.
- There have also been conflicts with local communities and biodiversity protection norms. Also, while India has achieved record low tariffs for solar power generation in the utility-scale segment, this has not translated into cheaper power for end-consumers.
- The International Renewable Energy Agency (IRENA) estimates that the global value of recoverable materials from solar PV waste could exceed USD15 billion.
- Currently, only the European Union has taken decisive steps in managing solar PV waste.
- India could look at developing appropriate guidelines around Extended Producer Responsibility (EPR), which means holding manufacturers accountable for the entire life cycle of solar PV products and creating standards for waste recycling.
- This could give domestic manufacturers a competitive edge and go a long way in addressing waste management and supply side constraints.

What is the state of India's Domestic Solar Module Manufacturing Capacity?

- Domestic manufacturing capacities in the solar sector do not match up to the present potential demand for solar power in the country.
  1. India had 3 GW capacity for solar cell production and 8 GW for solar panel production capacity. Moreover, backward integration in the solar value chain is absent as India has no capacity for manufacturing solar wafers and polysilicon.
  2. In 2021-22, India imported nearly USD 76.62 billion worth of solar cells and modules from China alone, accounting for 78.6% of India's total imports that year.
  3. Low manufacturing capacities, coupled with cheaper imports from China have rendered Indian products uncompetitive in the domestic market.
- This situation can, however, be corrected if India embraces a circular economy model for solar systems.This would allow solar PV waste to be recycled and reused in the solar PV supply chain. By the end of 2030, India will likely produce nearly 34,600 metric tonnes of solar PV waste.

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Way Forward

- Governments, utilities, and banks will need to explore innovative financial mechanisms that bring down the cost of loans and reduce the risk of investment for lenders.
- Increased awareness, and affordable finance for RTS projects could potentially ensure the spread of RTS across the scores of SMEs and homes around the country.
- Aggregating roof spaces could also help reduce overall costs of RTS installations and enable developing economies of scale.
- In addition to an impressive domestic track record, through the International Solar Alliance (ISA) established by India and France at Conference of the Parties (COP-21) in 2015, there is a global platform to bring countries together to facilitate collaboration on issues such as mobilising investments, capacity building, program support and advocacy and analytics on solar energy.
- Technology sharing and finance could also become important aspects of ISA in the future, allowing for meaningful cooperation between countries in the solar energy sector.

SCIENCE & TECHNOLOGY

Green Hydrogen Fuel Cell Electric Vehicle

Recently, the Union Minister for Road Transport and Highways launched the world's most advanced technology, Green Hydrogen Fuel Cell Electric Vehicle (FCEV) Toyota Mirai.

What is the Significance of this Achievement?

- **Create Awareness about Green Hydrogen and FCEV Technology:**
  1. This is a first of its kind project in India which aims to create a Green Hydrogen based ecosystem in the country by creating awareness about the unique utility of Green Hydrogen and FCEV technology.
     - ✓ An MoU was also signed by Toyota Kirloskar Motor Pvt Ltd and the International Centre for Automotive Technology (ICAT) for a pilot project to evaluate the vehicle's performance on Indian roads and climatic conditions.ICAT is a leading world class automotive testing, certification and R&D service provider under the aegis of NATRiP (National Automotive Testing and R&d Infrastructure Project), Government of India.
- **Help India becoming Self-reliant' by 2047:**
  1. It will promote clean energy and environmental protection by reducing dependence on fossil fuels and thereby make India 'Energy Self-reliant' by 2047.
- **Best Zero Emission Solutions:**
  1. Fuel Cell Electric Vehicle (FCEV), powered by Hydrogen is one of the best Zero Emission solutions. It is completely environment friendly with no tailpipe emissions other than water.
     - ✓ Tailpipe emissions: Emission of something such as gas or radiation into the atmosphere.
     - ✓ Green Hydrogen can be generated from renewable energy and abundantly available biomass.
     - ✓ Introduction and adoption of technology to tap into the Green hydrogen's potential will play a key role in securing a clean and affordable energy future for India.

What is the State of Electric Vehicles in India?

About:

- The push for Electric Vehicles (EVs) is driven by the global climate agenda established under the Paris Agreement to reduce carbon emissions in order to limit global warming.
  1) The global electric mobility revolution is today defined by the rapid growth in EVs uptake.
  2) Falling battery costs and rising performance efficiencies are also fueling the demand for EVs globally.
- **Need for Electric Vehicles: India is in need of a transportation revolution.**
  1. The current trajectory of adding ever more cars running on expensive imported fuel and cluttering up already overcrowded cities suffering from infrastructure bottlenecks and intense air pollution is unfeasible.
  2. The transition to electric mobility is a promising global strategy for decarbonising the transport sector.
  3. EVs currently account for less than 3% of all vehicles sold in India. This is despite EV registrations crossing 50,000 units for the first time in December 2021, the highest ever monthly sale recorded.
  4. Although 80% of the volume of EVs sold is occupied by low-cost and low-speed three-wheelers, overall EV sales have picked up pace due to the rise of next-gen two-wheeler companies.
  5. As per the Accelerated e-Mobility Revolution for India's Transportation (e-AMRIT) portal in India, only 7,96,000 EVs have been registered till December 2021, and just 1,800 public EV charging stations have been installed.

6. While there has been a growth of 133% in the sales of EV from FY 2015 to FY 2020, when compared to sales of conventional ICE vehicles, the numbers seem insignificant. In FY 2021-22, only 1.32% of the total vehicles sold in the country were electric.

Associated Challenges:

- Consumer Related Issues: Lack of appropriate charging stations is a cause of concern, which is quite less than the neighbouring counterparts who already had over 5 million charging stations.Lack of charging stations makes it unsuitable for the consumers in covering long range.
- Policy Challenges: EV production is a capital intensive sector requiring long term planning to break even and profit realisation, uncertainty in government policies related to EV production discourages investment in the industry.
- Lack of Technology and Skilled Labour: India is technologically deficient in the production of electronics that form the backbone of the EV industry, such as batteries, semiconductors, controllers, etc.
- Unavailability of Materials for Domestic Production: Battery is the single most important component of EVs.
  1. India does not have any known reserves of lithium and cobalt which are required for battery production.
  2. Dependence on other countries for the import of lithium-ion batteries is an obstacle in becoming completely self-reliant in the battery manufacturing sector.

Related Initiatives:

- The remodelled Faster Adoption and Manufacturing of Electric Vehicles (FAME II) scheme.
- Production-Linked Incentive (PLI) scheme for Advanced Chemistry Cell (ACC) for the supplier side.
- PLI scheme for Auto and Automotive Components for manufacturers of electric vehicles.
- "Charging Infrastructure for Electric Vehicles—Guidelines and Standards," describing the roles and responsibilities of various stakeholders at the Central and State level for expeditious deployment of public EV charging infrastructure across the country, has been issued recently.
- India is among a handful of countries that support the global EV30@30 campaign, which aims for at least 30% new vehicle sales to be electric by 2030.India's advocacy of five elements for climate change — "Panchamrit" — at the COP26 in Glasgow is a commitment to the same.Various ideas were espoused by India at the Glasgow summit, such as, renewable energy catering to 50% of India's energy needs, reducing carbon emission by 1 billion tonnes by 2030 and achieving net zero by 2070.

Way Forward

- The Indian market needs encouragement for indigenous technologies that are suited for India from both strategic and economic standpoint.
- Breaking away the old norms and establishing a new consumer behaviour is always a challenge. Thus, a lot of sensitisation and education is needed, in order to bust several myths and promote EVs within the Indian market.
- Subsidising manufacturing for an electric supplychain will certainly improve EV development in India.

21.Deep Ocean Mission

Recently, the Ministry of Earth Sciences has launched the Deep Ocean Mission (DOM).DOM is a mission mode project to support the Blue Economy Initiatives of the Government of India.

- Earlier, the Ministry of Earth Sciences had also rolled out the draft Blue Economy Policy.
- Blue Economy is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.

What are the Major Components of DOM?

- **Development of Manned Submersible Vehicle:**
  1. A manned submersible will be developed to carry three people to a depth of 6,000 metres in the ocean with a suite of scientific sensors and tools.
  2. NIOT & ISRO is jointly developing a Manned Submersible Vehicle.
  3. National Institute of Ocean Technology (NIOT), an autonomous institute under the Ministry of Earth Sciences.
- **Development of Technologies for Deep Sea Mining:**
  1. An Integrated Mining System will be also developed for mining polymetallic nodules at those depths in the central Indian Ocean.Polymetallic nodules are rocks scattered on the seabed containing iron, manganese, nickel and cobalt.

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2. The exploration studies of minerals will pave the way for commercial exploitation in the near future, as and when commercial exploitation code is evolved by the International Seabed Authority, a United Nations (UN) organisation.

- **Development of Ocean Climate Change Advisory Services:**It entails developing a suite of observations and models to understand and provide future projections of important climate variables on seasonal to decadal time scales.
- **Technological Innovations for Exploration and Conservation of Deep-sea Biodiversity:**Bio-prospecting of deep-sea flora and fauna including microbes and studies on sustainable utilisation of deep-sea bio-resources will be the main focus.
- **Deep Ocean Survey and Exploration:**It will explore and identify potential sites of multi-metal Hydrothermal Sulphides mineralization along the Indian Ocean mid-oceanic ridges.
- **Energy and Freshwater from the Ocean:**Studies and detailed engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plants are envisaged in this proof of concept proposal.OTEC is a technology that uses ocean temperature differences from the surface to depths lower than 1,000 metres, to extract energy.
- **Advanced Marine Station for Ocean Biology:**It is aimed at the development of human capacity and enterprise in ocean biology and engineering.It will translate research into industrial application and product development through on-site business incubator facilities.

What is the Significance of DOM?

- **Leveraging Ocean Resources:** Oceans, which cover 70% of the globe, remain a key part of our life. About 95% of the Deep Ocean remains unexplored.
  1. Three sides of India are surrounded by the oceans and around 30% of the country's population lives in coastal areas, the ocean is a major economic factor supporting fisheries and aquaculture, tourism, livelihoods and blue trade.
  2. Considering the importance of the oceans on sustainability, the UN has declared the decade, 2021-2030 as the Decade of Ocean Science for Sustainable Development.
- **Long Coastline:** India has a unique maritime position. Its 7517 km long coastline is home to nine coastal states and 1382 islands.The Government of India's Vision of New India by 2030 announced in February 2019 highlighted the Blue Economy as one of the ten core dimensions of growth.
- **Technology Expertise**: The technology and expertise needed in such missions are now available in only five countries - the US, Russia, France, Japan and China.India will now be the sixth country to have it.

What are other Blue Economy Initiatives

- **India-Norway Task Force on Blue Economy for Sustainable Development:**It was inaugurated jointly by both the countries in 2020 to develop and follow up joint initiatives between the two countries.
- **Sagarmala Project:**The Sagarmala project is the strategic initiative for port-led development through the extensive use of IT-enabled services for the modernization of ports.
- **O-SMART:**India has an umbrella scheme by the name of O-SMART which aims at regulated use of oceans, marine resources for sustainable development.
- **Integrated Coastal Zone Management:**It focuses on the conservation of coastal and marine resources, improving livelihood opportunities for coastal communities etc.
- **National Fisheries Policy:**India has a National Fisheries policy for promoting the 'Blue Growth Initiative' which focuses on sustainable utilisation of fisheries wealth from marine and other aquatic resources.

PRELIMS FACT

International Day to Combat Islamophobia

Recently, the UN General Assembly approved a resolution for setting March 15th as the International Day to Combat Islamophobia.The resolution was introduced by Pakistan on behalf of the Organisation of Islamic Cooperation (OIC).Though the resolution has been passed at UNGA, India has highlighted several concerns.

What are the Key Points of the Resolution?

- The resolution, adopted by consensus by the 193-member world body and cosponsored by 55 mainly Muslim countries.
- The resolution asks all countries, U.N. bodies, international and regional organisations, civil society, private sector and faith-based organisations “to organise and support various high-visibility events aimed at effectively increasing awareness of all levels about curbing Islamophobia.
- The resolution emphasizes the right to freedom of religion and belief and recalls a 1981 resolution calling for “the elimination of all forms of intolerance and of discrimination based on religion or belief”.

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What is India's Stand?

- India expressed concern over phobia against one religion being elevated to the level of an international day, saying there are growing contemporary forms of religiophobia, especially anti-Hindu, anti-Buddhist and anti-Sikh phobias.
- It also cited that that word 'pluralism' finds no mention in the resolution.
- India hopes the resolution adopted "does not set a precedent" which will lead to multiple resolutions on phobias based on selective religions and divide the United Nations into religious camps.
- The term Islamophobia does not have any agreed definition in international law, contrary to the freedom of religion or belief.

What is International Day Commemorating the Victims of Acts of Violence Based on Religion or Belief?

- Earlier in 2019, UNGA has also passed a resolution to celebrate August 22nd, International Day Commemorating the Victims of Acts of Violence Based on Religion or Belief.
- Its resolution envisages recognizing the importance of providing victims of acts of violence based on religion or belief and members of their families with appropriate support and assistance in accordance with applicable law.

DAILY ANSWER WRITING PRACTICE

Qns. Elaborate upon the various qualitative tools available with the RBI to accelerate growth and stability by controlling the credit supply in the economy. (250 words)

Introduction

RBI is the sole authority that decides the money supply in the economy. And to control this, RBI implements the monetary policy's Quantitative and Qualitative instruments to achieve economic goals. Qualitative or selective methods of credit control are used for discriminating between various uses of credit. For example, they can be used for favouring export over import or essential over non-essential credit supply. This method has an influence on both borrowers and lenders. The various qualitative instruments include regulation of margin requirement, credit rationing, regulation of consumer credit and direct action.

Body

Qualitative measures of credit control

- **Rationing of Credit**
  1. RBI fixes a credit amount to be granted for commercial banks.
  2. Credit is given by limiting the amount available for each commercial bank.
  3. For certain purposes, the upper credit limit can be fixed, and banks have to stick to that limit.
  4. This helps in lowering the bank's credit exposure to unwanted sectors.
  5. This instrument also controls the bill rediscounting.
- **Regulation of Consumer Credit**
  1. In this instrument, consumers' credit supply is regulated through the instalment of sale and hire purchase of consumer goods.
  2. Here, features like instalment amount, down payment, loan duration, etc., are all fixed in advance, which helps to check the credit and inflation in the country.
- **Regulation of Marginal Requirement**
  1. Margin is referred to the certain proportion of the loan amount that is not offered or financed by the bank.
  2. Change in marginal can lead to change in the loan size.
  3. This instrument is used to encourage the credit supply for the necessary sectors and avoid it for the unnecessary sectors.
  4. That can be done by increasing the marginal of unnecessary sectors and reducing the marginal of other needy sectors.
  5. Suppose, RBI feels that more credit supply should be allotted to the agricultural sector, then RBI will reduce the margin, and even 80-90% of the loan can be allotted.
- **Moral Suasion**
  1. Moral suasion refers to the suggestions to commercial banks from the RBI that helps in restraining credits in the inflationary period.
  2. RBI implies pressure on the Indian banking system without taking any strict action for compliance with rules.
  3. Through monetary policy, commercial banks get informed of the expectations of RBI.
  4. The RBI can issue directives, guidelines, suggestions for commercial banks regarding reducing credit supply for speculative purposes under the moral suasion.

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Conclusion

The effectiveness of credit control measures in an economy depends upon a number of factors. First, there should exist a well-organised money market. Second, a large proportion of money in circulation should form part of the organised money market. Finally, the money and capital markets should be extensive in coverage and elastic in nature. Extensiveness enlarges the scope of credit control measures and elasticity lends it adjustability to the changed conditions.Over the decades, it has been proven that the credit supply in the economy can be controlled better with the coordination of both the general (Quantitative) and selective (Qualitative) methods rather than implementing them individually in the economy.

DAILY QUIZ

Q1. Consider the following statements:

1. The Association of Southeast Asian Nations was established on 8 August 1967 in Bangkok, Thailand.
2. India became a sectoral dialogue partner of ASEAN in 2006.

Which of the statements given above is/are correct?

a. 1 only
b. 2 only
c. Both 1 and 2
d. Neither 1 nor 2

Q2. With reference to Mission for Integrated Development of Horticulture (MIDH), consider the following statements:

1. It is a Central Sector Scheme for the holistic growth of the horticulture sector in India.
2. The Ministry of Agriculture and Farmers Welfare is the nodal ministry for implementation of MIDH.

Which of the statements given above is/are correct?

a. 1 only
b. 2 only
c. Both 1 and 2
d. Neither 1 nor 2

Q3. The Periodic Labour Force Survey (PLFS) is released by which of the following?

a. NITI Aayog
b. National Statistical Office
c. Office of the Registrar General & Census Commissioner
d. Reserve Bank of India

Q4. Consider the following statements:

1. Rural Electrification Corporation (REC) is a Maharatna Central Public Sector Undertaking under the Ministry of Power.
2. It is primarily engaged in providing finance for rural electrification projects across India.

Which of the statements given above is/are correct?

a. 1 only
b. 2 only
c. Both 1 and 2
d. Neither 1 nor 2

Q5. Consider the following statements:

1. Ajay is a river which flows through the Indian states of Jharkhand and Odisha.
2. It is a tributary of the Brahmani River.

Which of the statements given above is/are correct?

a. 1 only
b. 2 only
c. Both 1 and 2
d. Neither 1 nor 2

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