

ECONOMY

❖ **Solar Panel Manufacturing**

➤ **CONTEXT:** The Union budget increased allocation for the Production-linked incentive (PLI) scheme for high-efficiency solar modules.

➤ **What is a Solar Panel?**

• A solar panel is a collection of photovoltaic (PV) cells that collect sunlight and convert it into electric current.

➤ **Working:**

• When sunlight hits the semiconductor in the solar PV cell the energy from the light in the form of photons is absorbed.

• This energy absorption results in exciting a number of electrons, which then drift freely in the cell.

• The solar cell is specifically designed to create an electric field. This electric field forces the electrons to flow in a certain direction- towards the electrical terminals that line the cell.

• This flow is known as an energy current, and the strength of the current is determined by how much electricity each cell can produce. Once the electrons reach terminals the current is then directed into wires making the panel a source of electrical energy.

➤ **Manufacturing in India:**

• From less than 10 MW in 2010, India has added significant PV capacity over the past decade, achieving over 50 GW by 2022 .

• By 2030, India is targeting about 500 GW of renewable energy deployment, out of which ~280 GW is expected from solar PV. This calls for 30 GW of solar capacity every year until 2030.

• India's current solar module manufacturing capacity is limited to around 15 GW per year rest is met through imports.

• An estimated 85 per cent of this import need is met by three countries China, alongside Vietnam and Malaysia. The value of solar imported since 2014 adds up to \$12.93 billion, or Rs 90,000 crore.

➤ **Challenges for Manufacturing in India:**

• Solar cell manufacturing is a complicated process that is technology intensive. Establishing state-of-the-art manufacturing facilities needs access to technology. It is unlikely that companies that have spent millions of dollars on R&D would make it easy for India to access the latest technologies easily or at a lower cost.

• Solar cell manufacturing needs a huge amount of capital .The cost of debt in India (11%) is highest in the Asia-Pacific region, while in China it is about 5%.

• Solar cell technology sees upgrades every 8-10 months making manufacturing inefficient for new entrants.

• Lack of an integrated set-up and the economies of scale (despite 100 per cent FDI in the renewable energy sector) translates into higher cost of domestic production

• Solar panel Manufacturing suffers from a huge raw material supply crunch. Silicon wafer, the most expensive raw material in the panel, is not manufactured in India.

➤ **Govt. initiatives**

• The Union Government established a Rs 19,500-crore production linked incentive (PLI) scheme on 'national programme on high efficiency solar PV modules', seeking to attract Rs 94,000-crore investment in the sector.

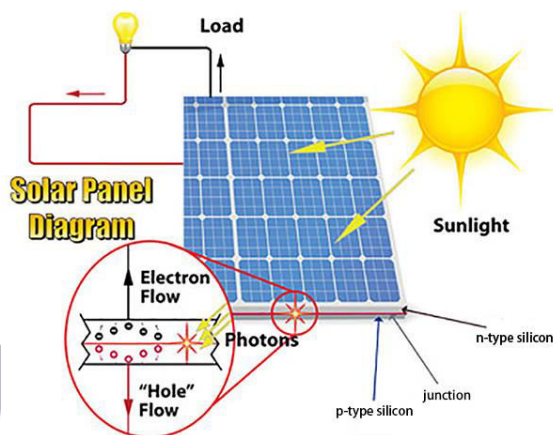
• To address the shortages on the raw material side with respect to silicon wafers ,the Centre has decided to provide uniform fiscal support of 50 per cent of the project cost for setting up of semiconductor fabrication plants.

• Modified Special Incentive Package Scheme (M-SIPS) of Ministry of Electronics & Information Technology offers a 20-25 per cent subsidy for investments in capital expenditure for setting up a manufacturing facility

• The government has mandated that a solar power producer should compulsorily source a certain percentage of solar cells and modules from local manufacturers, in order to be able to benefit from the government guarantee to purchase the energy produced.

➤ **India's Solar Targets**

• India's solar sector has grown at a compounded annual growth rate (CAGR) of around 59% from 0.5GW in 2011 to 55GW in 2021.



- Under the National Solar Mission (NSM) the total installed capacity target was set as 20GW by 2022. In 2015, the target was revised to 100GW and in August 2021, the government set a solar target of 300 GW by 2030.
- About 30% of India's 100GW (2022) solar target still remains unmet.
- **Govt's Schemes**
- PM KUSUM: The scheme aims to add solar and other renewable capacity of 30,800 MW by 2022 with total central financial support of Rs. 34,422 Crores.
- Solar Park Scheme: The Solar Park Scheme plans to build a number of solar parks, each with a capacity of nearly 500 MW, across several states.
- Atal Jyoti Yojana (AJAY): The AJAY scheme was launched in September 2016 for the installation of solar street lighting (SSL) systems in states with less than 50% of households covered with grid power (as per Census 2011).
- National Solar Mission: It is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge.
- SRISTI Scheme: Sustainable rooftop implementation of Solar transfiguration of India (SRISTI) scheme to promote rooftop solar power projects in India

PRELIMS

1. Autism spectrum disorder (ASD)

- **CONTEXT: According to the WHO, autism spectrum disorder affects one in 100 children. Children with ASD have impaired social interactions, lack verbal and nonverbal communication skills, and display restricted and repetitive behaviours.**
- Autism spectrum disorder (ASD) is a developmental disability caused by differences in the brain.
- The autism spectrum, often referred to as just autism, autism spectrum disorder (ASD) or sometimes autism spectrum condition (ASC), is a neurodevelopmental disorder characterized by difficulties in social interaction, verbal and nonverbal communication, and the presence of repetitive behavior and restricted interests.
- Other common signs include unusual responses to sensory stimuli, and an insistence on sameness or strict adherence to routine.
- Signs of autism usually appear by age 2 or 3. Some associated development delays can appear even earlier, and often, it can be diagnosed as early as 18 months.
- Research shows that early intervention leads to positive outcomes later in life for people with autism.
- There is no cure for autism. There are many forms of therapy, such as speech and occupational therapy that may help autistic people.

2. Verkko Software

- **CONTEXT: Researchers have developed and released an innovative software 'Verkko' to assemble truly complete, gapless genome sequences from a variety of species.**
- Verkko software is an innovative software for assembling complete, gapless diploid genomes. It is developed by researchers from National Institutes of Health (NIH), US.
- Verkko grew from assembling the first gapless human genome sequence, which was finished last year by the Telomere-to-Telomere (T2T) consortium, a collaborative project funded by the National Human Genome Research Institute (NHGRI), part of NIH, USA.
- Different DNA sequencing technologies generate different types of genomic puzzle pieces. Some are small and highly detailed, while others are much bigger though the image is blurry. Verkko compares and assembles both types of pieces to generate a complete and accurate picture.
- Verkko starts by putting together the small, detailed pieces, creating many partially assembled but disconnected segments of sequence. Then, Verkko compares the assembled regions with the larger, less precise pieces. These larger pieces serve as a framework to order the more detailed regions. The final product is an accurate and complete genome sequence.
- This software makes the process of assembling complete genome sequences more affordable and accessible.
- It will also accelerate efforts to generate gapless genome sequences of species commonly used in research.

3. Exercise 'Dustlik'

- **CONTEXT: The fourth iteration of the biennial training exercise DUSTLIK (2023) will be held in Pithoragarh, Uttarakhand, from February 20, 2023 through March 5, 2023, as part of a military-to-military exchange programme between the Indian Army and the Uzbekistan Arm.**
- The 14th Battalion, The Garhwal Rifles, a unit under Western Command, will participate in this bilateral exercise on behalf of the Indian contingent. Soldiers from the Uzbekistan Army's North Western Military Region will serve as its representatives. Increasing military capability to conduct multi-domain operations in a sub-conventional setting under United Nations Mandate is the goal of this joint exercise.

- The fourth iteration of the annual bilateral military drill “Dustlik” with the Uzbekistan Army will feature the Indian Army.
- The combined military drill would start on February 20 and end on March 5.
- Importantly, the exercise’s initial iteration took place in Uzbekistan in November 2019.
- The second round, meanwhile, was conducted in India from March 10 to March 19 of 2021 at the Foreign Training Node Chaubatia, Ranikhet. The Yangiariq district of Uzbekistan hosted the third iteration of Exercise Dustlik from March 22 to March 29 of that year.
- The main objective of Exercise Dustlik is to provide collaborative training for counterterrorism operations carried out in accordance with a United Nations mandate, particularly in hilly, urban, or rural environments. A validation stage is part of the exercise’s training programme. Exercise Dustlik also gives India and Uzbekistan a boost in their efforts to strengthen their bilateral military and political ties.

➤ **India-Uzbekistan Relations:**

- India-Central Asia Summit:
- ✓ The Presidents of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan attended the first India-Central Asia Summit in 2022.
- ✓ The Leaders agreed to hold the next meeting of the India-Central Asia Summit in 2024.
- Bilateral and Multilateral mechanisms:
- ✓ National Coordination Committees: India and Uzbekistan have set up National Coordination Committees to oversee the implementation of mutually agreed projects and initiatives.
- ✓ India-Central Asia Business Council: The dialogue brought together Business Councils of all five Central Asian countries to take the trade and investment partnership forward with special focus on energy, pharmaceuticals, automotive, agro-processing, education, urban infrastructure and transport, civil aviation, IT and tourism.
- ✓ India-Central Asia Dialogue: Central Asia Dialogue is held at the level of Foreign Ministers.
- Bilateral Trade and Investments
- ✓ Bilateral trade at about USD 442 million is well below potential.
- ✓ The major items of India’s exports are: pharmaceutical products, mechanical equipment, vehicle parts, services, optical instruments and equipment
- ✓ India’s import from Uzbekistan consist largely of fruit and vegetable products, services, fertilizers, juice products and extracts, lubricants

4. Sagar Parikrama

➤ **CONTEXT: Sagar Parikrama Phase-III was launched recently from Hazira Port in Gujarat.**

- **Aim of the project:**
- To communicate with fishermen, fisher communities, and stakeholders in coastal areas and districts in order to better understand the challenges and issues that they confront.
- It also aims to:
 - ✓ disseminate information of various fisheries related schemes and programs being implemented by the government,
 - ✓ promoting responsible fisheries,
 - ✓ protecting marine ecosystems, and
 - ✓ demonstrating solidarity with all fisher folk and concerned stakeholders
- It focuses on the sustainable balance between:
 - ✓ the utilization of marine fisheries resources for the food security of the nation and
 - ✓ livelihoods of coastal fisher communities and
 - ✓ the protection of marine ecosystems.
- Certificates related to Pradhan Mantri Matsya Sampadha scheme would be awarded to the progressive fishermen.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**
- The government proposed Pradhan Mantri Matsya Sampada Yojana (PMMSY) to establish a robust fisheries management framework and check gaps in the value chain.
- The objective of the scheme is to supplement or increase agriculture, modernize processing and decrease agricultural-waste and to utilize the potential in the fishery sector.
- Significance:
 - ✓ This yojana will create modern infrastructure with efficient supply chain management from farm gate to retail outlet.
 - ✓ Increase growth of food processing sector in the country.
 - ✓ Increase GDP, Employment and investment.
 - ✓ Help in reducing huge wastage of agriculture products.

- ✓ Help in providing better prices to farmers and double their income
- 5. **IDEX And NAVDEX 23**
 - **CONTEXT: Indian Naval Ship Sumedha arrived at Abu Dhabi to participate in NAVDEX 23 and IDEX 23.**
 - NAVDEX stands for Naval Defence Exhibition and IDEX stands for International Defence Exhibition.
 - This participation will showcase the strengths of India's indigenous ship building and underscore the vision of 'Aatma Nirbhar Bharat'.
 - **INS Sumedha:**
 - INS Sumedha is the third ship of the indigenously built Saryu class Naval Offshore Patrol Vessels (NOPV).
 - It was commissioned into the Indian Navy in 2014.
 - It was built indigenously at Goa Shipyard Limited.
 - Features: Fitted with an impressive array of weapons and sensors, Can carry an integral helicopter and Long endurance.
- 6. **Anubhuti Inclusive Park**
 - **CONTEXT: The Union Minister for Road Transport and Highways has laid the Foundation Stone of the world's largest Divyang Park - Anubhuti Inclusive Park in Nagpur, Maharashtra.**
 - The Minister highlighted that the park will have facilities for all 21 types of disabilities, it will have facilities like a touch and smell garden, hydrotherapy unit, water therapy, and independent room for mentally challenged children and mothers.
 - The Minister said that the Union government passed the Rights of Persons with Disabilities Act 2016 for protecting the promoting the rights of persons with disabilities and to give the disabled the right to live with dignity.
 - **Rights of Persons with Disabilities Act, 2016**
 - The Act replaced the Persons with Disabilities Act of 1995.
 - India is a signatory of the United National Convention on the Rights of Persons with Disabilities (UNCRPD). The act fulfils the commitment made by India at UNCRPD.
 - Under the Act, the types of disabilities have been increased from the existing 7 to 21 and it authorized the Central Government to add more types of disabilities.
 - The 21 disabilities are; Blindness, Low-vision, Leprosy Cured persons, Hearing Impairment (deaf and hard of hearing), Locomotors Disability, Dwarfism, Intellectual Disability, Mental Illness, Autism Spectrum Disorder, Cerebral Palsy, Muscular Dystrophy, Chronic Neurological conditions, Specific Learning Disabilities, Multiple Sclerosis, Speech and Language disability, Thalassemia, Haemophilia, Sickle Cell Disease, Multiple Disabilities including deaf, and blindness, Acid Attack victim, Parkinson's disease
 - First-time Speech and Language Disabilities and Specific Learning disabilities have been added to the list.
 - Acid Attack Victims and Dwarfism are also included in the list of disabilities.
 - The list of disabilities also included three blood disorders;
 - ✓ Thalassemia
 - ✓ Haemophilia
 - ✓ Sickle Cell Disease
 - Directed the governments to ensure that persons with disabilities enjoy their rights equally with others.
 - Persons with benchmark disabilities and those with high support will get additional benefits such as reservations in higher education, government jobs, poverty alleviation schemes etc.
 - Every child between the age group of 6 and 18 years with the benchmark disability shall have the right to free education.
 - Ensure their accessibility in public buildings (both Government and private).
 - Reservation in Public vacancies has been increased from 3% to 4% for persons with benchmark disabilities.
 - Central and State Advisory Boards on Disability serve as the highest policy-making bodies at the Central and State level.
 - District-level committees by the State Governments to address local concerns of PwDs.
 - National and State Funds to provide financial support to persons with disabilities.
 - Strict Punishments and Penalties for offences committed against persons with disabilities.
 - Special Courts in each district to take cases regarding violation of rights of PwDs.
 - The Act provided an effective tool for ensuring their empowerment and true inclusion into mainstream society in an acceptable manner.

ANSWER WRITING

Q. Monetisation of government assets can help in creating new sources of revenue and can unlock the potential of unused or underused assets. In this context discuss the role of National Land Monetisation Corporation (NLMC) and its intended benefits.

The monetisation of government assets means transferring the revenue rights of the asset to a private player for a specified period of time in return for upfront money, a revenue share, and a commitment to investments in the assets. The government created National Land Monetisation Corporation (NLMC) to undertake the monetization of surplus land and building assets of Central Public Sector Enterprises (CPSEs) and other government agencies.

Role of National Land Monetisation Corporation (NLMC):

- The NLMC is fully owned by the government and is formed to monetise government and public sector assets in the form of surplus, unused or underused land assets. It falls under the administrative jurisdiction of the Ministry of Finance.
- NLMC will own, hold, manage and monetize surplus land and building assets of CPSEs under closure. This will speed up the closure process of CPSEs and will smoothen the strategic disinvestment process.
- Apart from monetising underutilised land parcels of CPSEs, the corporation will also facilitate the monetisation of assets belonging to PSUs that have ceased operations or are in line for strategic disinvestment.
- NLMC also acts as an advisory body and supports government entities in identifying their surplus non-core assets and monetizing them professionally and efficiently to generate maximum value realization.
- Recognizing the wide range of specialized skills and expertise required for asset monetization, NLMC hires professionals from the private sector with a merit-based approach.

Intended benefits from NLMC:

- The monetisation of assets holds huge potential: There exist huge portions of land lying vacant with government agencies. For example, BSNL identified a total of ₹24,980 crore worth of properties for monetisation. The Railways have over 11 lakh acres of land available out of which 1.25 lakh acres are vacant.
- Unlocking the value of CPSEs: Monetisation of assets will lead to the unlocking of the value of investments made by the government in public assets which have not yielded potential returns. The money realised through monetisation will be deployed for the creation of infrastructure.
- Bringing efficiency: Asset recycling and monetisation will tap private sector efficiencies in operations and management of infrastructure.
- Reviving the economy: post-COVID significantly enhanced level of infrastructure investment is required for reviving growth. Financing infrastructure thus requires a diversified set of alternatives.
- Revenue can be used for social development: Government can use this additional revenue for spending on the social sector development needs such as education, health and other areas.

Therefore, asset monetization at its core is a distinct shift from 'privatization' and 'slump sale' of assets to 'structured partnerships' with the private sector. NLMC can prove a game-changer in the domain of asset monetisation. A relentless focus on implementation and partnering with state governments can provide the needed fillip to the monetisation drive.

MCQs

1. With reference to solar power production in India, consider the following statements:

1. India is the third largest in the world in the manufacture of silicon wafers used in photovoltaic units.
2. The solar power tariffs are determined by the Solar Energy Corporation of 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**

2. Consider the following statements:

1. The International Solar Alliance was launched at the United Nations Climate Change Conference in 2015.
2. The Alliance includes all the member countries of the United Nations.

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

3. With reference to the Sagar Parikrama, Consider the following Statements:

1. It is launched by the Ministry of Ports, Shipping and Waterways.
2. It is a navigation journey to be conducted in all coastal states/UTs through a pre-decided sea route to demonstrate solidarity with all fisherfolk

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
4. Consider the following statements regarding the Pradhan Mantri Matsya Sampada Yojana (PMMSY):
1. It is being implemented for a period of 5 years from FY 2020-21 to FY 2024-25 in all States/Union Territories.
 2. It is a scheme to bring about the Blue Revolution through sustainable and responsible development of the fisheries sector in India
 3. The scheme plans to reduce post-harvest losses from the present high of 25% to about 10% by modernizing and strengthening value chain.
- Which of the statements given above is/are correct?
- a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) **1,2 and 3**
5. Anubhuti Inclusive Park recently inaugurated in which of the following city?
- a) Bhopal
b) **Nagpur**
c) Delhi
d) Bhubaneswar
6. Which of the following are considered a type of disability under the Rights of Persons with Disabilities Act, 2016?
1. Mental Illness
 2. Thalassemia
 3. Acid Attack victim
 4. Haemophilia
 5. Dwarfism
- Choose the correct answer using the code given below:
- a) 1 and 5 only
b) 1, 3, and 5 only
c) 1, 2, 4, and 5 only
d) **1, 2, 3, 4, and 5**
7. The joint military exercise 'Dustlik', recently seen in the news, is held between India and which of the following country?
- a) **Uzbekistan**
b) Afghanistan
c) Saudi Arabia
d) Kazakhstan
8. With reference to INS Sumedha consider the following
1. It is an indigenously built Naval Offshore Patrol Vessel deployed for multiple roles independently
 2. It was built under project 75
- Which of the above statement/s is/are not correct?
- a) 1 only
b) **2 only**
c) Both 1 and 2
d) Neither 1 nor 2
9. Verkko software often mentioned in news is related to which of the following?
- a) Cyber security
b) Adhar Authentication
c) Online secure payment
d) **Genome Sequencing**
10. The term "Jaadui Pitara of Magical Box" often mentioned in news recently is related to which of the following?
- a) Women Empowerment
b) Disability person
c) Employment for northeast
d) **Child education**