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Patents (Amendment) Rules, 2021

Why in News

Recently, the union government has introduced **Patents (Amendment) Rules, 2021** which has **reduced the fee for patent filing and prosecution** for educational institutions by 80%.

It is aimed at **promoting innovation** and development of new technologies.

Key Points

- **About:**

- **Patents:**

- A patent is a form of preservation of **intellectual property**. It is an **exclusive right granted for an invention**, which is a **product** or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem.
 - To get a patent, technical information about the invention **must be disclosed to the public** in a patent application.

- **Patentability Criteria for an Invention:**

- It should be novel.
 - Must involve an inventive step (technical advancement)
 - Capable of industrial application

- **Term of Patent:**

- The term of every patent in India is **twenty years from the date of filing** the patent application, irrespective of whether it is filed with provisional or complete specification.

- **Patents Act, 1970** : This principal law for patenting system in India came into force in the year 1972. It **replaced the Indian Patents and Designs Act 1911**.

- The Act was **amended by the Patents (Amendment) Act, 2005**, wherein **product patent was extended to all fields of technology** including food, drugs, chemicals and microorganisms.
 - After the amendment, the **provisions relating to Exclusive Marketing Rights (EMRs) have been repealed**, and a provision **for enabling grant of compulsory license has been introduced**.
 - The provisions relating to **pre-grant and post-grant opposition** have also been introduced.

- **Patents (Amendment) Rules, 2021:**

- **Patent Fees for Educational Institutions Reduced:**

- **Educational institutions engage in many research activities**, where professors and teachers and students generate several new technologies which need to be patented for facilitating commercialization of the same.
- At the time of applying for patents, the **innovators have to apply these patents in the name of the institutions which have to pay fees for large applicants**, which are very high and thus work as a disincentive.
- In this regard and to encourage greater participation of the educational institutions, **official fees payable by them in respect of various acts under the Patents Rules, 2003**, have been reduced by way of the Patents (Amendment) Rules, 2021.
- Benefits related to **80% reduced fee** for patent filing & prosecution have been **extended to all educational institutions**.

This benefit was earlier available to all recognised educational institutions owned by the government.

- **Extension of Expedited Examination System:**

- The fastest granted patent is the one which was **granted in 41 days** after filing of such request. This facility of Expedited Examination system was initially provided for patent applications filed by Startups.
- It has been **now extended to 8 more categories of Patent Applicants:**
SME (Small and Medium Enterprises), Female applicants, Government Departments, Institutions established by a Central, Provincial or State Act, Government Company, an Institution wholly or substantially financed by the Government and applicants under Patents Prosecution Highway.

The **Patent Prosecution Highway (PPH)** is a set of initiatives for providing accelerated patent prosecution procedures by sharing information between some patent offices.

Note

- **Evergreening of Patent:** It is a corporate, legal, business, and technological strategy for extending / elongating the term of a granted patent in a jurisdiction that is about to expire, in order to retain royalties from them, by taking out new patents.
 - **Section 3(d) of the Indian Patent Act 1970** (amended in 2005) does not allow patents to be granted to inventions involving new forms of a known substance unless it differs significantly in properties with regard to efficacy.
 - This means that the **Indian Patent Act does not allow evergreening of patents**.

- **Compulsory Licencing (CL):** CL is the grant of permission by the government to entities to use, manufacture, import or sell a patented invention without the patent-owner's consent. Patents Act in India deals with CL.

CL is permitted under the **WTO's TRIPS (IPR) Agreement** provided conditions such as 'national emergencies, other circumstances of extreme urgency and anti-competitive practices' are fulfilled.

Source: PIB

Capacity of India's Sewage Treatment Plants

Why in News

- According to the latest report of the **Central Pollution Control Board (CPCB)**, **Sewage Treatment Plants (STPs)** in India are **able to treat a little more than a third of the sewage generated per day**.
- CPCB is a statutory organisation which was constituted in September, 1974 under the **Water (Prevention and Control of Pollution) Act, 1974**.

Key Points

- **Highlights of the Report:**
 - **Installed Capacity of STPs:**
 - India generated **72,368 MLD (million litres per day)** whereas the **installed capacity of STPs was 31,841 MLD (43.9%)**.
 - **5 states and Union Territories (UT)** - Maharashtra, Gujarat, Uttar Pradesh, Delhi and Karnataka - account for **60% of the total installed treatment capacity of the country**.
 - Arunachal Pradesh, Andaman & Nicobar Islands, Lakshadweep, Manipur, Meghalaya and Nagaland have not installed sewage treatment plants.
 - **Chandigarh ranks first** in terms of total sewage generated to what is actually treated.
 - **Reuse of Treated Sewage:**
 - It is **maximum in Haryana** followed by Puducherry, Delhi, Chandigarh. It has **not assumed much importance in the policy planning** of many state governments.
 - Treated sewage water **can be reused for horticulture**, irrigation, washing activities (road, vehicles and trains), fire-fighting, industrial cooling, toilet flushing and gardening.
 - This **can decrease the water demand from aquatic sources** like rivers, ponds, lakes and as well as groundwater sources.

- **Concerns:**
 - **Increased Sewage Generation:**
CPCB has estimated that sewage generation will **increase to over 1,20,000 MLD by 2051**.
 - **Gaps in Treatment Capacity:**
The gaps in treatment capacity are **amplified at local levels**, as STPs are concentrated in larger cities and **Common Effluent Treatment Plants (CETPs)** are unevenly distributed across states.
 - **Economic Case:**
 - **Modern Wastewater Treatment Plants (WTPs) are capital-intensive** and require the use of innovative technology, such as sensors, **Internet of Things (IoT)** devices and **Artificial Intelligence (AI)**-based trackers.
 - The **high upfront capital requirements** in machinery and equipment, combined with unpredictable revenue streams, make this a high-risk sector, deterring private sector investment.
- **Related Government Initiatives:**
 - Recognising this challenge, the Indian government shifted its focus to **solid waste, sludge and greywater management** under the **Swachh Bharat Mission 2.0 (SBM 2.0)** which was announced recently.
 - Following a sustained focus on achieving **Open Defecation-Free (ODF) status**, the **Ministry of Housing and Urban Affairs (MoHUA)** developed detailed criteria for cities to achieve **ODF+, ODF++ and Water+ statuses** in May 2020.

Way Forward

- The **water and wastewater treatment market in India** is a US\$4-billion industry, growing at 10-12 % annually (pre-**covid-19**).
- In a post-pandemic economy, **central and state governments must work in partnership** to create markets for treated water.
- **Attaining high rates of economic growth** for India will directly be a function of the sustainable use of water, particularly in recycling & reuse as it will be crucial for future urban planning and policy.
- **Wastewater can be a cost-efficient and sustainable source of energy**, nutrients and other useful by-products like organic and organic-mineral fertiliser.
The benefits of extracting such resources from wastewater go beyond human and environmental health. They have implications on **food and energy security as well as climate change mitigation**.

Source: DTE

Defence Industrial Corridor

Why in News

Recently, the **Prime Minister visited the exhibition models of the Aligarh node of the upcoming Uttar Pradesh Defence Industrial Corridor.**

- It was announced by the Prime Minister while inaugurating the **UP Investors Summit** in Lucknow in **2018**.
- The government has established **another Defence Industrial Corridor in Tamil Nadu.**



Key Points

- **Defence Industrial Corridor of UP:**
 - It is an aspirational project that intends to **reduce foreign dependency** of the **Indian Aerospace & Defence Sector**.
 - It will have **6 nodes** – Aligarh, Agra, Kanpur, Chitrakoot, Jhansi and Lucknow.
 - The **Uttar Pradesh Expressways Industrial Development Authority (UPEIDA)** is the **nodal agency** to execute this project in conjunction with various other state agencies.
 - It aims to **bring up the state as one of the largest & advanced Defence manufacturing hubs** and put it on the world map.

- **Features:**
 - Single Window approvals and clearances to Defence and Aerospace (D&A) manufacturing units via **Nivesh Mitra**.
Nivesh Mitra Portal has been launched by the Government of Uttar Pradesh to ease the **Ease of Doing Business** in the state.
 - **Labour Permits** for D&A industry towards flexible employment conditions.
 - Simple Procedures and **rationalised regulatory regime** with easy reimbursement of incentives and subsidies.
 - Assured **water supply** and uninterrupted **electricity**.
 - Connectivity with **4-lane heavy-duty highway**.
- **Reason for choosing UP for Defence Corridor:**
 - Uttar Pradesh is the **fourth largest state in India** and the **third largest economy within the country**.
 - With a population of more than 200 million, **UP has the highest number of available labour force** and is one of the **top five manufacturing states in India**.
 - The state also ranks **first in terms of number of Micro, Small & Medium Enterprises (MSMEs)** in the country and ranks **2nd in Ease of Doing Business (EoDB)**.

Defence Corridors

- **About:**

A **defence corridor refers** to a route or a path along which domestic productions of defence equipment by **public sector, private sector and MSMEs** are lined up to enhance the operational capability of the defence forces.
- **Significance:**
 - It will **help in making the nation self-reliant** in the field of **defense production and promoting 'Make in India'**, which will **reduce our imports and promote the export of these items** to other countries.
 - It will provide a **fillip to the defence manufacturing ecosystem** through synergistic development of technologies, promote the **growth of private domestic manufacturers**, including **MSMEs** and **Start-Ups**.

- **Challenges:**
 - **Technological Development in Defence:**
 - The first challenge in the development of technology is in **advanced electronics and materials**, which cut across all the verticals.
 - The second challenge is **relative immaturity of Material Science** to use lighter and stronger intelligent material.
 - **Meeting Industries Expectations:**

Meeting expectations of the industry, who not only wants faster clearance of their proposals for setting up or shifting their bases, but also tax benefits like in **Special Economic Zones (SEZ)**, faster decision making etc is a challenge for the government.
 - **Less Involvement of Private Players:**

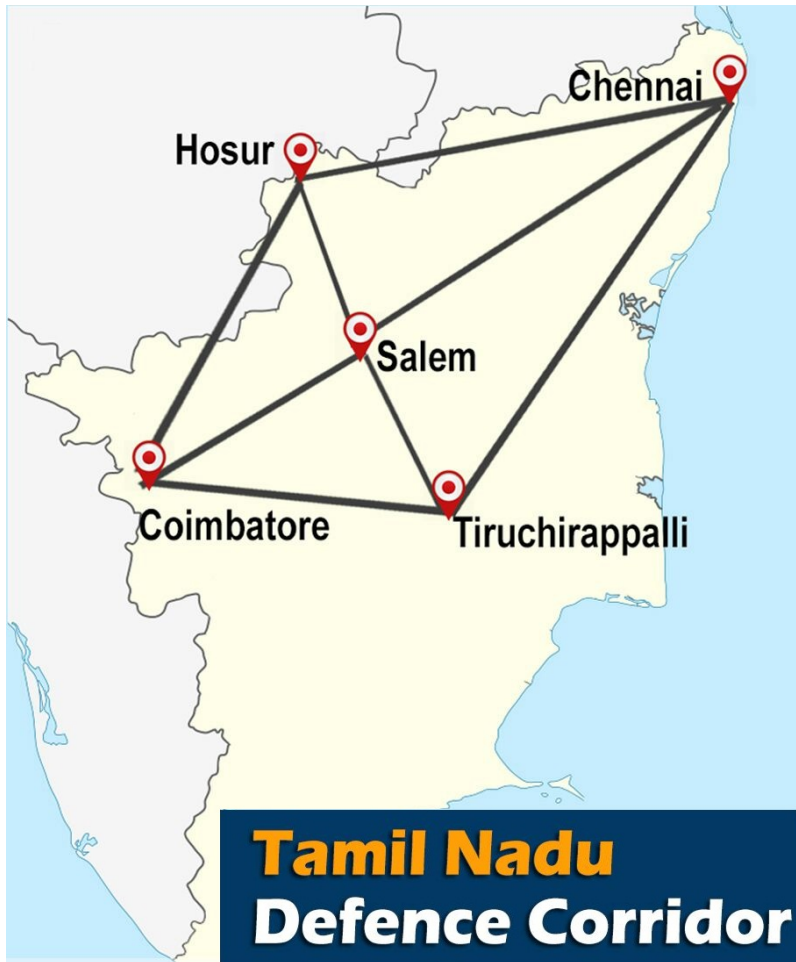
While there is an **over-concentration of orders with the public sector** (leading to choking and queuing), hardly any orders are actually flowing to the private players.
 - **Human Resource:**

Unavailability of **talented human resources** is also one of the major issues.

Tamil Nadu Defence Industrial Corridor

It comprises **Chennai, Tiruchirappalli, Coimbatore, Salem and Hosur**. It will create **new defence production facilities and promote clusters** with necessary testing and certification facilities, export facilitation centres, technology transfer facilitation, etc.

The corridor was **inaugurated in 2019**.



Way Forward

- Its success would lie in **addressing the concern of 'Make in India' in addressing the concern of industry**, attracting investments, generating employment, creating contemporary technologies, aiding the growth of the manufacturing sector and making India Self-reliant.
- The **right infrastructure**, support for a vibrant supply chain network, skill development, involvement of established national and global players to bring in capital and viable projects can give the required traction.
- There is a **need to identify short term, medium-term and long-term roadmaps** keeping existing capability, requirements, technology, capital and infrastructure development in mind. It will also help in the development of clusters with supporting ecosystems around them.

Source: TH

Arctic Sea Ice Decline

Why in News

Recently, the **Arctic sea** ice reached its **minimum extent**, coming in at 4.72 million square miles. It is the **12th lowest** on record and the record minimum melting of the ice occurred in 2012.

- September marks the end of the summer sea ice melt season and the Arctic sea ice minimum, which means when sea ice over the **Northern Hemisphere ocean** reaches its lowest extent of the year.
- The '**Last Ice Area**' (**LIA**), located in the Arctic's Ice north of Greenland, has also started melting earlier than what the scientists had expected.



Key Points

- **About:**

- Sea ice cover has dropped by roughly half since the 1980s as a direct result of **increased carbon dioxide** from human activities.
 - In recent years, Arctic sea ice levels have been at their lowest since at least 1850 for the annual mean and in at least 1,000 years for late summer, according to the **Intergovernmental Panel on Climate Change** (IPCC).
 - It concluded that **the Arctic is likely to be practically sea ice free in September at least once before 2050.**
- At this stage of the melt season, the sea ice pack is at its weakest and is highly responsive to the weather conditions of a given day or week. **Subtle shifts can have big impacts.**

- **Factors Causing Rapid Melting of Ice:**

- **Albedo Feedback Loop:**

Ice is more reflective (has a higher albedo) than land or water surfaces, this is one of several reasons for the Arctic's warming about **three times faster than the planet as a whole.**

Therefore, as global ice cover decreases, the reflectivity of Earth's surface decreases, more incoming solar radiation is absorbed by the surface, and the surface warms.

- **Darker Ocean Surface.**

The Arctic's bright ice is replaced by a darker open ocean surface, less of the sun's radiation is reflected back to space, **driving additional heating and ice loss.**

- **Counterclockwise Ice Circulation:**

- **Cyclones** entering the Arctic from Siberia generated counterclockwise winds and ice drifts.
- This pattern generally reduces the amount of sea ice moving out of the Arctic through the **Fram Strait, east of Greenland.** This likely contributed to the record low summer sea ice conditions observed in the Greenland Sea.

- **Low Pressure System:**

- The low pressure system also **increases cloudiness over the Arctic.**
- Clouds generally block incoming solar radiation, **reducing sea ice melt, but they can also trap heat lost from the surface,** so their impact on sea ice melt can be a mixed bag.

- **Impact of Melting Arctic Ice**

- **Global Climate Change:**

- The **Arctic and Antarctic** act like the **world's refrigerator**. They balance out other parts of the world that absorb heat. The loss of ice and the warming waters will **affect sea levels, salinity levels, and current and precipitation patterns**.

- **Danger to Coastal Communities:**

- Global average sea level has risen by about 7-8 inches since 1900, and it's getting worse.
 - Rising seas endanger coastal cities and small island nations by exacerbating **Coastal Flooding** and storm surge.

- **Food Security:**

- Polar vortexes, increased heat waves, and unpredictability of weather caused by ice loss are already causing significant damage to crops on which global **food systems** depend.

- **Loss of Methane Store:**

- **Permafrost** in the Arctic region (ground that is permanently frozen) stores large amounts of methane, which is a greenhouse gas that contributes to climate change.
 - As more quickly the arctic ice is lost, more rapidly permafrost will melt. This will result in **a vicious cycle that may result in a climate catastrophe**.

- **Biodiversity Threat:**

- Melting of the Arctic ice puts the Arctic region's vibrant **biodiversity under serious threat**.

Way Forward

- The Arctic is an essential system like the **Amazon forest**, lungs of the world, it feeds into global climate change everywhere. Therefore, **it is in humanity's interest to treat the Arctic melting as a severe global issue** and act accordingly.
- The sea-ice loss at such a high rate is a matter of concern for all the lives on Earth. Thus, **maintaining the balance between anthropological activities and carrying capacity of the environment is one of the foremost steps** that can be taken at this point of time.

Source: DTE

Stablecoins

Why in News

The US is discussing launching a **formal review into whether Tether and other stablecoins threaten financial stability.**

The first stablecoin, created in 2014, was Tether.

Key Points

- **About Stablecoins:**

- A stablecoin is a type of **cryptocurrency** that is typically pegged to an **existing government-backed currency**.

A cryptocurrency is a **form of digital asset based on a network** that is distributed across a large number of computers.

- Stablecoins hold a **bundle of assets in reserve**, usually **short-term securities** such as cash, government debt or **commercial paper**.
- Stablecoins are useful because they **allow people to transact more seamlessly in cryptocurrencies** that function as investments, such as **Bitcoin**.
- They form a **bridge** between old-world money and new-world crypto aslo they **promise to function like perfectly safe holdings**.

- **Types:**

- **Fiat-collateralized Stablecoins:**

- They are **collateralized by fiat money**, such as the US dollar, euro or the pound, on a 1:1 ratio.
- **Examples:** Tether, Gemini Dollar, and TrueSD.

- **Stablecoins Backed by Other Assets:**

- There are a **few stablecoins**, which are **backed by a basket of multiple assets** (commercial papers, bonds, real estate, precious metals, etc).
- The value of these stablecoins can **fluctuate over time subject to movement** in commodity and precious metal **prices**.
- **Example:** Digix Gold, backed by physical gold.

- **Crypto-Collateralized Stablecoins:**

- Crypto-collateralized stablecoins are **more decentralised than their peers** and are backed by cryptocurrencies.
- The flipside is **price volatility** and to address the risk of price volatility, these stablecoins are over-collateralized.
- **Example:** Dai.

- **Non-collateralized stablecoins:**

- These stablecoins **do not have any backing and are decentralized** in the true sense and the supply of **non-collateralized stablecoins** is governed by algorithms.
- **Example:** Basis.

- **Concerns:**
 - **Related to Short term Debt:**

Many stablecoins are backed by **types of short-term debt** that are prone to periods of illiquidity, meaning that they can become hard or impossible to trade during times of trouble.
 - **Not all Stablecoins are Stable:**

Not all stablecoins are really 100% price-stable. Their values are **dependent on their underlying assets**.
 - **Asset Contagion Risk:**
 - There are **potential asset contagion risks** linked to the liquidation of stablecoin reserve holdings.

A **contagion** is the spread of an economic crisis from one market or region to another and can occur at both a domestic or international level.
 - The risks are primarily associated with collateralised stablecoins, varying based on the size, liquidity and riskiness of their asset holdings, as well as the transparency and governance of the operator.
 - **Risks to Financial Stability:**

While stablecoins have the potential to enhance the efficiency of the provision of financial services, they may also **generate risks to financial stability**, particularly if they are adopted at a significant scale.
 - **Lack of Accountability:**

They are not **transparent or auditable by everyone** and are operated just like non-bank financial intermediaries that provide services similar to traditional commercial banks, but outside normal banking regulation.
 - **Regulatory Challenge:**
 - International coordination of regulatory efforts across diverse economies, jurisdictions, legal systems, and different levels of economic development and needs is another regulatory challenge.
 - There is **not (yet) a uniform regulatory approach of regulators worldwide** relating to stablecoins.

Way Forward

- Stablecoins do not stand for a uniform category but represent a variety of crypto instruments that can vary significantly in legal, technical, functional and economic terms.
- So, in order to be **effective in limiting risks and not disturbing innovations** the stablecoin industry **must work together with the regulators** to come up with a framework that helps put them at ease while protecting this nascent industry from overregulation.

Source: IE

Ladakh Resident Certificate Order 2021

Why in News

Recently, the Ladakh administration has decided to issue **Resident Certificate only to the Permanent Resident Certificate** holders of the region.

- This is **unlike J&K where new domicile laws also permit outsiders** to apply for **jobs, land and other facilities**.
- Earlier, when **Article 370 and Article 35A** of Indian constitution were in vogue in J&K and Ladakh, all jobs in the erstwhile state of J&K including Ladakh were exclusively reserved for permanent residents of the State.

Key Points

- **About:**
 - Any person who possesses a **Permanent Resident Certificate (PRC)** issued by the **competent authority (Tehsildars) in the districts of Leh and Kargil** or belongs to a category of persons who would have been **eligible to be issued PRC** shall be eligible to receive the **Resident Certificate**.
 - The Administration also **enhanced the upper age limit for entry into government services** against all posts.
The **age relaxation would be a one-time exception** and this relaxation shall remain in force for two years.
- **Objective:**

It is to **temporarily define Resident of Union Territory of Ladakh** for the purpose of **appointment to all the non-gazetted posts** borne on the establishment of any department or service of administration of Ladakh.

- **Permanent Residence Certificate (PRC):**

- **About:**

It is a kind of **domicile certificate which helps people** in availing domicile linked quotas in government jobs and admission in educational institutions.

PRC in India is **issued by states** like Arunachal Pradesh, Assam, Mizoram, Meghalaya, Tripura and Manipur.

- **Purpose:**

It is a legal document that **serves as a proof of residence** and thus must be submitted wherever a residence proof is required.

- **Use:**

- For **taking admission in educational organisations** and **job reservation** under specific quotas especially for government jobs, etc. to get **local preferences**.
- For **obtaining a ration card** of the respective state and cast the vote in the elections.
- For **availing the benefits of various schemes** of the state or to claim scholarships of the State.

Source: TH

Fast and Secured Transmission of Electronic Records (FASTER) System

Why in News

Recently, in a major reform, the **Supreme Court** has given the go-ahead to implement a system for electronic transmission of its orders.

- It will ensure effective implementation of **Article 21 (right to life)**.
- Earlier, the Chief Justice of India (CJI) launched an Artificial Intelligence (AI) based portal '**SUPACE**' in the judicial system aimed at assisting judges with legal research.

Key Points

- **About:**

The system proposes **transmission of e-authenticated copies of interim orders, stay orders, bail orders and record of proceedings** to the duty-holders for compliance and due execution, through a **secured electronic communication channel**.

- **Need:**
 - There have been cases where the plight of jail inmates are **not released despite bail orders passed by this court** due to delay in communication of such orders.
 - So, it was needed to **utilise information and communication technology tools** for efficient transmission of court's orders.
- **Significance:**
 - **Ensure that undertrials are not made to wait for days on end** behind bars to be released because the certified hard copies of their bail orders took time to reach the prison.

Undertrials are the **people who are yet to be found guilty of the crimes** they have been accused of.
 - **Prevent unnecessary arrests and custody of people** even after the court had already granted them its protection.
 - **Communicate a stay on an execution ordered** by the final court on time.
- **Challenges:**

The **availability of internet connection in jails** across the nation as without this facility transmission of such orders to prisons will not be possible.

Source: TH

Solar DC Cooking System

Why in News

Recently, the **solar DC cooking technology** was developed by the **Central Mechanical Engineering Research Institute (CMERI)**.

The CMERI is an institute under the **Council for Scientific and Industrial Research (CSIR)**.

Key Points

- **About:**

- It is a **Solar Energy based Cooking System** which consists of a solar PV panel, charge controller, battery bank and cooking oven.
- It provides a **Clean Cooking Environment**, Inverter-Less Direct Operation, Fast and Uniform Heating and a potential to save 1 ton Carbon Dioxide emissions per year/household.
- It has **20-25% better efficiency** and is **more Economical** in comparison with **Conventional Solar based Cooking Systems** which loses efficiency owing to AC-DC conversion.
- The simple Technology Design also ensures **Ease-of-Manufacturing** and thus provides a substantial Economic Opportunity for the Micro-Industries.
- It will cost in the range of **Rs 65,000- Rs 70,000** and if Government subsidies are provided there will be a **significant reduction in the price of the product**.

- **Significance:**

- Widespread usage the system can also **play a critical role in achieving the target of 200 GW of Solar energy** and also to **save almost 290 million tons of Carbon Dioxide emissions**.
- Along with the **widening of the popularity base of Technology**, there is a probability of **improvement in Job Prospects**.

Source: PIB

Arjun Mk-1A Battle Tanks

Why in News

Recently, the Ministry of Defence (MoD) placed an order with Heavy Vehicles Factory (HVF), Chennai for supply of **118 Main Battle Tanks (MBTs) Arjun Mk-1A** for the Indian Army.



MBT ARJUN Mk 1A

Key Points

- **About:**

- The state-of-the-art MBT Mk-1A is a **new variant of Arjun Tank** designed to enhance fire power, mobility and survivability.

The Arjun Main Battle Tank project was **initiated by DRDO in 1972.**

- Infused with **72 new features and more indigenous content from the Mk-1 variant**, the tank would ensure effortless mobility in all terrains, besides precise target engagement during day and night.
- This indigenous MBT proves to be at **par with any contemporary in its class across the globe.**

- **Developed By:**

Combat Vehicles Research and Development Establishment (CVRDE), along with other laboratories of **Defence Research & Development Organisation (DRDO)**.

- **Significance:**

The order, worth Rs 7,523 crore, will provide further boost to the **'Make in India' initiative** in the defence sector and is a big step towards achieving **'Aatmanirbhar Bharat'**.

- **Mk1A and MkII:**

- The **development of Arjun Mk1** was followed by improved variants - **Mk1A and MkII.**
- **Arjun Mk1A**, which features improved firepower and transmission systems, completed the final integration tests in 2019 and was cleared for production.
- The **Arjun MkII variant** is a **light-weight Futuristic Main Battle Tank (FMBT)** with electro-optical sensors and high-power lasers.

Source: PIB
