



Ramsar Convention

RAMSAR CONVENTION

About

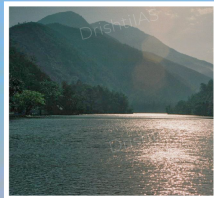
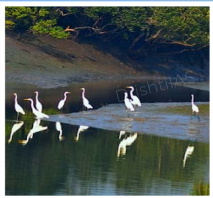
- Also known as the Convention on Wetlands.
- An intergovernmental treaty, adopted in 1971, in Ramsar, Iran.
 - Entered into force in 1975.
- Wetlands that are of international importance are declared as Ramsar sites.
- **Largest Ramsar Site in World: Pantanal: South America**

Montreux Record

- Adopted in Montreux (Switzerland) in 1990.
- Identifies Ramsar sites that need priority conservation attention at national or international level.

Wetlands

- A place in which the land is covered by water – salt, fresh, or somewhere in between – either seasonally or permanently.
- Take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains.
- **World Wetlands Day: 2nd February**



India & Ramsar Convention

- Came into force in India: **1982**
- **Total Number of Ramsar Sites: 64**
 - Chilika Lake (Odisha), Keoladeo National Park (Rajasthan), Harike Lake (Punjab), Loktak Lake (Manipur), Wular Lake (Jammu and Kashmir), etc.
- **Recent Additions (Jan-Aug 2022): 12**
 - Nanda Lake (Goa), Sirpur Wetland and Sakhya Sagar (Madhya Pradesh), Ranganathittu Bird Sanctuary (Karnataka), Gulf of Mannar Marine Biosphere Reserve, Vedanthangal Bird Sanctuary, Vembannur Wetland Complex, Udhyamarthandapuram Bird Sanctuary, Vellore Bird Sanctuary, Karikili Bird Sanctuary, Pallikaralai Marsh Reserve Forest and Pichavaram Mangrove (Tamil Nadu)

Key Facts

- **Largest Ramsar Site:** Sunderbans, West Bengal
- **Smallest Ramsar Site:** Vembannur Wetland Complex, Tamil Nadu
- **State with the maximum number of Ramsar Sites:** Uttar Pradesh & Tamil Nadu (10)
- **Wetlands in Montreux Record:**
 - Keoladeo National Park: Rajasthan
 - Loktak Lake: Manipur



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India's Solar Power Dream

For Prelims: Renewable Energy, Production Linked Incentive (PLI), Domestic Content Requirement (DCR)

For Mains: Challenges to Indian Solar Power Industry and Government Initiatives to Resolve them, India's achievements in renewable energy sector, India's renewables energy targets

Why in News?

Government of India has set the target to **expand India's renewable energy installed capacity to 500 GW by 2030.**

- India is also targeting to reduce India's total projected carbon emission by 1 billion tonnes by 2030, reduce the carbon intensity of the **nation's economy by less than 45% by the end of the decade, achieve net-zero carbon emissions by 2070.**

What is the Present Status of Renewable Energy in India?

- **The total installed capacity for renewable energy in India is 151.4 GW.**
 - The following is the breakup of total installed capacity for Renewables:
 - Wind power: 40.08 GW
 - **Solar Power: 50 GW**
 - Biopower: 10.61 GW
 - Small Hydro Power: 4.83 GW
 - Large Hydro: 46.51 GW
 - **Present Solar Power capacity:**
 - **45 solar parks** of aggregate capacity 37 GW have been approved in India.
 - Solar Parks in Pavagada (2 GW), Kurnool (1 GW) and Bhadla-II (648 MW) are included in the top 5 operational solar parks of 7 GW capacity in the country.
 - The **world's largest renewable energy park of 30 GW capacity solar-wind hybrid project is under installation in Gujarat.**

What are the Challenges?

- **Heavily Dependent on Imports:**
 - India doesn't have enough module and PV cell manufacturing capacity.
 - The current solar module manufacturing capacity is **limited to 15 GW per year, whereas the domestic production is around 3.5 GW only.**
 - Further, out of the 15 GW of module manufacturing capacity, **only 3-4 GW of modules are technologically competitive** and worthy of deployment in grid-based projects.
- **Raw Material Supply:**
 - The silicon wafer, the most expensive raw material, is not manufactured in India.
 - It currently imports 100% **silicon wafers** and around 80% cells.
 - Further, other key raw materials, such as **silver and aluminum metal pastes for making electrical contacts, are also almost 100% imported.**

What are Government Initiatives?

- **PLI scheme to Support Manufacturing:**
 - The Scheme has provisions for **supporting the setting up of integrated manufacturing units of high-efficiency solar PV modules** by providing [Production Linked Incentive \(PLI\)](#) on sales of such solar PV modules.
- **Domestic Content Requirement (DCR):**
 - Under some of the current schemes of the [Ministry of New & Renewable Energy \(MNRE\)](#), namely Central Public Sector Undertaking (CPSU) Scheme Phase-II, [PM-KUSUM](#), and Grid-connected [Rooftop Solar Programme](#) Phase-II, wherein **government subsidy is given, it has been mandated to source solar PV cells and modules from domestic sources.**
 - Further, the government made it mandatory to procure modules only from an **Approved List of Manufacturers (ALMM)** for projects that are connected to state/ central government grids.
- **Imposition of Basic Customs Duty on import of solar PV cells & modules:**
 - The Government has announced the imposition of **Basic Customs Duty (BCD)** on the import of solar PV cells and modules.
 - Further, it has imposed a 40% duty on the import of modules and a 25% duty on the import of cells.
 - Basic custom duty is the **duty imposed on the value of the goods at a specific rate.**
- **Modified Special Incentive Package Scheme (M-SIPS):**
 - **It's a scheme** of the [Ministry of Electronics & Information Technology](#).
 - The scheme mainly provides a **subsidy for capital expenditure on Pv cells and modules - 20% for investments in [Special Economic Zones \(SEZs\)](#) and 25% in non-SEZ.**

Way Forward

- As India is making significant progress in the development of solar PV modules, but for it to become a manufacturing hub, it will require more policy interventions like developing home-grown technologies which could, in the short-term, work with the industry to provide them with trained human resource, process learnings, root-cause analysis through right testing and, in the long term, develop India's own technologies.
- This would further require substantial investment in several clusters which operate in industry-like working and management conditions, appropriate emoluments, and clear deliverables.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. The term 'Domestic Content Requirement' is sometimes seen in the news with reference to (2017)

- (a) Developing solar power production in our country.
- (b) Granting licenses to foreign T.V. channels in our country.
- (c) Exporting our food products to other countries.
- (d) Permitting foreign educational institutions to set up their campuses in our country.

Ans: (a)

Exp:

- National Solar Mission was started in 2010 which aims at deploying solar power across the country and also mandates to ensure development across the entire value chain. Hence, developing domestic manufacturing capacity across the value chain is also one of the thrust areas of the Mission.
- **To ensure the development of domestic manufacturing, provision of 'Domestic Content Requirement' was introduced under the Mission.** The provision required the solar energy producer to use locally manufactured cells. Subsidies were offered to those developers who would

use domestic equipments.

- However, India lost the case against the US at WTO as the body ruled that India's Domestic Content Requirement provisions were inconsistent with the international norms.
- **Therefore, option (a) is the correct answer**

Mains

Q. India has immense potential of solar energy though there are regional variations in its developments. Elaborate **(2020)**

Source: IE

Food Inflation

For Prelims: Inflation, Food Inflation, Food Price Index, CPI, MSP

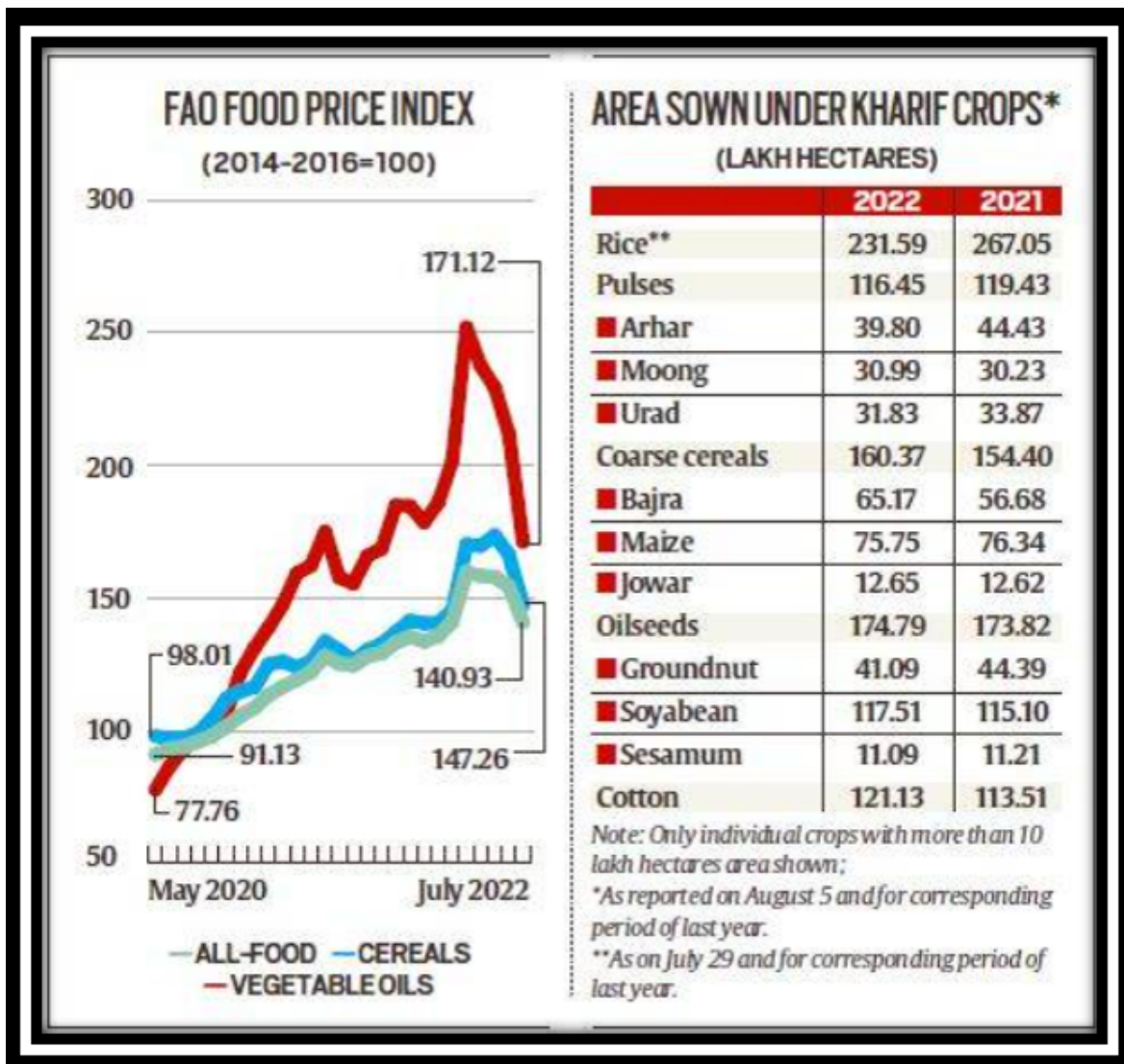
For Mains: Food Inflation and issues, Growth & Development

Why in News?

The [UN Food and Agriculture Organization's Food Price Index \(FFPI\)](#) averaged **140.9 points** in July 2022, **8.6% down from its previous month's level** and marking the **steepest monthly drop** since October 2008.

- It is expected that [Food Inflation](#) may ease faster than expected.

What do we know about the Food Price Index (FFPI)?



▪ **About:**

- It is a measure of the **monthly change** in **international prices** of a **basket of food commodities**.
- It consists of the **average of five commodity group price indices** weighted by the **average export shares** of each of the groups over **2014-2016 (Base Year)**.
- It was introduced in **1996** as a **public good** to help in monitoring developments in the **global agricultural commodity markets**.

▪ **Trends in FFPI:**

- FFPI hit an **all-time-high of 159.7 points in March 2022**, the month that followed the **Russian invasion of Ukraine** in February 2022.
- **The latest index reading (July 2022) is the lowest** since the 135.6 points of January 2022, before the still-ongoing war.
- Between March 2022 and July 2022, the FFPI has **cumulatively declined by 11.8%**.

What are the Reasons for Fall in FFPI?

▪ **Global:**

◦ **Black Sea Trade Route:**

- The UN-backed agreement for unblocking of the **Black Sea trade route** provides for unobstructed shipments of **Russian food and fertilisers**.
- Russia alone is expected to **export 40 million tonnes (mt)** in 2022-23 (July-June), up from last year's 33 mt.

◦ **Lift of Ban on Palm Oil:**

- Indonesia, since late-May 2022, has lifted its ban on **palm oil exports**.

◦ **Soyabean Crops:**

- The US, Brazil, Argentina and Paraguay are set to harvest bumper [soyabean crops](#).
- **Pandemic Effect:**
 - The supply disruption caused by [Covid-19 pandemic](#) is also easing with the **movement of migrants** and increase in **production of food crops**.
- **Domestic:**
 - **Rainfall:**
 - **Cumulative rainfall** during the current [monsoon season](#) from June 2022 to August 2022 has been **5.7% above the historical long-term average for this period**.
 - Almost all agriculturally-significant areas – barring **Uttar Pradesh, Bihar, Jharkhand and West Bengal** – have received good rains so far.
 - Above average rainfall across the **South Peninsula, Central and Northwest India** has boosted acreages under most crops this [kharif \(monsoon\) season](#).

What are the Causes of Recent Food Inflation?

- **Weather:**
 - It included [droughts in Ukraine \(2020-21\)](#) and **South America (2021-22)**, which especially impacted **sunflower and soyabean supplies**, and the March-April 2022 **heat wave that devastated India's wheat crop**.
- **Covid-19 Pandemic:**
 - **The pandemic's supply-side impact** was felt the most in **Malaysia's oil palm plantations**, where harvesting of fresh fruit bunches is **done mainly by migrant labourers** from Indonesia and Bangladesh.
 - As Covid-19 resulted in **many of them flying back** and no new work permits being issued, **output from the world's second largest palm oil producer and exporter fell**.
- **Russo-Ukrainian War:**
 - It led to supply disruptions from the two countries that, in 2019-20 (a non-war, non-drought year), accounted for **28.5% of the world's wheat, 18.8% of corn, 34.4% of barley and 78.1% of sunflower oil exports**.
- **Export Controls:**
 - Controls were first imposed by **Russia in December 2020**, prompted by **domestic food inflation** fears arising from record hot temperatures.
 - Shortage concerns at home triggered similar actions in **palm oil by Indonesia** (the world's No. 1 producer-cum-exporter) and in [wheat by India](#) during March-May 2022.

How Global Prices of Food Affect Domestic Prices?

- The transmission of the **global inflation to domestic food prices** basically depends on **how much of a country's consumption/production is imported/exported**.
 - Such transmission is evident in **edible oils and cotton**, where up to **2/3rd of India's consumption** and **1/5th of its production** are imported and exported, respectively.
- In the case of [wheat](#), the [heat wave](#) from mid-March 2022 severely impacting yields, both **public stocks and overall domestic availability** are under pressure, even as open market prices have risen to export parity levels.
 - Centre has decided to **slash wheat allocations** and **offer more rice** under its flagship [free-grains scheme](#).
- **Sugar** is one commodity where **retail prices haven't gone up much**, despite record exports by mills.
 - The reason for it is **production is also hitting a historic high**.

Way Forward

- There should be **consistency in import policy** as that sends **appropriate market signals in**

advance.

- Intervening through **import tariffs** is better than quotas **which leads to greater welfare loss**. This also calls for more accurate **crop forecasts using satellite, remote sensing and GIS techniques** to indicate shortfall/surplus in a crop year much in advance.
- Moreover, **a decade old Consumer Price Index (CPI) base year of 2011-12** that gives nearly **half of the weight to food items needs to be revised and updated** to reflect the change in food habits and lifestyle of the population.
 - With the rising middle-class, spending on non-food items has increased and this needs to be better reflected in the CPI, thereby enabling **RBI** to better target the non-volatile segment (**core inflation**).

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following statements: (2020)

1. The weightage of food in Consumer Price Index (CPI) is higher than that in Wholesale Price Index (WPI).
2. The WPI does not capture changes in the prices of services, which CPI does.
3. Reserve Bank of India has now adopted WPI as its key measure of inflation and to decide on changing the key policy rates.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 3 only
- (d) 1, 2 and 3

Ans: (a)

Explanation:

- Wholesale Price Index (WPI) is a measure of the average change in the prices of goods in the wholesale market or at the wholesale level. It is published by the Office of Economic Adviser, Ministry of Commerce and Industry.
- Consumer Price Index (CPI) is the measure of changes in the price level of a basket of consumer goods and services bought by households. There are four types of CPI based on items basket:
 - CPI for Industrial Workers (IW)
 - CPI for Agricultural Labourer (AL)
 - CPI for Rural Labourer (RL)
 - CPI (Rural/Urban/Combined)
- Of these, the first three are compiled by the Labour Bureau in the Ministry of Labour and Employment. Fourth is compiled by the Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation.
- Weightage of items in CPI is based on average household expenditure taken from consumer expenditure surveys. The weightage of food in CPI is far higher (approx. 46%) than in WPI (approx. 24%). A significant proportion of WPI items basket represents manufacturing inputs and intermediate goods like minerals, basic metals, machinery etc. **Hence, statement 1 is correct.**
- Moreover, WPI does not capture changes in the prices of services, which CPI does. **Hence, statement 2 is correct.**
- WPI is used as a key measure of inflation in some economies. However, the RBI no longer uses it for policy purposes, including setting repo rates. In April 2014, the RBI adopted the CPI or retail inflation as a key measure of inflation to set the monetary and credit policy. **Hence, statement 3 is not correct.**
- Therefore, option (a) is the correct answer.

Mains

Q. There is also a point of view that Agricultural Produce Market Committees (APMCs) set up under the State Acts have not only impeded the development of agriculture but also have been the cause of food inflation in India. Critically examine. **(2014)**

Source: IE

Decline in Counterfeit Notes

For Prelims: Decline in Counterfeit Notes, Government Measures to Combat Counterfeiting, Demonetisation

For Mains: Counterfeiting of Currency and Related Threats

Why in News?

Recently, the Ministry of finance has informed Lok Sabha that the value of counterfeit currency in the banking system reduced from Rs 43.47 crore in 2016-17 to about Rs 8.26 crore in 2021-22.

What is Counterfeit Money?

- Counterfeiting, manufacture of false money for gain, **a kind of forgery in that something is copied so as to defraud** by passing it for the original or genuine article.
- Because of the value conferred on money and the high level of technical skill required to imitate it, counterfeiting is singled out from other acts of forgery and is treated as a separate crime under **section 489A of the Indian Penal Code.**
- Counterfeiting is the oldest technique used by **fraudsters to cheat unsuspecting individuals of their money.**

What are the Threats of Counterfeiting?

- **Economic Terrorism:**
 - **FICN (Fake Indian Currency Notes)** can be seen as a form of **“economic terrorism” practiced by external sources** to damage India’s economy.
 - Economic terrorism refers to the **behind-the-scenes manipulation of a nation’s economy by state or non-state actors.**
 - The circulation of FICN threatens **India’s economy while the profit that is earned from doing so is used to fund covert activities** targeting India.
- **Inflation:**
 - The circulation of a large amount of fake currency **increases the amount of money in circulation**, which may lead to high demand for goods and commodities.
 - The rise in demand in turn creates **a scarcity of goods, leading to a [rise in the price](#)** of the goods.
 - This leads to **[currency devaluation.](#)**
- **Non-Reimbursement of Losses:**
 - The non-reimbursement policy of banks is another issue that occurs when banks reject the fake notes and do not reimburse the losses.
 - Firms which are involved in daily cash transactions **face heavy losses in the long run**

thanks to the infiltration of FICN into the economy.

▪ **Loss of Public Confidence:**

- Other effects of counterfeit currency include the loss of public confidence, [black marketing](#) of products, illegal stocking of products, etc.

What are the Measures to Control Fake Currency?

▪ **Demonetisation:**

- On 8th November 2016 Rs. 500 and Rs. 1,000 notes were withdrawn from the system in 2016, to discourage the use of high-denomination notes for illegal transactions and to **curb Counterfeiting**.
- [Demonetisation](#) is the act of **stripping a currency unit of its status as legal tender**.

▪ **Bi-Luminescent Security Ink:**

- The [Council of Scientific and Industrial Research \(CSIR\)](#)-National Physical Laboratory has developed [a bi-luminescent security ink](#) which glows in red and green colours when illuminated by two different excitation sources.

▪ **Terror Funding and Fake Currency (TFFC) Cell:**

- A Terror Funding and Fake Currency (TFFC) Cell has been constituted in [National Investigation Agency \(NIA\)](#) to conduct focused investigation of terror funding and fake currency cases.

▪ **FICN Coordination Group:**

- [FICN Coordination Group \(FCORD\)](#) has been formed by the Ministry of Home Affairs to share intelligence/information among the security agencies of the states/centre to counter the problem of circulation of fake currency notes.

▪ **MoU between India-Bangladesh to Counter Fake Currency:**

- Memorandum of Understanding (MoU) has been signed between India and Bangladesh **to prevent and counter smuggling and circulation of fake currency notes**.
- Also, security at the international borders has **been strengthened by using new surveillance technology**.

[Source: TH](#)

Ceasefire between Israel and Palestine

For Prelims: Geography of Israel & Palestine, Arab Israel war of 1948, Abraham Accord, Jerusalem's al-Aqsa Mosque

For Mains: Israeli-Palestinian conflict, Arab Israel war of 1948, Six-Day War in 1967, Abraham Accord

Why in News?

After three days of violence between Israel and Palestine, which resulted in killing of dozens of populations in both the countries, a ceasefire took place recently.

- Earlier this year as well, tensions flared up at [Jerusalem's al-Aqsa Mosque](#) between the **Palestinians and Israeli police**.
- These recurring clashes are part of the ongoing [Israeli-Palestinian conflict](#).



What do we know about the Recent Conflict?

- **Reason for Conflict:**
 - **Israeli aircraft** pummelled targets (**Islamic Jihad Leaders**) in **Gaza**.
 - In response, **Iran-backed Palestinian Jihad militant group** fired hundreds of rockets at Israel.
 - Islamic Jihad has fewer fighters and supporters than **Hamas**.
- **Actions from Israel:**
 - Israel launched its operation with a **strike on a leader of the Islamic Jihad**, and followed up on with **another targeted strike** on a second prominent leader.
- **Actions from Gaza:**
 - As per the Israeli army, **militants in Gaza fired about 580 rockets toward Israel**.
 - Israel had intercepted many of them, with two of those shot down being fired toward

Jerusalem.

- **UNSC Meeting:**
 - [The U.N. Security Council](#) scheduled an **emergency meeting** on the violence.
 - **China**, which holds the council presidency for August 2022, scheduled the session in response to a request from the **United Arab Emirates**, which represents **Arab nations** on the council, as well as **China, France, Ireland and Norway**.

What is Conflict between Israel and Palestine?

- **Conflict Over Jerusalem:**
 - **Jerusalem** has been at the **center of the Israeli-Palestinian conflict**.
 - According to the original 1947 [United Nations \(UN\)](#) partition plan, **Jerusalem was proposed to be an international city**.
 - However, in the first [Arab Israel war of 1948](#), the **Israelis captured the western half of the city**, and **Jordan took the eastern part**, including the Old City that houses **Haram al-Sharif**.
 - Following the [Six-Day War in 1967](#), an **armed conflict** between Israel and a coalition of Arab states primarily comprising **Jordan, Syria and Egypt**, the **Waqf Ministry of Jordan** that had till then held control of the al-Aqsa Mosque, **ceased to oversee the mosque**.
 - Israel captured **East Jerusalem from Jordan in the Six-Day War 1967 and annexed it later**.
 - Since its annexation, Israel has **expanded settlements in East Jerusalem**.
 - Israel sees the whole city as its **“unified, eternal capital”**, whereas the Palestinian leadership across the political spectrum have maintained that they would **not accept any compromise formula** for the future Palestinian state unless **East Jerusalem is its capital**.
- **Recent Developments:**
 - [Al-Aqsa Mosque & Sheikh Jarrah:](#)
 - In May 2021, **Israeli armed forces attacked Al-Aqsa Mosque** in the **Haram esh-Sharif in Jerusalem**, ahead of a march by **Zionist nationalists** commemorating Israel's capture of the eastern half of the city in 1967.
 - The threatened **eviction of dozens of Palestinian families in the East Jerusalem** neighborhood of Sheikh Jarrah escalated the crisis further.
 - [West Bank Settlement:](#)
 - Israel's Supreme Court has rejected a petition **against the eviction of more than 1,000 Palestinian inhabitants** of a rural part of the occupied **West Bank in an area which Israel has designated for military exercises**.
 - The judgment paved the way for the **demolition of eight small villages** in a rocky, arid area near Hebron known to **Palestinians as Masafer Yatta** and to **Israelis as the South Hebron Hills**.
- **India's Stand on the Crisis:**
 - India in the recent years has been [following a dehyphenation policy between Israel and Palestine](#).
 - India's policy on the longest running conflict in the world **has gone from being unequivocally pro-Palestine** for the first four decades, to a **tense balancing act with its three-decade-old friendly ties with Israel**.
 - In 2017, in an unprecedented move, **India's PM visited only Israel** and not Palestine.
 - Then, the recent visit of the **Prime Minister to Palestine (2018)**, **Oman and the UAE** is again a continuation of similar policy.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Which one of the following countries of South-West Asia does not open out to the Mediterranean Sea? (2015)

- (a) Syria
- (b) Jordan
- (c) Lebanon
- (d) Israel

Ans: (b)

Explanation:

- The Mediterranean Sea borders 21 countries on three continents, i.e., Europe, Africa and Asia, which includes Spain, France, Monaco, Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, Greece, Turkey, Syria, Lebanon, Israel, Egypt, Morocco, Algeria, Tunisia, Libya, Malta, and Cyprus.
- Jordan is landlocked, except at its southern extremity, where nearly 26 kilometres of shoreline along the Gulf of Aqaba provides access to the Red Sea.
- Therefore, option (b) is the correct answer.

Mains

Q. 'Too little cash, too much politics, leaves UNESCO fighting for life.' Discuss the statement in the light of US' withdrawal and its accusation of the cultural body as being 'anti-Israel bias'. **(2019)**

Q. "India's relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back." Discuss. **(2018)**

Source: TH

Electricity Amendment Bill, 2022

For Prelims: Electricity Amendment Bill, Seventh Schedule

For Mains: Significance of Power Sector, Amendments under Electricity Bill, Role of Subsidies

Why in News?

Recently, **the Electricity (Amendment) Bill 2022** was introduced in [Parliament](#) amid protests and later sent to the [standing committee](#) for further deliberation.

- Many **power engineers** protested the Bill across the country, in states like Tamil Nadu, Telangana, Rajasthan, and others.

What is the Electricity (Amendment) Bill 2022?

- **About:**
 - **The Electricity Amendment Bill, 2022** aims at giving **multiple players open access to [distribution networks of power suppliers](#)** and also allowing **consumers to choose any service provider.**

▪ Implication:

- The Bill seeks to amend **Electricity Act 2003**:
 - To facilitate the **use of distribution networks** by all licensees, under provisions of **non-discriminatory "open access"** with the objective of **enabling competition, enhancing efficiency** of distribution licensees for improving services to consumers and **ensuring sustainability** of the power sector.
 - To facilitate **non-discriminatory open access to the distribution** network of a distribution licensee.
 - To make provisions vis-à-vis **graded revision in tariff** over a year besides **mandatory fixing of maximum ceiling and minimum tariff** by the appropriate commission.
 - To convert the rate of punishment **from imprisonment or fine to fine**.
 - To **strengthen functions** that will be discharged by the regulators.

What are the Protestor's Arguments Against the Bill?

▪ Federal Structure:

- **The Constitution** lists 'Electricity' as Item 38 of **List III (Concurrent)** of the **Seventh Schedule**, so both the **Central and state governments** have the power to make laws on this subject.
 - With the proposed amendments, the **federal structure of Indian polity**, a part of the **'basic structure'** of the Constitution of India, is being violated.

▪ Electricity Subsidy:

- **Free power for farmers** and **Below Poverty Line** population will go away eventually.

▪ Differential Distribution:

- Only **government discoms or distribution companies** will have universal power supply obligations.
 - Therefore, it is likely that **private licensees** will prefer to supply the electricity in **profit-making areas** - to industrial and commercial consumers.
 - Once this happens, **profit-making areas will be snatched** from government discoms and they will become **loss-making companies**.

How will this Bill impact the Power Employees & Consumers?

▪ Monopoly of Private Players:

- It will lead to a major loss for government distribution companies, eventually helping to **establish the monopoly of a few private parties in the country's power sector**.

▪ Operational Issue:

- About 80% of the cost of supply is on account of power purchase, **which will be the same for all distribution licensees operating in an area**.
- Having different retailers will **open a plethora of operational issues**.
- By bringing in more retailers or distribution licensees, **the quality of service or price is not going to be any different**.

▪ Hit on Consumers:

- **As per a report of UK auditors**, due to adoption of such faulty models the consumers **had to pay in excess of 2.6 billion pounds**.
 - The cost of such transfers was **charged to the ordinary consumer**.
 - While the private companies failed, **consumers were hit the most**.

What is the Government's Rationale for the Bill?

- Government has maintained that **no provision in the bill reduces powers of the states** to regulate the **power distribution sector, payment of power subsidy**.
- The government has indicated that **multiple discoms can already exist in the same area** and the **bill only simplifies the process** to ensure that competition leads to better operations and service.
- The government has maintained that it had **consulted every state and many associations** in writing, including a separate written assurance to the Agriculture Ministry, **that there is nothing**

anti-farmer in the bill.

- The bill allows the use of **additional cross-subsidy** that is collected from industrial and commercial users in one area, for subsidising for the poor in other areas.
- With **India aiming to achieve 50% of its installed power capacity from renewables** by 2030, the government is of the view that the push for **Renewable Purchase Obligations (RPOs) mentioned in the bill will augment India's power demand**, which is expected to double in the next eight years while moving to achieve green targets fixed as per the [Paris and Glasgow Agreements](#).

Way Forward

- Being a subject of **Concurrent List of Indian Constitution**, recommendations from **states should be taken into consideration** for effective implementation of the provisions of the bill.
- Provision related to **subsidies should be put up in an elaborate manner** to eliminate any scope of confusion/ conflict.
- **Regulations for private players** should be brought in to avoid differential distribution.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Which one of the following is a purpose of 'UDAY', a scheme of the Government? (2016)

- (a) Providing technical and financial assistance to start-up entrepreneurs in the field of renewable sources of energy
- (b) Providing electricity to every household in the country by 2018
- (c) Replacing the coal-based power plants with natural gas, nuclear, solar, wind and tidal power plants over a period of time
- (d) Providing for financial turnaround and revival of power distribution companies

Ans: (d)

Explanation:

- Ujwal DISCOM Assurance Yojana (UDAY) was launched by the Ministry of Power. It aimed to help to make state electricity distribution companies (DISCOMS) financially and operationally healthy so that they can supply adequate power at affordable rates.
- It envisages financial turnaround, operational improvement, reduction of the cost of generation of power, development of renewable energy, energy efficiency and conservation.
- The scheme seeks to impact financially and operationally sound DISCOMs, increased demand for power, improvement in Plant Load Factor (PLF) of generating plants, reduction in stressed assets, availability of cheaper funds, increased capital investment, development of renewable energy sector.
- Therefore, option (d) is the correct answer.

[Source: IE](#)

OTEC Plant in Lakshadweep

For Prelims: National Institute of Ocean Technology, Ocean Thermal Energy Conversion Plant, Deep Sea Mining, Deep Ocean Mission, DNA Bank

Why in News?

Recently, the **National Institute of Ocean Technology**, an autonomous institute under the Union **Ministry of Earth Sciences (MoES)** is establishing an **[Ocean Thermal Energy Conversion Plant](#)** with a capacity of 65 kilowatts (kW) in Kavaratti, **[Lakshadweep](#)**.

- The plant will power the one lakh liter per day low temperature thermal desalination plant, which converts seawater into potable water.
- The plant is the first of its kind in the world as it will **generate drinking water from sea water using indigenous technology, green energy** and environmentally friendly processes.

What is Ocean Thermal Energy Conversion?

- **About:**
 - Ocean Thermal Energy Conversion (OTEC) is a **process for producing energy by harnessing the temperature differences (thermal gradients) between ocean surface waters and deep ocean waters.**
 - Oceans are **huge heat reservoirs** as they **cover almost 70% of Earth's surface.**
 - Researchers focus on **two types of OTEC technologies-**
 - **Closed cycle method** - where a working fluid (ammonia) is pumped through a heat exchanger for evaporation and the steam runs a turbine.
 - The vapour is turned back to fluid (condensation) by the cold water found at the depths of the ocean where it returns to the heat exchanger.
 - **Open cycle method** - where the warm surface water is pressurized in a vacuum chamber and converted to steam which runs the turbine. The steam is then condensed using cold ocean water from lower depths.
- **Historical perspective:**
 - India initially had planned to set up an OTEC plant way back in 1980, off the Tamil Nadu coast. However, with the foreign vendor closing down its operation, it had to be abandoned.
- **India's OTEC Potential:**
 - As India is **geographically well-placed to generate ocean thermal energy, with around 2000 kms of coast length along the South Indian coast**, where a temperature difference of above 20°C is available throughout the year.
 - The total OTEC potential around India is estimated as **180,000 MW**, considering 40% of gross power for parasitic losses.

How does an OTEC Plant Work?

- **About:**
 - As the energy from the sun heats the surface water of the ocean. In **tropical regions, surface water can be much warmer than deep water.**
 - This temperature difference can be **used to produce electricity and desalinate ocean water.**
 - Ocean Thermal Energy Conversion (OTEC) systems **use a temperature difference (of at least 77°F) to power a turbine to produce electricity.**
 - Warm surface water is pumped through an evaporator containing a working fluid. The vaporized fluid drives a turbine/generator.
 - Then the vaporized fluid is turned back to a liquid in a condenser cooled with cold ocean water pumped from deeper into the ocean.
 - OTEC systems **use seawater as the working fluid** and can use **condensed water to produce desalinated water.**
- **Significance:**

- Two of the biggest advantages of OTEC are that it produces **clean environmentally friendly renewable energy** and, unlike solar plants which can't work at night and wind turbines which only work when it's windy, **OTEC can produce energy at all times.**

What are the Related Recent Initiatives of the Government?

- **Deep Sea Mining:**
 - The MoES is developing technologies for **mining deep sea** resources like polymetallic nodules from the **Central Indian Ocean** at a water depth of 5,500 meters.
- **Weather Forecasting:**
 - The ministry is also working on introducing **ocean climate change advisory services** for climate risk assessment due to **sea level rise; cyclone intensity and frequency; storm surges and wind waves;** biogeochemistry, and changing **harmful algal blooms** in the coastal waters of India.
- **Deep Ocean Mission:**
 - MoES is trying to design and develop a **prototype crewed submersible rated for 6,000 meters of water depth** under the **Deep Ocean Mission.**
 - It will include technologies for underwater vehicles and underwater robotics.
- **DNA Bank:**
 - There efforts are being made to improve the detection, sampling and **DNA storage** of benthic fauna of the northern Indian Ocean through systematic sampling using a remotely operated vehicle.

National Institute of Ocean Technology (NIOT)

- It was established in **November 1993 as an autonomous society** under the **Ministry of Earth Sciences,** Government of India.
- It aims to develop reliable indigenous technologies to solve various engineering problems associated with harvesting of non-living and living resources in the **Indian Exclusive Economic Zone.**

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Where was the first desalination plant in India to produce one lakh litres freshwater per day based on low temperature thermal desalination principle commissioned? (2008)

- (a) Kavaratti
- (b) Port Blair
- (c) Mangalore
- (d) Valsad

Ans: (a)

Exp:

- The National Institute of Ocean Technology (NIOT), Chennai has **developed the world's first Low Temperature Thermal Desalination (LTTD) plant in Kavaratti, the capital of Lakshadweep** to cater to the requirements of the local population of Karavatti, Minicoy and Agatti.
- The reverse osmosis, a membrane process which is globally accepted technology suitable for desalination of saline water, is quite different from LTTD technology.
- The LTTD is a process under which the warm surface sea water is flash evaporated at low pressure and the vapour is condensed with cold deep sea water.

- The LTTD technology does not require any chemical pre and post-treatment of seawater and thus the pollution problems are minimal and the process is suitable for island territories. Since no effluent treatment is required, it gives less operational maintenance problems compared to other desalination processes. **Therefore, option (a) is the correct answer.**

[Source: DTE](#)

Soil Mapping

Why in News?

Recently, [Food and Agriculture Organization \(FAO\)](#) started a project to digitally map soil nutrients in sub-Saharan Africa (SSA) and central America to increase efficiency in using fertilizers.

- Also, it will organize and improve existing soil maps.

What is Soil Mapping?

- **About:**
 - [Soil Mapping](#) is the process of **delineating natural bodies of soils, classifying and grouping the delineated soils into map units**, and capturing soil property information for interpreting and depicting soil spatial distribution on a map.
- **Benefits:**
 - It will enhance the understanding of what types of nutrients our soils and crops need.
 - Further, it will reduce waste when applying fertilizers and increase their effectiveness.

What is the Project all about?

- **About:**
 - A [United Nations](#) project is digitally mapping soil nutrients in sub-Saharan Africa (SSA) and central America to increase efficiency in using fertilisers. The project is being carried out by **Food and Agriculture Organization (FAO)**.
 - It would foster the creation of national **soil databases and soil information systems** as public goods to be used by policymakers.
 - Further, the private sector, and especially farmers can generate long-term benefits from it.
 - It will also improve short-term flexibility to adapt to trends in fertilizer markets and climate dynamics without compromising output.
- **Need:**
 - There were **unsustainable agricultural practices, a lack of resources and capacity development, and nutrient underuse** in sub-Saharan Africa (SSA), which has resulted in **significant soil nutrient depletion, low crop yields, and poverty**, leaving many farm families in a scenario of vulnerability and food insecurity.
 - Many African countries lack policies regulating soil as well as the capacity, knowledge and experience to plan and implement sustainable soil management programmes.
 - **Africa's Total Factor Productivity growth**, especially in the sub-Sahara region, **does not match up to the growth of other developing regions**.
 - Total factor productivity growth is the difference between the growth of output and the growth of a combination of all factor inputs, usually labour and capital.

What is FAO?

- The **Food and Agriculture Organization (FAO)** is a specialized agency of the **United Nations** that leads international efforts to defeat hunger.
- Its goal is to **achieve food security** for all and make sure that people have **regular access to enough high-quality food to lead active healthy lives.**
 - With 195 members - 194 countries and the [European Union](#), FAO works in over 130 countries worldwide.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following statements: (2017)

The nation-wide 'Soil Health Card Scheme' aims at

1. expanding the cultivable area under irrigation.
2. enabling the banks to assess the quantum of loans to be granted to farmers on the basis of soil quality.
3. checking the overuse of fertilizers in farmlands.

Which of the above statements is/are correct?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: (b)

Exp:

- **Soil Health Card (SHC) is a GoI scheme promoted by the Department of Agriculture and Co-operation under the Ministry of Agriculture and Farmers' Welfare. It is being implemented through the Department of Agriculture of all the State and Union Territory Governments.**
- A SHC is meant to give each farmer, soil nutrient status of the holding and advise on the dosage of fertilizers and also the needed soil amendments, that should be applied to maintain soil health in the long run.
- SHC is a printed report that a farmer is handed over for each of his holdings. It contains the status of the soil with respect to 12 parameters, namely Nitrogen (N), Phosphorus (P), Potassium (K) (macro-nutrients); Sulphur (S) (secondary-nutrient); Zinc (Zn), Iron (Fe), Copper (Cu), Manganese (Mn), Boron (B) (micro-nutrients); and pH, Electrical Conductivity (EC), Organic Carbon (OC) (physical parameters). Based on this, the SHC also indicates fertilizer recommendations and soil amendment required for the farm. Hence, statement 3 is correct and statements 1, 2 are not correct.
- The main aim behind the scheme is to find out the type of a particular soil and then provide ways in which farmers can improve it. **Therefore, option (b) is the correct answer**

Source: DTE

Grain Shape and Its Liquefaction Potential

Why in News?

Recently, the Scientists have studied and highlighted the **important effects of** shape of Sand Grain **on the liquefaction potential of granular soils.**

- Liquefaction of sand is **a phenomenon in which the strength and stiffness of soil is reduced (Decreases Cohesive Forces) by [earthquake](#) shaking** or other rapid loading and leads to the collapse of structures resting on the liquefied ground.

What are the Findings?

- There is a strong relation between the grain shape of sands and its liquefaction potential,
 - Liquefaction potential of sand is one of the major **factors behind the collapse of structures during earthquakes.**
- In the study conducted, the **glass beads, which have regular shape** with higher roundness and sphericity, **liquefied first**, while **river sand, whose roundness and sphericity fall between glass beads and manufactured sand, liquefied next**, followed by manufactured sand, **whose shape is relatively irregular.**
- As **natural sand with regular shape liquefies easily**, the natural sand used in structures like slopes and retaining walls **can be replaced with irregular manufactured sand to improve stability and sustainability.**

Why Irregular Grain Shape Improves Stability and Sustainability?

- **More Shear Force Required:**
 - This is because the shear force (unaligned forces pushing one part of a body in one specific direction and another part of the body in the opposite direction) required to break the inter-particle locking is **more for the grains with relatively irregular shapes.**
- **Interlocking of Particles:**
 - As the shape of the particles becomes irregular, they **get interlocked with each other during shearing.**
 - Interlocking provides **additional resistance to shear**, and hence the tendency to get separated from each other to float in the fluid becomes lesser for particles with irregular shapes.
- **Deviation in Fluid Path:**
 - Tortuosity or the **deviation in the fluid path increases with the irregular shape** of the particles.
 - **Greater tortuosity** decreases water flow through the pore network and **decreases the chance for water to separate** the particles, thus preventing collapse of structures/buildings.

What is Earthquake?

- An **earthquake** in simple words is **the shaking of the earth.** It is a **natural event.**
- It is caused **due to release of energy, which generates waves** that travel in all directions.
- The **vibrations called seismic waves** are generated from earthquakes that travel through the Earth and are recorded on instruments called seismographs.
- The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the **earth is called the epicenter.**
- **Types of Earthquake:** Fault Zones, Tectonic Earthquakes, Volcanic Earthquake, Human Induced Earthquakes.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Which of the following is/are the possible consequence/s of heavy sand mining in riverbeds? (2018)

1. Decreased salinity in the river
2. Pollution of groundwater
3. Lowering of the water-table

Select the correct answer using the code given below.

- (a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (b)

- Sand mining is the process of extracting sand from the river bed or from the coastal region.
- Excessive sand mining results in pollution of river water by lowering the pH value of water, mixing of various metal oxides, reduction of oxygen and thus, increasing the Biological Oxygen Demand (BOD). Polluted river water causes pollution of ground water. **Hence, 2 is correct.**
- Due to increased metal oxides and their mixing in river water, the salinity of the water increases. **Hence, 1 is not correct.**
- Volume of water flow in the river is decreased, thus it results in lowering of the water table. **Hence, 3 is correct. Therefore, option (b) is the correct answer.**

Source: PIB