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**Current  
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**1-15<sup>th</sup>**

**NOVEMBER 2018**

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# Polity and Governance

## Highlights

- No Double Jeopardy Bar If There was No Trial (1)
- National Legal Services Day (2)

## No Double Jeopardy Bar If There was No Trial

In a recent judgment (State of Mizoram vs. Dr. C. Sangnghina), Supreme Court has held that the bar of double jeopardy will not apply if the person was discharged due to lack of evidence.

- In its judgment, SC held that double jeopardy cannot be invoked at all if an accused was discharged of a criminal offence, even before the commencement of trial, on the basis of an invalid sanction for prosecution.
- Also, in case of lack of conviction or acquittal, double jeopardy can not be invoked.
- Both **Article 20(2) of the Constitution of India and Section 300 of the Criminal Procedure Code** say that no person shall be prosecuted and punished for the same offense more than once.

### Background

- The judgment is based on an appeal filed by the State of Mizoram against an order passed by the Gauhati High Court in August 2015, upholding a Special Court decision to decline to entertain a second charge sheet filed in a corruption case against the accused on the ground of double jeopardy.

**The principle of Double Jeopardy:** Double Jeopardy is a legal term and it means that a person can not be punished for the same offense more than once.

### Article 20: Protection in Respect of Conviction for Offences

- Article 20 grants protection against arbitrary and excessive punishment to an accused person, whether citizen or foreigner or legal person like a company or a corporation.
- It contains three provisions in that direction:
  - Article 20(1): **(No ex-post-facto law)** No person shall be (i) convicted of any offense except for violation of a law in force at the time of the commission of the act, nor (ii) subjected to a penalty greater than that prescribed by the law in force at the time of the commission of the act.
  - Article 20(2): **(No double jeopardy)** No person shall be prosecuted and punished for the same offense more than once.
  - Article 20(3): **(No self-incrimination)** No person accused of any offense shall be compelled to be a witness against himself.
- An ex-post-facto law is one that imposes penalties retrospectively (retroactively), that is, upon acts already done or which increases the penalties for such acts.
- The protection against double jeopardy is available only in proceedings before a court of law or a judicial tribunal. In other words, it is not available in proceedings before departmental or administrative authorities as they are not of judicial nature.
- The protection against self-incrimination extends to both oral evidence and documentary evidence.

Note:

## National Legal Services Day

The National Legal Services Day is celebrated on **9<sup>th</sup> November** to spread awareness for ensuring **reasonable fair and justice procedure for all citizens**. It was first started by **Supreme Court of India in 1995**.

### **Free Legal Services in India**

- Free legal services are provided in matters before Civil, Criminal and Revenue Courts, Tribunals or any other authority exercising judicial or quasi judicial functions.
- The National Legal Services Authority (NALSA) has been constituted under the Legal Services Authorities Act, 1987 to provide free Legal Services to the weaker sections of the society and to organize Lok Adalats for amicable settlement of disputes.
- In every State, State Legal Services Authority has been constituted to give effect to the policies and directions of the NALSA and to give free legal services to the people and conduct Lok Adalats in the State.
- **Objectives of Legal Services Authorities are:**
  - Provide free legal aid and advice.
  - Spread legal awareness.
  - Organise lok adalats.
  - Promote settlements of disputes through **Alternative Dispute Resolution Mechanisms (Arbitration, Conciliation, Mediation, Negotiation etc.)**
  - Provide compensation to victims of crime.
- **Persons Eligible for Free Legal Services:**
  - Women and Children
  - Persons with disability
  - Member of Scheduled Caste or Scheduled Tribes
  - Industrial Workmen
  - Persons in custody
  - Victims of natural disasters, ethnic/caste violence, industrial disaster
  - Victims of Human Trafficking or Begar
  - Persons with an annual income of less than Rs. 1,00,000/- or as notified by the Central/State Governments.
- **Legal Services Institutions for providing Free Legal Services:**
  - National Level: National Legal Services Authority. The **Chief Justice of India is the Patron-in-Chief** and the **second senior most Judge of Supreme Court** of India is the **Executive Chairman** of the Authority.
  - State Level: State Legal Services Authority. It is **headed by the Chief Justice of the State High Court** who is its **Patron-in-Chief**. A **serving or retired Judge of the High Court** is nominated as its **Executive Chairman**.
  - District Level: District Legal Services Authority. The **District Judge of the District** is its **ex-officio Chairman**.
  - Taluka/Sub-Division Level: Taluka/Sub-Divisional Legal Services Committee. It is headed by a **senior Civil Judge**.
  - High Court: High Court Legal Services Committee
  - Supreme Court: Supreme Court Legal Services Committee

Note:

**National Legal Services Authority**

- The National Legal Services Authority (NALSA) was constituted under the **Legal Services Authorities Act, 1987** which came into force on **9th November, 1995** to establish a nationwide uniform network for providing free and competent legal services to the weaker sections of the society.
- **Article 39A** of the Constitution provides for free legal aid to the poor and weaker sections of the society, to promote justice on the basis of equal opportunity. **Article 14** and **Article 22 (1)**, obligates State to ensure equality before law.
- It can be noted that the role played by NALSA and its networks is very much relevant to achieving the **Sustainable Development Goal-16**, which seeks to "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels".



# Economic Scenario

## Highlights

- World Bank's Ease of Doing Business Report 2019 (4)
- US Revokes Generalized System of Preferences (GSP) for India (6)
- Support and Outreach Initiative for MSME Sector (7)
- 70% Youth Unaware of Govt's Skill Development Programmes: WEF (10)
- Payment Firms Begin Process of Data Localisation (11)
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- Global IT Challenge for Youth with Disabilities, 2018 (22)

## World Bank's Ease of Doing Business Report 2019

India improved its ranking by 23 places to secure 77<sup>th</sup> rank in World Bank's latest 'Ease of Doing Business' report, 2019.

### Important Points

- New Zealand topped the list of 190 countries, followed by Singapore, Denmark, and Hong Kong.
- India and Djibouti emerge as the only economies to be top 10 improvers in this year's assessment, for the second successive time.
- India has improved its rank in 6 out of 10 indicators and has moved closer to international best practices (Distance to Frontier score) on 7 out of the 10 indicators.
- The most dramatic improvements in rank has been in the indicators related to **'Construction Permits' (from 181 to 52)** and **'Trading across Borders' (from 146 to 80)**.
- In 2018 report, India had leapfrogged by 30 places to move into the top 100 rankings among 190 countries.

### India's Initiatives for Improvement in Doing Business

EASE OF DOING BUSINESS IN INDIA			
		2018/19 Rank	2017/18 Rank
Starting A Business	▲	137	156
Dealing With Construction Permits	▲	52	181
Getting Electricity	▲	24	29
Registering Property	▼	166	154
Getting Credit	▲	22	29
Protecting Minority Investors	▼	7	4
Paying Taxes	▼	121	119
Trading Across Borders	▲	80	146
Enforcing Contracts	▲	163	164
Resolving Insolvency	▼	108	103

Note:

- **Starting a Business:** made easier by fully integrating multiple application forms into a general incorporation form. India also replaced the value added tax with the GST (Goods and Services Tax) making registration faster. **Dealing with Construction Permits:** the process of obtaining a construction permit has been streamlined, made faster and less expensive. **Getting Electricity:** The Delhi Electricity Regulatory Commission reduced charges for low voltage connections. Getting electricity was also made easier in Delhi through a reduction in the time for the utility to carry out the external connection works.
- **Getting Credit:** India strengthened access to credit by amending its insolvency law. Secured creditors are now given absolute priority over other claims within insolvency proceedings.
- **Paying Taxes:** India made paying taxes easier by replacing many indirect taxes with a single indirect tax, the GST, for the entire country. India also made paying taxes less costly by reducing the corporate income tax rate and the employees' provident funds scheme rate paid by the employer.
- **Trading across Borders:** India reduced the time and cost to export and import through electronic sealing of containers, upgrading of port infrastructure, electronic submission of supporting documents with digital signatures, replacing many indirect taxes with GST, reducing the corporate income tax rate and the employees' provident funds scheme rate paid by the employer.
- Implementation of **eBiz portal** which offers **Government-to-business (G2B)** services for investors and business activities, through a single window, cutting time and cost and improving business environment.
- The **establishment of debt recovery tribunals** in India which "reduced non-performing loans by 28% and lowered interest rates on larger loans, suggesting that faster processing of debt recovery cases cut the cost of credit.
- Under its **National Trade Facilitation Action Plan 2017-2020**, India implemented several initiatives that improved the efficiency of cross-border trade, reducing border and documentary compliance time for both exports and imports.
- Investor facilitation cell created under the **Invest India agency**.
- Government of India has also started to rank its 36 states and Union Territories "to further promote Ease of Doing Business" in the country which is promoting Competitive Federalism.

Improvements have taken place due to the commitment of the Government to carry out comprehensive and complex reforms, supported by the bureaucracy which has changed its mindset from a regulator to a facilitator. The Government has undertaken an extensive exercise of stakeholder consultations to understand challenges of the industry, government process re-engineering to provide simplified and streamlined processes to create a more conducive business environment in the country.

#### Ease of Doing Business Report

- The report was introduced in **2004** to provide an assessment of objective measures of business regulations and their enforcement across 190 economies on **ten parameters** affecting a business through its life cycle.
- The 10 parameters are- starting a business, construction permits, getting electricity, getting credit, paying taxes, trade across borders, enforcing contracts, and resolving insolvency.
- It ranks countries on the basis of **Distance to Frontier (DTF)**, a score that shows the **gap of an economy** to the **global best practice**. For example, a score of 75 means an economy was 25%age points away from the frontier constructed from the best performances across all economies and across time.
- Other reports published by World Bank:
  - Ease of Doing Business Report
  - World Development Report
  - Global Economic Prospects Report
  - Human Capital Index

Note:



**Human Capital Index**

The World Bank releases the Human Capital Index (HCI) as part of the World Development Report 2019.

- The HCI has three components:
  - **Survival**, as measured by under-5 mortality rates
  - **Expected years of Quality-Adjusted School** which combines information on the quantity and quality of education
  - **Health** environment is measured by (a) adult survival rates, and (b) the rate of stunting for children under age 5.

**Challenges**

- India is facing challenges primarily in two criteria: **enforcing contracts** and **registering property** because of the complexities involved.
- Although, the Central Government has amended the Commercial Courts, Commercial Divisions and Commercial Appellate Divisions Act, 2015, to allow district court-level commercial courts. Similarly, the state governments of Delhi and Maharashtra have invested heavily in digitizing land records and building online solutions for registration and mutation.
- Lack of transparency, accountability, clearances complexity, and lack of clarity in policy direction— leading to lack of investment pose the biggest challenges in doing business in India.

**Way Forward**

- India's rapid growth will offer opportunities for both local and global business and will also create jobs which are the need of the hour due to the rising demographic dividend.
- Better rank in ease of doing business and greater awareness about opportunities in Indian business sector would attract foreign investors to invest in India and will also bring advanced technologies to the country.
- India's jump in ease of doing business rankings will hopefully be a spur for further reforms, which, if successful, will lead both to a better business environment and greater prosperity for all.

**US Revokes Generalized System of Preferences (GSP) for India**

The US government has withdrawn GSP (Generalized System of Preferences) benefits to India worth \$70 million on as many as 50 items mostly from handloom and agriculture sector.

- Of the total US imports under GSP in 2017 was \$21.2 billion, of which India was the biggest beneficiary with USD 5.6 billion.

**GSP (Generalized System of Preferences)**

- The idea of granting developing countries preferential tariff rates in the markets of industrialized countries was originally presented at the first UNCTAD conference in 1964.
- **The GSP was adopted at UNCTAD in New Delhi in 1968 and was instituted in 1971.**
- There are currently **13 national GSP schemes notified to the UNCTAD secretariat.**
- The following countries grant GSP preferences: **Australia, Belarus, Canada, the European Union, Iceland, Japan, Kazakhstan, New Zealand, Norway, the Russian Federation, Switzerland, Turkey and the United States of America.**
- GSP of the US is the largest and oldest U.S. trade preference program. Established by the Trade Act of 1974, GSP promotes economic development by eliminating duties on thousands of products when imported from one of 120 designated beneficiary countries and territories.

**Impact of GSP Withdrawal**

- **Impact on India**

Note:

- The products which India exports under **GSP belong to sectors which employ several thousands of men and women**, especially in rural areas through micro, small and medium enterprises. Thus losing a major market can impact their profits.
- **Impact on the US**
  - Federation of Indian Chambers of Commerce & Industry (FICCI) has said that the termination of the GSP would be contrary to the legislative objective and the history of the Trade Reform Act of 1974 of furthering the economic development of developing countries.
  - It would cause **significant distress to the export-oriented sector leading to increased cost for US** industries that use products under the GSP.

### **Background**

- Trade relationships between India and the US have gone downhill in the last few years.
- The US had imposed tariffs on steel and aluminum imports from India and had challenged its export subsidy regime at the World Trade Organization (WTO).
- India had also dragged the US to the WTO on higher steel and aluminum tariffs and has threatened to impose retaliatory tariffs worth \$240 million on US imports.

### **Benefits of GSP**

- **For India**
  - **Indian exporters benefit** indirectly - through the benefit that accrues to the importer by way of reduced tariff or duty-free entry of eligible Indian products.
  - It also allows India to **integrate with global value chains (GVC)** and hence, with global markets and furthers the development of the country's export base.
  - Makes Indian products **more competitive** to the importer - other things (e.g. quality) being equal.
  - This tariff preference helps new exporters to **penetrate a market** and established exporters to increase their market share and to improve upon the profit margins, in the donor country.
- **For the US**
  - Indian exports to the USA under GSP are less-expensive, high-quality alternatives that reduce the costs of final products, this enables the U.S. economy to be more globally competitive.
  - GSP is especially important to U.S. small businesses, many of which rely on the programs' duty savings to stay competitive.
  - GSP supports U.S. jobs, transporting GSP imported items from the ports in U.S. to consumers, farmers, and manufacturers support tens of thousands of jobs in the United States.
- **Globally**
  - GSP has promoted economic growth in a large number of developing countries by allowing increased exports of eligible products, benefitting global economy.

### **Way Forward**

- The GSP remains a central aspect of the overall trade engagement and is needed for Indian exporters to access US markets.
- Continuing GSP would have reinforced and strengthened overall relationship between the two countries, and have pushed the trade relations as India continues to liberalize its economy.

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## **Support and Outreach Initiative for MSME Sector**

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The Prime Minister, launched support and outreach programme for the Micro, Small and Medium Enterprises (MSME) sector.

Note:

- The programme includes **12 key initiatives** which will help the growth, expansion and facilitation of MSMEs across the country.
- There are **five key aspects** for facilitating the MSME sector, viz.
  - access to credit,
  - access to market,
  - technology upgradation,
  - ease of doing business, and
  - a sense of security for employees.
- The 12 initiatives will address each of these five categories.
- The Government is also working on **steps to improve liquidity** in the financial markets to provide **relief to the Non Banking Financial Companies (NBFCs)**, which have a high exposure to the MSME sector. After banks, NBFCs are major lenders to the MSMEs.
- **Challenges faced by MSME:** Poor infrastructure, Access to modern technology, Access to markets, Getting statutory clearances related to power, environment, labour etc.

As per **Micro, Small & Medium Enterprises Development (MSMED) Act, 2006** the Micro, Small and Medium Enterprises (MSME) are classified in two Classes:

**(i) For manufacturing: Investment in plant & machinery**

Micro Enterprises	Does not exceed twenty five lakh rupees
Small Enterprises	More than twenty five lakh rupees but does not exceed five crore rupees
Medium Enterprises	More than five crore rupees but does not exceed ten crore rupees

**(ii) For services: Investment in Equipments**

Micro Enterprises	Does not exceed ten lakh rupees
Small Enterprises	More than ten lakh rupees but does not exceed two crore rupees
Medium Enterprises	More than two crore rupees but does not exceed five crore rupees

**Access to Credit**

- Launch of the **59 minute loan portal** to enable easy access to credit for MSMEs.
  - The loans **upto Rs. 1 crore** can be granted in-principle approval through this portal, in just 59 minutes.
  - The link to this portal will be available through the GST portal.
- A **2% interest subvention** for all GST registered MSMEs, on fresh or incremental loans.
  - **Increase in interest rebate** from 3% to 5% for exporters who receive loans in the pre-shipment and post-shipment period.
- All companies with a **turnover of more than Rs. 500 crore**, must now **compulsorily** be brought on the **Trade Receivables e-Discounting System (TReDS)**.
  - Joining this portal will enable entrepreneurs to access credit from banks, based on their upcoming receivables.
  - This will resolve their problems of cash cycle.
  - Trade Receivables Discounting System (TReDS) is the institutional mechanism for facilitating the **financing of trade receivables of MSMEs from corporate and other buyers**, including Government Departments and Public Sector Undertakings (PSUs), through multiple financiers. It has been set up under the **regulatory framework set up by RBI under Payment and Settlement Systems Act 2007**.

Note:

### **Access to Markets**

- Public sector companies have now been asked to **compulsorily procure 25%**, instead of 20% of their total purchases, from MSMEs, out of which, **3%** must now be reserved for **women entrepreneurs**.
- All public sector undertakings of the Union Government must now compulsorily be a part of **Government e-Marketplace (GeM)**. They should also get all their vendors registered on GeM.

#### **Government e-Marketplace (GeM)**

- GeM is an Online Market platform to facilitate procurement of goods and services by the government ministries, departments, public sector undertakings (PSU) etc.
- It has been envisaged as **National Procurement Portal** of India.
- It has been developed by Directorate General of Supplies and Disposals (Ministry of Commerce and Industry) with technical support of National e-governance Division (Ministry of Electronic and Information Technology).
- It functions under Directorate General of Supplies and Disposals (DGS&D), **Ministry of Commerce and Industry**.
- GeM is a completely **paperless, cashless** and system driven e-market place that enables procurement of common use goods and services with minimal human interface.

### **Technology Upgradation**

- Establishment of 20 hubs, and 100 spokes in the form of tool rooms will be established across the country to **facilitate product design**.
  - A toolroom is a room where tools are stored or, in a factory, a space where tools are made and repaired for use throughout the rest of the factory.

### **Ease of Doing Business**

- **Clusters of pharma MSMEs** will be formed and **70%** cost of establishing these clusters will be borne by the Union Government.
- In order to **simplify the government procedures**, the return under 8 labour laws and 10 Union regulations must now be filed only once a year.
- The establishments to be visited by an Inspector will be decided through a **computerised random allotment**.
- Environmental Clearance under air pollution and water pollution laws, have been **merged into one**. Also, the return will be accepted through self-certification.
- For minor violations under the Companies Act, the entrepreneur will no longer have to approach the Courts, but can correct them through simple procedures.

### **Importance of Micro, Small and Medium Enterprises (MSME) sector**

- **Backbone of Indian economy:** The importance of MSMEs is attributable to their calibre for (a) employment generation (b) low capital and technology requirement (c) promotion of industrial development in rural areas (d) use of traditional or inherited skill (e) use of local resources (f) mobilization of resources and exportability of products.
- **Contribution to growth parameters:** The sector contributes around 38% to the country's gross domestic product (GDP), 40% to overall exports and 45% to overall manufacturing output.
- **Contribution to job creation:** The MSME sector generates around 100 million jobs through over 46 million units situated throughout the geographical expanse of the country. MSME sector is the second largest employment providing sector in India after agriculture.
- **Diversity:** The MSME sector in India is quite diverse in terms of its size, level of technology employed, range of products and services provided and target markets.

Note:

### **Other Recent Initiatives to Promote MSME Sector**

- **Udyog Aadhaar Memorandum (UAM):** It is a simple one-page registration form to promote ease of doing business for MSMEs in India.
- **A Scheme for Promoting Innovation, Rural Industry and Entrepreneurship (ASPIRE):** The scheme promotes innovation & rural entrepreneurship through rural Livelihood Business Incubator (LBI), Technology Business Incubator (TBI) and Fund of Funds for start up creation in the agro-based industry.
- **Credit Guarantee Fund Scheme:** To facilitate easy flow of credit, guarantee cover is provided for collateral free credit extended to MSMEs.
- **Prime Minister's Employment Generation Programme (PMEGP):** is a credit linked subsidy scheme, for setting up of new micro-enterprises and to generate employment opportunities in rural as well as urban areas of the country.
- **Scheme of Fund for Regeneration of Traditional Industries (SFURTI):** The scheme aims to make **traditional industries** more productive and competitive by organizing the traditional industries and artisans into clusters.
- **Credit Linked Capital Subsidy Scheme (CLCSS) for Technology Upgradation:** CLCSS aims at facilitating technology upgradation of Micro and Small Enterprises (MSEs) by providing **15% capital subsidy** for purchase of plant & machinery.

## **70% Youth Unaware of Govt's Skill Development Programmes: WEF**

Seventy% of youth are unaware of government-run skill development programmes in their area, yet more than seventy% are very interested in pursuing skills training, according to a "Young India and Work" study by the **Observer Research Foundation and World Economic Forum**.

- The findings, released recently, sheds light on a disconnect between youth sentiments and government's skill development programme.
- The study surveyed a random sample of almost 6,000 youth between 15 and 30 about employment and aspirations.

### **Context**

- About 1.3 million people enter the working age population in India every month.
- The half of the country's population of 1.3 billion is below the age of 25, there is a demographic advantage to be realised.
- While it is clear that this will be realised in the context of technological disruption (emergence of Artificial Intelligence, Machine learning, Big data, etc.) and in the wake of dramatic changes in the economy and labour market, managing these transformations and truly leveraging the possibilities they present, will require an understanding of the expectations and aspirations of India's youth.

### **Findings of the Report**

- **Higher education degrees are highly valued, but youth also want new skills:** 96% of respondents hope to achieve a bachelor's degree or higher. 76% of respondents reported being very interested in pursuing skills development training.
- **Factors considered while looking for a job:** Good salaries, ample opportunities for promotion and career development, and job security.
- **While youth prefer public sector jobs, there is discernible interest in entrepreneurship:** 49% of youth prefer a job in the public sector. On the other hand, 38% of youth selected self-employment as an entrepreneur as their ideal type of job.

Note:

- **The IT Industry is the largest employer of youth:** 17% of employed respondents in this survey report working in information technology, communications and telecommunications making the IT industry the largest employer of surveyed youth.
- **More than a third of surveyed youth are neither employed nor in education:** 34% of all surveyed youth are neither employed, nor in education.
  - The majority of respondents in the 15-20 age bracket are in education.
  - However, over 30 percent of 21 to 25-year-olds reported being neither employed nor in education. Fifty percent of female respondents in the 26-30 age bracket reported being neither employed nor in education.
- **Women prefer full-time careers, have less paid work experience, and feel less prepared.**
  - The survey also reveals that men have more paid work experience than women, with 28 percent of male respondents between the ages of 26-30 years having four or more years of paid work experience compared to 18 percent of female respondents.
  - Overall, men also report feeling more prepared for their ideal job than women.
- **Areas of Disconnect between policies and aspirations of youth:** Seventy% of youth are unaware of government-run skill development programmes in their area. The low training participation — roughly three-fourths of the youth have never enrolled in a skills development programme — was mostly due to **financial barriers, time constraints and the delay between skills training and finding an appropriate job.**
- **Information asymmetry, lack of guidance and work experience are impeding Indian youth from meeting their career aspirations.**

### **Way Forward**

- The key findings of the survey point to a high level of optimism and ambition among Indian youth with regard to their future.
- India has the opportunity to build a productive and inclusive future of work in the wake of technological disruption.
- However, meaningful strategies for managing these transformations cannot evolve in isolation; the expectations and aspirations of young India must be built into solutions for them to be successful.

## **Payment Firms Begin Process of Data Localisation**

Global card payment companies like Visa and MasterCard have started to comply with the Reserve Bank of India's (RBI) norms on data localization.

### **Background**

- The RBI gave October 15 as the deadline for global financial technology companies to comply with its data localization norms in India and to setup facility to store transaction data of Indian customers within India.
- In April 2018, RBI said that all system providers shall ensure that the entire data relating to payment systems operated by them are stored in a system only in India.
- This covered not only card payment services by Visa and MasterCard but also of companies such as Paytm, WhatsApp and Google which offer electronic or digital payment services.
- This data includes the full end-to-end transaction details/ information collected/carried/processed as part of the message/payment instruction.
- RBI's directives were followed by the draft data protection law recommended by the **Srikrishna committee.**

### **What is Data Localisation?**

- Data localization is the **practice of storing data on any device that is physically present within the borders of the country** where the data is generated. As of now, most of these data are stored, in a cloud, outside India.

Note:

- Localization mandates that companies collecting critical data about consumers must store and process them within the borders of the country.

### **Importance of Data Localisation**

- The main intent behind data localization is **to protect the personal and financial information of the country's citizens and residents** from foreign surveillance, like Facebook sharing user data with Cambridge Analytica, which is alleged to have influenced voting outcomes.
- It gives local governments and regulators the **jurisdiction to call for the data when required**. This aspect has gained importance after a spate of lynchings across States which were linked to WhatsApp rumors.
- RBI has said that unfettered access to data stored by system providers and third-party vendors in the payments ecosystem will **ensure better monitoring**.
- Data localization is **essential to national security**. Where data is not localized, the agencies need to rely on **mutual legal assistance treaties (MLATs)** to obtain access, delaying investigations.
- On-shoring global data could also create domestic jobs and skills in data storage and analytics too.
- Global service providers like Facebook and Google collect all sorts of data about its consumers. It is necessary to have greater accountability from these firms about the end-use of the data.
- India is a huge market due to its population. Such huge consumer base is an advantage for government when it comes to pushing for data localization.

### **Issues with respect to Data Localisation**

- Maintaining multiple local data centers may lead to **significant investments in infrastructure and higher costs for global companies**.
- One of the argument is that localization will help in enhancing data security. But, by **storing data at multiple locations, service providers enhance their data security** in case of a breach at one location.
- The impact of data localization on the economy and on data-driven innovation will be highly negative. European Centre for International Political Economy - ECIPE 2014 Study has estimated **GDP loss of 0.8%, reduced growth by 20%, decrease in FDI by 1.9%** due to data localization.
- Clouds and large service providers implement risk-based security programs that track the latest threats and vulnerabilities, with the latest technology tools, and highly skilled manpower. **Small organizations can not invest that much for security, while the risks are similar**. The norms discourage such small organisations and start-ups.

### **Way Forward**

- Data localization may not entirely avoid Facebook-Cambridge Analytica-like episodes but it can ensure that domestic law enforcement can respond more effectively to such issues.
- It is said that data localization will help avoid the vulnerabilities of relying on the fiber optic cable network. The Cyber Security Report 2017 released by Telstra reported that businesses in India were most at risk to cybersecurity attacks. Thus, a mandatory border control provision may not be the solution to avoiding security breach incidents. Instead, **using superior encryption and adoption of robust security measures will help to prevent the security breach**.

The [Justice Srikrishna Committee Report](#) and the **Personal Data Protection Bill, 2018** (Data Protection Bill) has proposed:

- all personal data to which the law applies must have at least one serving copy stored in India
- personal data critical to national interest must be stored and processed only in India
- the Centre will have the power to exempt transfers on the basis of strategic or practical considerations.

Note:

## **RBI-Government Tussle**

Recently, deputy governor of Reserve Bank of India (RBI) in a public speech has warned against government interference in Reserve Bank's working.

- The Ministry of Finance recently started consultation with RBI governor on issues such as easing the PCA (Prompt Corrective Action) framework and providing more credit to small units.
- This is prior to issuing the directions to RBI under Section 7 of RBI Act of 1934, such directives under this section have never been issued in past since 1934.

### Prompt Corrective Action (PCA)

- PCA norms allow the RBI to place certain restrictions such as halting branch expansion and stopping dividend payment. It can even cap a bank's lending limit to one's entity or sector.
- Other corrective actions that can be imposed on banks include special audit, restructuring operations and activation of the recovery plan. Banks' promoters can be asked to bring in new management, too. The RBI can also supersede the bank's board, under PCA.
- The provisions of the revised PCA framework became effective from April 1, 2017, based on the financials of the banks for the year ended on March 31, 2017. The framework will be reviewed after three years.
- **When is PCA invoked?**
  - The PCA is invoked when banks breach certain regulatory requirement like minimum capital, return on asset and quantum of non-performing assets.

### **Issues between RBI and Government**

- **Easing Norms of Prompt Corrective Action**
  - The government has asked the RBI to give exemption to power companies under the PCA framework.
  - The government wants RBI to ease lending rules under PCA, as it could help reduce pressure on Micro, Small and Medium Enterprises (MSME) through credit availability.
  - RBI has said that such move will jeopardize all efforts of dealing with country's Non-Performing Asset (NPA) Crisis.
- **Section 7 of RBI Act of 1934**
  - The government which is a stakeholder in 21 public sector bank is issuing the direction to RBI, the regulator of banks.
  - This section empowers the government to issue directions to RBI in public interest.
  - The section states that directions must be issued after consultation with RBI governor.
- **RBI Surpluses**
  - Every year RBI earns interests from the domestic and foreign bonds it holds. This income is used in running the operation of RBI and rest is accrued as surplus. Out of this surplus, RBI holds some amount to itself as equity capital to maintain its creditworthiness and pays the rest to the government.
  - In 2015 RBI's risk analysis showed that its equity position of around Rs 10 lakh crore was adequate, the Bank decided to transfer its entire surplus to the government (around Rs 65,876 crore for 2015-16).
  - The government is of the opinion that RBI should pay more dividend reasons being that the building up of buffers such as the Contingency Fund and Asset Reserve by the RBI has been far in excess of what is required to maintain creditworthiness.
  - RBI, on the other hand, says that increasing the dividend payment to the government can prove to be inflationary as there will be more money in the market and may harm the RBI's major task of macroeconomic stability.
  - The surplus is also meant to cover a situation where the rupee appreciates against one or more of the currencies or if there is a decline in the rupee value of gold.

Note:



### Way Forward

- The tussle between RBI and government can **impact the image of India as a stable market as investors require long-term policy consistency, such interference in the working of RBI can impact investment in the Indian economy.** Thus it is necessary that the government should respect the mandate given to RBI as a regulator of the banks.
- On the other hand, it must also be understood that constitutionally RBI is not independent, it is a part of the government, thus accountable to people. The independence of the central bank is maintained as it has positive externalities on the economy.
- The autonomy must also come with accountability.
- Thus it can be said that by considering Section 7 of RBI Act 1934, the government was acting within power given to it under the act. However, Section 7 of RBI Act was not invoked by government.

## Digital Transactions in India

Over the past two years, i.e. since 2016, Digital payment transactions have registered tremendous growth in India.

- New payment modes – **Bharat Interface for Money-Unified Payments Interface (BHIM-UPI), Aadhaar enabled Payment System (AePS) and National Electronic Toll Collection (NETC)** – have transformed digital payment ecosystem by increasing Person to Person (P2P) as well as Person to Merchant (P2M) payments.
- At the same time existing payment modes such as debit cards, credit cards, Immediate Payment Service (IMPS) and Pre Paid Instruments (PPI) have registered substantial growth.

### Bharat Interface for Money-Unified Payments Interface (BHIM-UPI)

- BHIM is developed by the **National Payment Corporation of India (NPCI)**.
- It is an initiative to enable fast, secure, reliable cashless payments through the mobile phone. BHIM is based on **Unified Payment Interface (UPI)** to facilitate e-payments directly through bank.
- It is interoperable with other Unified Payment Interface (UPI) applications, and bank accounts. Unified Payment Interface (UPI) is an instant payment system **built over the Immediate Payment Service (IMPS) infrastructure** and allows instant transfer of money between any two parties bank accounts.

### Aadhaar enabled Payment System (AePS)

- AePS is developed by the **National Payments Corporation of India (NPCI)** that allows people to carry out financial transactions on a Micro-ATM by furnishing just their Aadhaar number and verifying it with the help of their fingerprint/iris scan.
- With the help of this payment system, funds can be transferred from one bank account to another simply through their Aadhaar numbers.
- This system adds another layer of security to financial transactions as **bank details would no longer be required** to be furnished while carrying out these transactions.

### National Electronic Toll Collection (NETC)

- NETC was developed by **National Payments Corporation of India (NPCI)** in 2016 for electronic toll collection at toll plazas using FASTag.
- FASTag is a device that employs **Radio Frequency Identification (RFID)** technology for making toll payments directly while the vehicle is in motion.
- FASTag (RFID Tag) is affixed on the windscreen of the vehicle and enables a customer to make the toll payments directly from the account which is linked to FASTag.
- RFID (Radio Frequency Identification) tagging is a system that uses **small radio frequency detection devices** for identification and tracking purposes.

Note:

**National Payments Corporation of India (NPCI)**

- National Payments Corporation of India (NPCI), an umbrella organisation for operating retail payments and settlement systems in India, is an initiative of **Reserve Bank of India (RBI) and Indian Banks' Association (IBA)** under the provisions of the **Payment and Settlement Systems Act, 2007**.
- It is a **"Not for Profit"** Company under the provisions of **Section 25 of Companies Act 1956 (now Section 8 of Companies Act 2013)**, with an intention to provide infrastructure to the entire Banking system in India for **physical** as well as **electronic** payment and settlement systems.

**Unified Payment Interface (UPI)**

- It is an **advanced version of Immediate Payment Service (IMPS)** – round-the-clock funds transfer service to make cashless payments **faster, easier and smoother**.
- This is a payment system that allows one to send money from bank account the way one sends an SMS or email.

**Ease of Doing Agribusiness Index**

Ministry of Agriculture has proposed a **new index to gauge the performance of states** in implementation of policies and programs of government of India in the field of agricultural reforms.

- The concept is to consider **farming not solely as a production-oriented activity** carried out to achieve food security for the country but as a **business activity carried** out by farmer as entrepreneur.
- The index will measure performance of state on various sub-parameters:
  - Marketing Reforms
  - Reducing cost of inputs
  - Governance and Land reforms
  - Risk Mitigation
  - Increasing production /productivity
  - Investment in and for agriculture

**Significance of Initiative**

- It will help in developing **competitive spirit among the states** and develop their performance to the highest level.
- It will **allow central government to plug the gaps in schemes and programmes** and bring the states lagging behind in implementation up.
- By this index, Ministry of Agriculture will be able to **reward high performing states**, by linking their performance with allocation of funds.

**Measures taken by Government for Farm Sector Reforms**

- **Marketing Reforms**
  - **The Model "The Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017"**.
    - This is a model law **seek to end the monopoly of Agricultural Produce Market Committee (APMC)**.
    - This act has provision that **entire state would be treated as a single market, which will remove area limitations of APMC**.
    - It will enhance farmers produce by providing conditions for creation of private wholesale markets along with farmers-consumer market yards.

Note:

- **It will enable direct contact between farmers and consumers or other end-user categories.**
- APLM act will also give **freedom to the farmer to sell his property to any person or agency** at his place of choice, making him get a better return.
- This is a model act, state can adopt it fully or partially in their own acts as Agriculture is a state subject.
- **National Agriculture Market Scheme (e-NAM)**
  - National Agriculture Market (NAM) is a **pan-India electronic trading portal** which **networks the existing APMC mandis** to create a unified national market for agricultural commodities.
  - NAM Portal provides a **single window service for all APMC** related information and services.
- **Reducing Input Cost**
  - **“Paramparagat Krishi Vikas Yojana (PKVY)”**
    - PKVY aims to **increase the area under organic farming as it ensures higher income to farmers** due to comparatively lower cost of cultivation and premium price of organic.
  - **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)**
    - This was launched for realising the **potential of organic farming in the North Eastern Region of the country**. It is a central sector scheme which has been launched to develop **North East as organic hub of India**.
  - **Soil Health Card**
    - Soil Health Card is one of the **largest universal Soil Health Card Schemes in the world**. It aims to provide **information about fertility of land** to farmers based on testing soil samples for 12 parameters.
  - **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**
    - **PMKSY is being implemented to expand cultivated area with assured irrigation, reduce wastage of water and improve water use efficiency**. Focus of the program is to provide end-to-end solution to irrigation supply chain through
      - ◆ development of the water resources
      - ◆ creation of an efficient distribution network
      - ◆ improvement of farm level management
      - ◆ water-use efficiency
- **Governance and Structural Reforms**
  - **Encouraging Contract Farming**
    - The government has approved **Model Contract Farming Act** which will help farmers to enter pre-season price agreement on their produce.
  - **Right of Lease Farming**
    - NITI Aayog has developed **Draft Model Agriculture Land Leasing Act** and has circulated it to states for adoption.
    - This act has provisions which recognizes land leasing and ensure complete ownership of land ownership right while recognizing the lease holders.
- **Risk Mitigation**
  - **Pradhan Mantri Fasal Bima Yojana (PMFBY)**
    - **PMFBY aims to provide insurance at lowest premium rate to farmers with added benefits.**
    - Under the PMFBY, a uniform maximum premium of only 2 per cent will be paid by farmers for all Kharif crops and 1.5 per cent for all Rabi crops and 5% for annual commercial and horticultural crops.
    - The premium rates to be paid by farmers are very low and balanced premium will be paid by the Government, shared equally by State and Central Government.

Note:

- The scheme covers risk from pre-sowing to post harvest stages and there is no upper limit on Government subsidy.

#### **Agricultural Marketing & Farm Friendly Reforms Index**

- This Index was launched by NITI Aayog.
- NITI Aayog has launched this index to **rank States and UTs** based on implementation of seven provisions related to farm sector reforms.
- This indicator reveal **ease of doing agribusiness** as well as **opportunities for farmers to benefit from modern trade and commerce** and have wider option for sale of her/his produce.

## **Scheme to Promote Young Entrepreneurs in Cooperatives**

Union Agriculture Ministry has launched National Cooperative Development Corporation (NCDC's) youth-friendly scheme '**Yuva Sahakar-Cooperative Enterprise Support and Innovation Scheme**' for attracting youth to cooperative business ventures.

- The Scheme will encourage cooperatives to venture into new and innovative areas.
- NCDC has created a **dedicated Rs 1000 crore 'Cooperative Start-up and Innovation Fund (CSIF)'**. It would have more incentives (funding of up to 80% as against 70% for others) for cooperatives of North Eastern region, Aspirational Districts and cooperatives with women or SC or ST or Persons with Disabilities (PwD) members.
- The scheme **envisages 2%** less than the applicable rate of interest on term loan for the project cost up to Rs 3 crore including **2 years moratorium on payment of principal**.
- All types of cooperatives in **operation for at least one year** are eligible.

### **National Cooperative Development Corporation (NCDC)**

- NCDC is a **statutory corporation** set up under **National Cooperative Development Corporation Act, 1962**.
- The objectives of NCDC are planning and promoting programmes for production, processing, marketing, storage, export and import of agricultural produce, foodstuffs, industrial goods, livestock and certain other notified commodities and services on cooperative principles.
- NCDC functions through its Head Office at **New Delhi** and multiple Regional Offices.
- The NCDC has the **unique distinction** of being the **sole statutory organisation** functioning as an apex financial and developmental institution **exclusively devoted to cooperative sector**.
- NCDC is a major financial institution for cooperatives, and has recently started **Mission Sahakar 22**, which **aims to double farmers' income by 2022**.

### **More about Cooperatives**

- The **United Nations General Assembly** had declared the **year 2012** as the **International Year of Cooperatives**. This recognized the contribution that Cooperatives make to social and economic development through poverty reduction, employment generation and social integration.
- The Government of India enacted the **Multi-State Co-operative Societies Act in 2002 and National Policy for Cooperatives was also formulated in 2002** to provide support for promotion and development of cooperatives as **autonomous, independent and democratic organizations** so that they can play their due role in the socio-economic development of the country.
  - The Policy also aims at **reduction of regional imbalances** and strengthening of cooperative education, training and human resource development for professionalisation of cooperative management.

Note:

### **Provisions of Indian Constitution related to Cooperatives**

- The **Constitution (97th Amendment) Act, 2011** added a **new Part IXB** to the constitution of India regarding the cooperatives working in India.
- The word **“cooperatives”** was added after **“unions and associations”** in **Art. 19(1)(c)** under Part III of the Constitution. This enables all the citizens to form cooperatives by giving it the **status of fundamental right of citizens**.
- A new **Article 43B** was added in the **Directive Principles of State Policy (Part IV)** regarding the “promotion of cooperative societies”.

## **Operation Greens**

**Ministry of Food Processing Industries (MoFPI)** has approved the strategy for operationalization of [OPERATION GREENS](#).

- Operation Greens was announced in the Budget speech of 2018-19 with an outlay of Rs 500 crores to stabilize the supply of **Tomato, Onion and Potato (TOP) crops**.
- Operation Greens wants to **replicate the success story of Operation Flood** in fruit and vegetables, starting with tomatoes, onions and potatoes.
- **NAFED** be the nodal agency to implement these price stabilisation measures.
- The idea behind Operation Greens is to double the income of farmers by the end of 2022.

### **Major objectives of “Operation Greens”**

- **Enhancing value realisation of TOP farmers** by targeted interventions to strengthen TOP production clusters and their Farmer Producer Organizations, and linking/connecting them with the market.
- **Price stabilization for producers and consumers** by proper production planning in the TOP clusters and introduction of dual use varieties.
- **Reduction in post-harvest losses** by the creation of appropriate storage capacity linking consumption centers.
- **Increase in food processing capacities** and value addition in the TOP value chain with firm linkages with production clusters.
- Setting up of a market intelligence network to collect and collate real time data on demand and supply and price of TOP crops.

#### **Operation Flood (white revolution)**

Operation Flood was started by the National Dairy Development Board (NDDB) in the 1970s. The objective of this programme was to create a nationwide milk grid and raise milk production in the country. It has helped India become the largest producer of milk in the world in 2016-17.

## **Building Resilient Cities**

Every year, **World Cities Day is observed on 31<sup>st</sup> October**. The concept was first brought about by the United Nations.

- According to the UN, the day is expected to:
  - promote the international community’s interest in global urbanisation,
  - push forward cooperation among countries in meeting opportunities and addressing challenges of urbanisation,
  - contributing to sustainable urban development around the world.
- The theme for World Cities Day 2018 was **'Building Sustainable and Resilient Cities'** because cities need support to become resilient and develop their capacity to absorb the impact of hazards, protect and preserve human life and limit damage to and destruction of public and private assets while continuing to provide infrastructure and services after a crisis.

Note:

### ***Why the world needs to focus on resilience***

- About **1.4 million people move to cities around the world every week** and nearly 55% of the world's population now lives in urban areas. Such rapid urbanisation can strain local capacities, contributing to increased risk from natural and human made disasters.
- **As more people are concentrated in cities**, dependent on local services and networks, **the risks from natural and human made disasters grow.**
- The poor and vulnerable, living in substandard, hazardous places are most at risk with **around 1 billion people living in slums.**
- **People exposed to natural hazards in poorest nations** are more than **seven times likely to die than those in the richest.**
- Challenges to resilience can also be **economic, cultural, civic and social and develop over time such as economic downturns or crises, high unemployment, lack of inclusion, social cohesion or discrimination, disease outbreaks and terrorism.**

### ***How to build Resilience***

- Cities can protect against economic shocks by **diversifying their economy, creating opportunities for business and employment, and engaging the private sector.**
- They can build socially cohesive societies becoming **democratic, sustainable and inclusive by ensuring residents from all backgrounds take part in decision making.**
- To build climate and environment resilience, authorities need to plan cities properly to minimize the overall effect on the environment as well as ensuring resilience through **strengthened infrastructure, good planning and public education.**
- Responses to disasters in urban areas **can promote greater resilience to future crises** and support long-term development goals.
- The need for resilient cities is recognised in the Sustainable Development Goals, the Paris Agreement for Climate Change, the Sendai Framework and in the New Urban Agenda (Habitat-III).

#### **UN-Habitat**

- UN-Habitat is the United Nations programme **working towards a better urban future.** Its mission is to promote socially and environmentally sustainable human settlements development and the achievement of adequate shelter for all.
- The **first international UN conference** to fully recognize the challenge of urbanization was held in 1976 in **Vancouver, Canada (Habitat I).**
- In 1996, the United Nations held a **second conference – Habitat II in Istanbul, Turkey** to assess two decades of progress since Habitat I in Vancouver and to set fresh goals for the new millennium.
- In 2016, at the **UN Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador,** New Urban Agenda was signed. This is an action-oriented document which sets global standards of achieving SDG 11, rethinking the way cities are built and managed.

## **INSPIRE 2018**

Power Minister inaugurated '**International Symposium to Promote Innovation & Research in Energy Efficiency (INSPIRE-2018)**' and awarded the winners of the **#InnovateToINSPIRE** challenge.

- This is the second edition of INSPIRE and is being **organised by Energy Efficiency Services Limited (EESL) and World Bank.**
- The three-day symposium focuses on enhancing grid management, **e-Mobility, financial instruments and technologies for energy efficiency in India.**

Note:

- To support investments in new, innovative and scalable business models, EESL and Asian Development Bank (ADB) also signed an agreement for a Global Environment Facility (GEF) grant of USD 13 million to establish an Energy Efficiency Revolving Fund (EERF).
- INSPIRE is **India's first Energy Efficiency event**, bringing together various policy makers, innovators, financiers, influencers and stakeholders to showcase best practices in transformative policies, large scale implementation, financing models and high-impact research initiatives from India and across the globe.

#### **Energy Efficiency Revolving Fund (EERF)**

- The fund aims to expand and sustain investments in the energy efficiency market in India, build market diversification, and scale up existing technologies.
- EERF will boost four of EESL's existing technologies. These involve street lighting, domestic lighting, five-star rated ceiling fans and agricultural pumps.
- The funding will also help EESL promote three new technologies, on 'super-efficient' ceiling fans, tri-generation and smart grids/meters.
- The EERF mechanism will help cover the initial investment cost of energy efficiency programmes. Savings from these technologies can be used to finance additional projects.

#### **Energy Efficiency Services Limited (EESL)**

- EESL functions under the administration of Ministry of Power, Government of India and is working towards mainstreaming energy efficiency.
- It is implementing the world's largest energy efficiency portfolio in the country.

#### **Global Environment Facility**

- The Global Environment Facility(GEF) was established on the eve of the 1992 Rio Earth Summit to help tackle our planet's most pressing environmental problems.
- GEF is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues.
- It is based in Washington DC, United States.

## **World Wide Web Foundation Report**

World Wide Web Foundation recently released a report on Internet Accessibility and Affordability.

- World Wide Web Foundation is established by **Tim Berners-Lee, who invented the Internet**.
- The WWW Foundation's study is **based on purchasing power**, comparing the price of 1GB of data against average household income.

### **Major Findings of Report**

- The report has **found a sharp decline in the growth of Internet** access across the globe due to a dip in affordability.
- However, **India has shown the reverse trend** in Internet accessibility and affordability because of the decrease in prices.
- The report mentions healthy **market competition, growth in infrastructure, good policymaking and the role played by TRAI** (which has created an open-access system to measure the quality of service) as factors responsible for India's growth.
- India also had an advantage over the developed countries because it had fewer legacy systems (old computer systems) to write off and could tap directly into the mobile internet boom.
- Global Digital Divide
  - Despite the global communications boom, one out of every two humans is still offline.

Note:

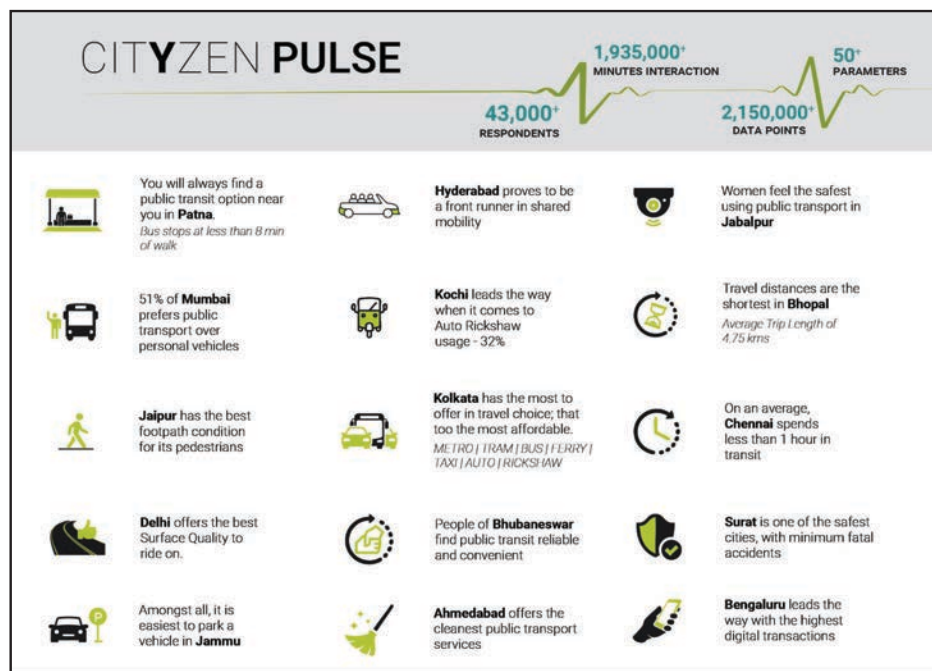
- The majority of the people with no internet connection are in nations that are either developing or small and are mostly females.
- This digital divide undermines opportunities for wider socio-economic development.

### Inclusive Internet Index

- The Inclusive Internet Index is **commissioned** by Facebook and **conducted** by The Economist Intelligence Unit (Part of the UK based *The Economist* Group).
- It seeks to measure the extent to which the Internet is not only accessible and affordable but also “relevant to all, allowing usage that enables positive social and economic outcomes at individual and group level.”
- India was ranked 47<sup>th</sup> out of 86 countries in Inclusive Internet Index in 2018.

## Ease of Moving Index, 2018

- Ministry of Road, Transport and Highways has released **India's first Ease of Mobility Index 2018**.
- The report has been prepared by **Ola Mobility Institute** - Ola's research and social innovation arm.
- As part of report findings, Kolkata ranks the highest in terms of affordability of public transportation with 80% of commuters finding Kolkata's public transport reasonable and affordable.
- Chennai emerged as the city with the most sustainable mobility practices amongst other metros in the country.
- The Index offers a source of information to aid transit agencies and urban planners to make informed decisions and align solutions with the preference of commuters.
- The report further seeks to offer a comprehensive action plan for cities to further strengthen their public transportation systems and improve the overall state of mobility.



## New PSU's Included in CPSE ETF

- Ministry of Finance recently included **four public sector undertakings (PSUs)** NTPC, NLC India, SJVN and NBCC in the list of **Central Public Sector Enterprises (CPSE) Exchange Traded Fund (ETF)**.
- CPSE ETF, which functions like a mutual fund scheme, comprises scrips of 10 PSUs -- ONGC, Coal India, IOC, GAIL (India), Oil India, PFC, Bharat Electronics, REC, Engineers India and Container Corporation of India.

### Exchange Traded Funds (ETF)

- ETFs are index funds that are **listed and traded on stock exchanges just like regular shares**.

Note:



- They are a **basket of stocks with assigned weights** that reflect the composition of an index.
- The ETFs trading value is based on the net asset value of the underlying stocks that it represents.
- They **enable investors to gain broad exposure to entire stock markets in different countries** and specific sectors with relative ease, on a real-time basis and at a lower cost than many other forms of investing.
- The ETF is aimed at helping **speed up the government's disinvestment programme**.

### ***Bharat 22 ETF***

- Bharat 22 ETF comprises of stocks of 22 Central Public Sector Enterprises (**CPSEs**), Public Sector Banks (**PSBs**) and Specified Undertaking of Unit Trust of India (**SUUTI**).
- Bharat 22 ETF is **managed by ICICI Prudential Mutual Fund**.
- The foundation of Bharat 22 ETF was laid by the government in the Union Budget 2017.

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## **Global IT Challenge for Youth with Disabilities, 2018**

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- Global IT Challenge for Youth with Disabilities, 2018 was organised by the Department of Empowerment of Persons with Disabilities (DEPwD) under Ministry of Social Justice and Empowerment.
- India was hosting the event in **collaboration with the Government of Korea and Rehabilitation International (RI)**.
- The Global IT Challenge for disability is a **capacity building project** that helps youth with disabilities to overcome their limitations and challenges for a better future through access to ICT.
- It will alleviate the digital divide and expand the participation of youth with disabilities in the society.
- It propagates implementation of the **United Nations Convention on Rights of Persons with Disabilities (UNCRPD)** ( Article 21 of UNCRPD relates to access to information).
- The Global IT Challenge started in the year 1992 in Korea. Subsequently, it expanded to the neighbouring countries throughout the Asia-Pacific region and since 2011 it has become a global event.

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# International Relations

## Highlights

- US Reimposes Sanctions on Iran (23)
- RCEP Ministerial Meeting (24)
- Vice President's Three Nation Tour (25)
- 109th session of UNWTO Executive Council (27)
- Pakistan-China Luxury Bus Service (27)
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- IONS Anniversary Celebrations (28)
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- Exercise INDRA 2018 (29)
- Exercise Samudra Shakti (29)
- SIMBEX-2018 (29)

## US Reimposes Sanctions on Iran

The US imposed sanctions on Iran came under enforcement from November 5. This is the second round of sanctions targeting oil and petrochemicals.

- The first sanction took effect from August 7 targeting Iran's aviation sector, auto industry, trade in gold and precious metals etc.

### Iran Nuclear Program and JCPOA

- In 2015, **Iran with the P5+1 or the E3+3** group of world powers - **the US, UK, France, China, Russia, and Germany** agreed on a long-term deal on its nuclear programme. The deal was named as **Joint Comprehensive Plan of Action (JCPOA)**.
- The deal came after years of tension over Iran's alleged efforts to develop nuclear weapons.
- Under the JCPOA, Iran agreed to **limit its nuclear activities** by **stopping uranium enrichment** and **allowing the international agencies to inspect its nuclear facilities** in return for the **lifting of economic sanctions**.

### US withdrawal from JCPOA

- US has alleged that deal does not include a strong enough mechanism for inspections and verification of Iran's nuclear sites and fails to address the threat of Iran's missile programme.
- In May 2018, US pulled out of Iran Nuclear Deal - JCPOA and threatened to impose sanctions on Iran and on nations doing significant amount of trade with Iran.
- However, no other signatory of the deal has supported the US stand on the deal and even the UN has expressed misgivings about the decision. The US has given no evidence that Iran in any way violated the terms of the JCPOA.
- The International Atomic Energy Agency's report concluded that Iran's stockpile of uranium and heavy water, as well as its implementation of additional protocols, were "in compliance" with the agreement.

### Impact of Sanctions on Iran

- **Iran** being **one of the world's largest oil producers**, oil export forms the major part of Iran's trade with the rest of the world. Sanctions targeting oil exports have a deep impact on the economy of Iran.
- **US sanctions led to the crash in the value of Iranian currency Rial** and that further led to inflation in Iran.
- Also, the aviation sector in Iran will be particularly hit by US sanctions.
- Tourism in Iran which had benefited from the nuclear deal could also be affected by renewed sanctions.

Note:

- **Fundamentalist forces in Iran were against the JCPOA, the imposition of sanctions despite adhering to the deal strengthens the radical forces which are against any engagement with the western world, the US in particular.**
- Sanctions may lead to political instability. **Protesters are now targeting the government of President Hassan Rouhani, who championed the nuclear deal as a way of boosting the economy.**

### **Impacts on India**

- Iran has already increased price discounts since May, worth around USD 10-15 million a month to large importers like China and India compared with last year.
- Another impact would be on India's investment in the Chabahar port, which would face both direct and indirect sanctions: as shippers, port suppliers and trading companies refuse to participate in the project. (It threatens India's \$500 million investment in the port and its \$2 billion plan for a railway line to circumvent Pakistan and reach Afghanistan and Central Asian trade lines.)
- **With trade levels receding, the Iranian regime may lose interest in the Chabahar option, and focus on its main port of Bandar Abbas instead, derailing India's plans for regional connectivity.**
- Apart from Chabahar, India's interest in the International North-South Transit Corridor (INSTC), which runs through Iran, which will improve connectivity with five Central Asian republics, may also get affected.
- For India, the impact of the US sanctions plan would be manifold. **The U.S. has said that it is only issuing temporary waivers, and the waivers are strictly linked to the condition that countries receiving them keep cutting down their purchases from Iran.**
- Along with the JCPOA-linked sanctions, India may face sanctions linked to the **Countering America's Adversaries Through Sanctions Act (CAATSA)**, which puts more strictures on dealings with Iran, Russia and North Korea.
- Finally, there would be an impact on India's regional security situation, which could see the Iranian-Arab divide deepen, Afghanistan's choices dwindle and an angry Iran pitched closer into the China-Russia corner.

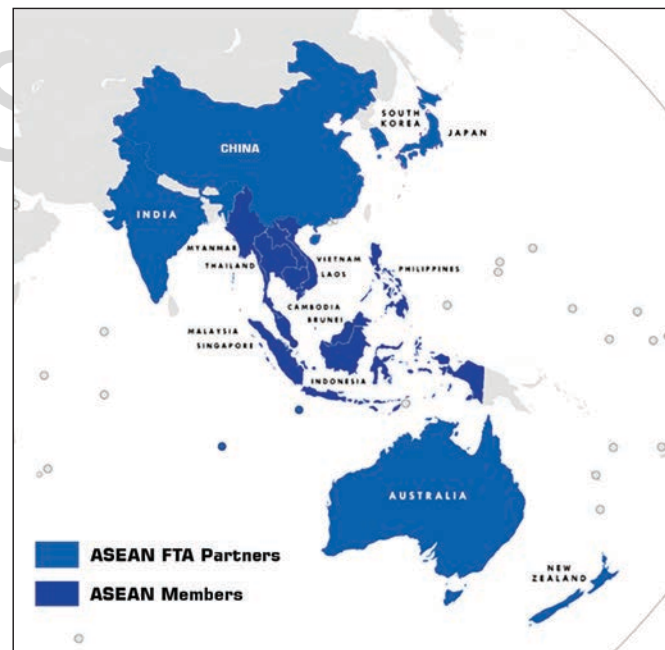
## **RCEP Ministerial Meeting**

Delegation from India participated in the 7th Regional Comprehensive Economic Partnership (RCEP) Inter-Sessional Ministerial Meeting in Singapore on 12-13 November 2018.

- The RCEP Ministerial meeting failed to reach a consensus on chapters related to e-commerce, competition, and investment, but progress was made on several other issues like economic and technical cooperation, small and medium enterprises etc.
- It was decided to push the year-end target for a "substantial conclusion" of the talks by a year due to differences on key issues.
- Government think-tank NITI Aayog has warned against India joining RCEP and said that it will be "disastrous" for India.

### **What is RCEP?**

- The RCEP is a **mega-regional free trade agreement** which aims to cover goods, services, investments, economic and technical cooperation, competition and intellectual property rights.



Note:

- It is being negotiated amongst 16 countries, comprising **10 ASEAN countries** plus **six ASEAN FTA partners – India, China, Japan, South Korea, Australia, and New Zealand**.
- RCEP negotiations seek **regional economic integration**, leading to the creation of the largest regional trading block.
- RCEP will account for 25% of global GDP, 30% of global trade and 26% of foreign direct investment (FDI) flows and 45% of the global population.

### India and RCEP

#### ➤ Concerns

- The **presence of China in RCEP** is a matter of concern for India as India had a \$63 billion trade deficit with China in 2017-18.
  - Granting greater market access to China under RCEP can harm India's labor-intensive domestic industry, steel sector in particular, as China has been dumping iron and steel products in India.
- Since the start of the RCEP negotiations, **India wanted greater liberalization in the services sector**, especially for easy movement of its professionals to RCEP-member countries.
  - Most members have resisted a deal in the services sector, sensing a threat from China and India.
- India is also wary of measures that may lead to its **losing the right to produce cheap generic drugs** due to the enforcement of a strict IPR regime related to patent term extension and data exclusivity.

#### ➤ Opportunities

- RCEP is important for India as it **means access to the Asia Pacific region** which will be important for its future economic and strategic status in the region.
- Joining RCEP will give a **boost to India's Act East Policy** which builds on the Look East Policy for a closer partnership with the Asian region.
- RCEP will allow India to **expand its trading association with countries like Australia and New Zealand**, with which it has no formal trading partnership due to its absence in the APEC and Transatlantic Trade and Investment Partnership (TTIP).

### Way Forward

- The RCEP, once formalized, has the potential to emerge as the most effective and the largest free-trade bloc in the world. India certainly cannot afford to be excluded from new regional trade chains and hence, its participation in RCEP is imperative. However, legitimate concerns of Indian trade and commerce have to be addressed with a progressive look.

## Vice President's Three Nation Tour

Vice President of India completed his visit to Botswana, Malawi and Zimbabwe from November 1 to 5.

- During the visit various agreements covering a range of areas of cooperation were signed.
- India's relation with Africa has found convergence due to shared struggle against colonialism, stand against racism and similar post independence developmental issues.
  - Botswana also announced its decision to join the International Solar Alliance.



Note:

- Vice-president's visit to Zimbabwe was first high-level visit from India in last 21 years.
- The vice-president launched the "India For Humanity" initiative with Malawi.

## **India's Assistance in Africa**

### **Economic Engagements**

#### ➤ **Trade:**

- India has offered duty-free market access to Africa's least developed countries under Duty Free Tariff Preferences scheme.
- India is also a large market for goods and services generated in Africa. The India-Africa trade is estimated to be around \$70 billion, and it can increase up to \$100 billion in the next 2-3 years.

#### ➤ **Assistance:**

- India has been providing line of credits for various infrastructural projects in many African countries.
- During India Africa Forum Summit in 2008 India has committed \$7.5 billion to African infrastructure, covering 137 projects in more than 40 countries.

### **Capacity Building Programmes**

- India has provided more than \$1 billion in technical assistance and training to personnel under the **Indian Technical and Economic Cooperation (ITEC)** program.
- India is also implementing **e-Vidya Bharati** and **e-Arogya Bharati (e-VBAB)** in African countries.

### **Security Engagement**

- India has participated in nearly all UN peacekeeping operations in Africa. India is one of the largest contributor to Peacekeeping mission in Africa.

### **Cooperation at Global Level**

- Both India's and Africa's viewpoints converge on issue of UNSC reform. India has been providing leadership to Least Developed Countries in World Trade Organization and at climate forums.
- India's initiative of International Solar Alliance has found many takers in Africa and many countries have become part of this initiative.

#### **India Africa Forum Summit (IAFS)**

- IAFS is the official platform for the African-Indian relations.
- It is held once in every three years beginning from 2008.
- India by consistently holding IAFS in places like New Delhi (2008), Addis Ababa (2011) and New Delhi (2015) has been able to forge ties with the 54 African states through the African Union (AU).

#### **e-VBAB Network Project**

- The Project aims at imparting tele-education and telemedicine by linking educational institutions and hospitals in India with those from the participating African countries.
- It is completely funded by the Government of India and is open for participation to all our partner countries of India in Africa.

#### **India-Botswana**

- India established diplomatic relations with Botswana immediately after its independence in 1966 and opened its diplomatic mission in Gaborone in 1987.
- Botswana is an active member of Southern African Development Community (SADC), South African Customs Union (SACU), WTO and other International organizations.

Note:

- Diamonds have a significant role in trade relation between two countries, diamond forms approx. 40% of GDP and almost 70% of its export earnings of Botswana and diamond cutting and polishing industries located in India are heavily dependent on supply of rough diamond from Botswana.

#### India-Zimbabwe

- During the era of the Munhumutapa Kingdom, Indian merchants established strong links with Zimbabwe, trading in textiles, minerals and metals.
- In the 17<sup>th</sup> century, a great son of Zimbabwe, Dom Miguel – Prince, Priest and Professor, and heir to the imperial throne of the Mutapas – studied in Goa.
- India supported Zimbabwe's freedom struggle. Former Prime Minister Smt. Indira Gandhi attended Zimbabwe independence celebrations in 1980.

#### India-Malawi

- India established diplomatic ties with Malawi in 1964, the year when Malawi gained its independence.

## 109<sup>th</sup> session of UNWTO Executive Council

India attended the 109<sup>th</sup> session of **United Nations World Tourism Organization (UNWTO)** Executive Council in Manama, Bahrain in October 2018.

- The Executive Council discussed several topics related to the development of the global tourism sector.
- The UNWTO is responsible for the **promotion of responsible, sustainable and universally accessible tourism**.
- As the leading international organization in the field of tourism, UNWTO **promotes tourism as a driver of economic growth, inclusive development, and environmental sustainability**.
- UNWTO's membership includes **158 countries, 6 Associate Members and over 500 Affiliate Members** representing the private sector, educational institutions, tourism associations, and local tourism authorities.

#### Few initiatives by UNWTO

- **World Tourism Day:** 27<sup>th</sup> September
- **Silk Road initiative:** A collaborative platform designed to enhance sustainable tourism development along the historic Silk Road routes.
- **Sustainable Tourism - Eliminating Poverty Initiative (ST-EP):** Promotes poverty alleviation through the initiative which focuses to encourage sustainable tourism.
- **World Tourism Barometer Report:** Monitors short-term tourism trends on a regular basis to provide global tourism stakeholders with up-to-date analysis of international tourism. It is published six times a year.

## Pakistan-China Luxury Bus Service

In spite of India's objection, Pakistan and China have launched a luxury bus service passing through Pakistan-occupied Kashmir (PoK) from Lahore (Pakistan) to Kashgar city (China's Xinjiang province).

- It is part of an initiative to connect the two countries via road under the China-Pakistan Economic Corridor (CPEC).

#### ***Belt and Road Initiative (BRI) and CPEC***

- BRI, also known as [One Belt One Road \(OBOR\)](#), is one of the major initiatives of China focusing on improving connectivity and cooperation - connecting Asia to Europe and Africa.
- It has two dimensions:

Note:

- **Silk Road Economic Belt (SREB)** - a land route that links China with south east Asia, south Asia, Central Asia, Russia and Europe.
- A 21<sup>st</sup> century **Maritime Silk Road** - a sea route connecting China's coastal regions with south east and south Asia, the South Pacific, the Middle East and Eastern Africa, all the way to Europe.
- Launched in 2015, CPEC is one of the flagship projects of SREB.
- It provides rail-road connectivity between Gwadar in Balochistan, Pakistan to Xinjiang province of China and passes through PoK.
- It is one of the largest bilateral initiatives between China and Pakistan with a budget of around \$46 billion.
- CPEC is considered as a boon to struggling Pakistani economy.



### India's Concern

- The project passes through Gilgit-Baltistan in PoK, which India considers its own territory - thereby interfering with India's sovereignty and territorial integrity.
- There is a lack of transparency around the way the project is funded. It is considered as a part of Chinese policy of debt-trap diplomacy in which loans are turned into strategic investments.
- It may disrupt and destroy Himalayan ecology.

## India Re-elected as Member of ITU Council

- India has been elected as a member of the International Telecommunications Union Council (ITU) for another 4-year term - from 2019 to 2022.
- ITU was founded in Paris in 1865 as the International Telegraph Union. It took its present name in 1934, and in 1947 became a specialized agency of the United Nations.
- The ITU has 193 member states who elect representatives to the Council.
- India has been an active member of the ITU since 1869.
- The country has been a regular member of the ITU Council since 1952.
- India's strong partnership with the ITU is also demonstrated in the recent decision to set up the ITU South Asia Area Office and Technology Innovation Centre in New Delhi.

## IONS Anniversary Celebrations

The 10<sup>th</sup> anniversary celebrations of the Indian Ocean Naval Symposium (IONS) commenced with the release of the 'Special Cover' in Kochi.

- The commemorative Special Cover of IONS 10th Anniversary celebrations depicts a map of the Indian Ocean and littoral countries of the IOR, signifying the geopolitical importance of the region.
- IONS is a voluntary initiative that seeks to increase maritime cooperation among navies of the littoral states of the Indian Ocean Region by providing an open and inclusive forum for discussion of regionally relevant maritime issues.

Note:

- The inaugural edition of **IONS-2008 was held in New Delhi**. The theme of the IONS-2008 was “Contemporary Transnational Challenges – International Maritime Connectivities”.
- The 2<sup>nd</sup> edition i.e. IONS-2010 was held in Abu-Dhabi. The theme of IONS-2010 was "Together for the Reinforcement of Maritime Security in the Indian Ocean".

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## **Dharma Guardian–2018**

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- Dharma Guardian 2018 is the joint military exercise between **India and Japan**.
- It involves the Indian Army and Japan Ground Self Defence Force at Counter Insurgency Warfare School, Vairengte, Mizoram, India.
- It is a 14-day long exercise, with emphasis on increasing interoperability between forces from both countries.
- Both sides will jointly train, plan and execute a series of well developed tactical drills for neutralization of likely threats that may be encountered in urban warfare scenario.
- Exercise 'DHARMA GUARDIAN-2018' is another step in deepening strategic ties including closer defense cooperation between the two countries.
- **JIMEX** and **MALABAR** are the **Naval exercises** conducted by Indian and Japanese Navy.

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## **Exercise INDRA 2018**

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- The joint military **exercise between Indian and Russia EXERCISE INDRA 2018** on combating insurgency under the aegis of United Nations (UN) was conducted at Babina Military Station, Jhansi (UP).
- The aim of the exercise is to practice joint planning and conduct to enhance interoperability of the two Armies in the peacekeeping/ enforcement environment.

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## **Exercise Samudra Shakti**

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- The inaugural edition of **Indian Navy – Indonesian Navy Bilateral Exercise ‘Samudra Shakti’** was conducted from 12 to 18 Nov 2018.
- The aim of the exercise is to strengthen bilateral relations, expand maritime co-operation, enhance interoperability and exchange best practices.

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## **SIMBEX-2018**

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- The 25th edition of **SIMBEX (Singapore-India Maritime Bilateral Exercise)** – 2018 was held in Andaman Sea and Bay of Bengal.
- The 2018 edition marks the Silver Jubilee of SIMBEX.
- The previous edition of the exercise was held off Singapore in the South China Sea in May 2017.
- SIMBEX 2018 is the largest edition since 1994 in terms of scale and complexity.
- This Exercise complement India’s **‘Act-East’ policy**.
- The aim of 'Act East Policy' is to promote the country's economic cooperation, cultural ties and develop strategic relationship with countries in the Asia-Pacific region through continuous engagement at bilateral, regional and multilateral levels.
- ‘Act East Policy’ was originally conceived as an economic initiative but has gained political, strategic and cultural dimensions, including establishment of institutional mechanisms for dialogue and cooperation.



Note:



# Science and Technology

## Highlights

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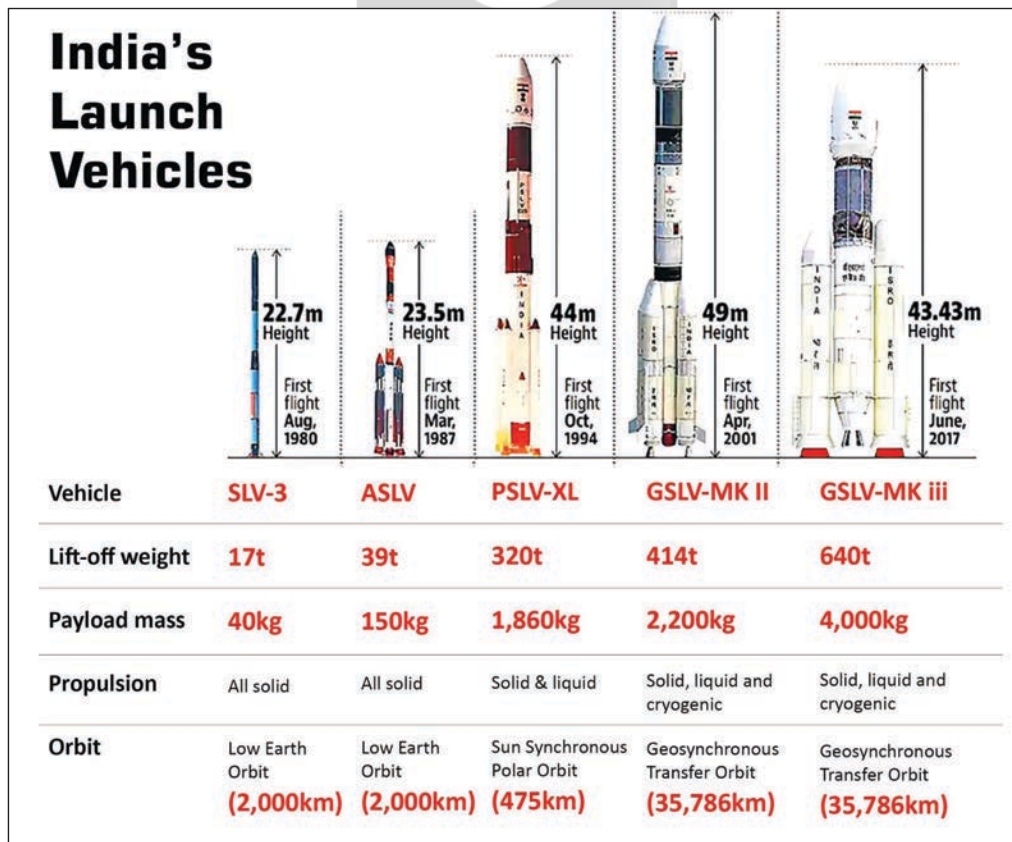
## GSAT-29 Satellite Launched

The Indian Space and Research Organisation (ISRO) has successfully launched **GSAT-29 (Geostationary Satellite)** communication satellite through Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mk III).

- GSLV Mk III successfully placed the satellite in **Geosynchronous Transfer Orbit (GTO)** after three orbit-raising maneuvers, the satellite will be placed in the **Geostationary Orbit**.

### Payloads on GSLV Mk III

- GSAT-29, weighing 3,423kg, is the **heaviest satellite to be put into orbit by ISRO's launch vehicle** and is designed for a mission life of 10 years.



Note:

- It is a multiband, multi-beam communication satellite which will serve as a testbed for several new and critical technologies.
- Its Payload also consists of Geo High-Resolution Camera and an Optical Communication Payload.

### Significance

- GSAT-29 will help in providing **internet connectivity** in remote areas especially in **Jammu & Kashmir and North-Eastern regions of India**.
- Geo-High Resolution Camera will help in high-resolution imaging and help in **surveillance in the Indian Ocean**.
- Optical Communication payload will help in **data transmission at a very high rate** through the optical communication link.
- The successful launch signifies the **completion of the experimental phase of GSLV Mk III and it is now operational**.
- Future Mission of ISRO, **Chandrayaan-2 and Gaganyaan missions** (human space flight) will also be **launched by GSLV Mk III**.
- The success of GSLV Mk III marks an important milestone in the Indian space programme towards **achieving self-reliance** in launching heavier satellites.

### Types of Orbits

In general, there are two types of orbits:

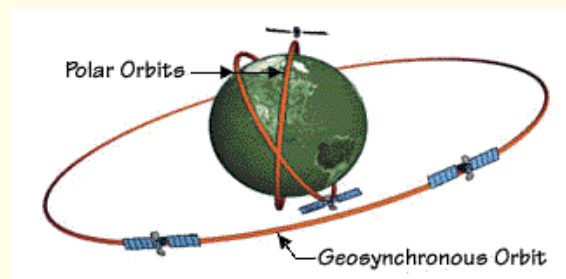
- Polar Synchronous
- Geosynchronous

#### Polar Orbit

- A polar orbit travels **north-south over the poles** and takes approximately **90 minutes for a full rotation**.
- These orbits have an **inclination near 90 degrees**. This allows the satellite to see virtually every part of the Earth as the Earth rotates underneath it.
- These satellites have many uses such as **monitoring crops, global security, measuring ozone concentrations in the stratosphere or measuring temperatures in the atmosphere**.
- Almost all the satellites that are in a polar orbit are at **lower altitudes**.
- An orbit is called **sun-synchronous** when the angle between the **line joining the center of the Earth and the satellite and the Sun is constant throughout the orbit**.
- These orbits are also referred to as **“Low Earth Orbit (LEO)”** which enables the onboard camera to take images of the earth under the same sun-illumination conditions during each of the repeated visits, thus making the satellite useful for earth resources monitoring.
- **It passes over any given point on Earth’s surface at the same local solar time.**

#### Geosynchronous Orbit

- Geosynchronous satellites are launched into orbit in the same direction the Earth is spinning and can have any inclination.
- When the satellite is in orbit at a specific altitude (approximately 36,000km above the Earth's surface), **it will exactly match the rotation of the Earth**.
- While, **Geostationary orbits** fall in the same category as geosynchronous orbits, but with that one special quality of being **parked over the equator**.
- In the case of geostationary satellites, the Earth’s force of gravity is exactly enough to provide acceleration required for circular motion.



Note:

- **Geosynchronous Transfer Orbit (GTO):** To attain geostationary or geosynchronous earth orbits, a spacecraft is first launched into a Geosynchronous Transfer Orbit.
- From the **GTO the spacecraft uses its engines to shift to geostationary or geosynchronous orbit.**

## NASA's Dawn Mission

NASA's Dawn spacecraft (launched in 2007) which orbited the two largest objects (Vesta and Ceres) in the asteroid belt ran out of fuel, ending a historic 11-year mission that unravelled many mysteries of our solar system.

- Mission managers of Dawn Mission concluded that the spacecraft finally ran out of hydrazine, the fuel that enables the spacecraft to control its pointing.

### **Significance of the Mission**

- The astounding images and data that Dawn collected from Vesta and Ceres are **critical to understanding the history and evolution of the solar system.**
- In 2011, when Dawn arrived at Vesta, the spacecraft became the first to orbit a body in the region between Mars and Jupiter.
- In 2015, when Dawn went into orbit around Ceres, a dwarf planet that is also in the asteroid belt, the mission became the first to visit a dwarf planet and go into orbit around two destinations beyond Earth.
- **The data Dawn beamed back to Earth from its four science experiments enabled scientists to compare two planet-like worlds that evolved very differently.**
- Among its accomplishments, Dawn showed how important location was to the way objects in the early solar system formed and evolved.
- **Dawn also reinforced the idea that dwarf planets could have hosted oceans over a significant part of their history and potentially still do.**
- Dawn's data sets will be deeply mined by scientists working on how planets grow and differentiate, and when and where life could have formed in our solar system.
- Ceres and Vesta are important to the study of distant planetary systems, too, as they provide a glimpse of the conditions that may exist around young stars.

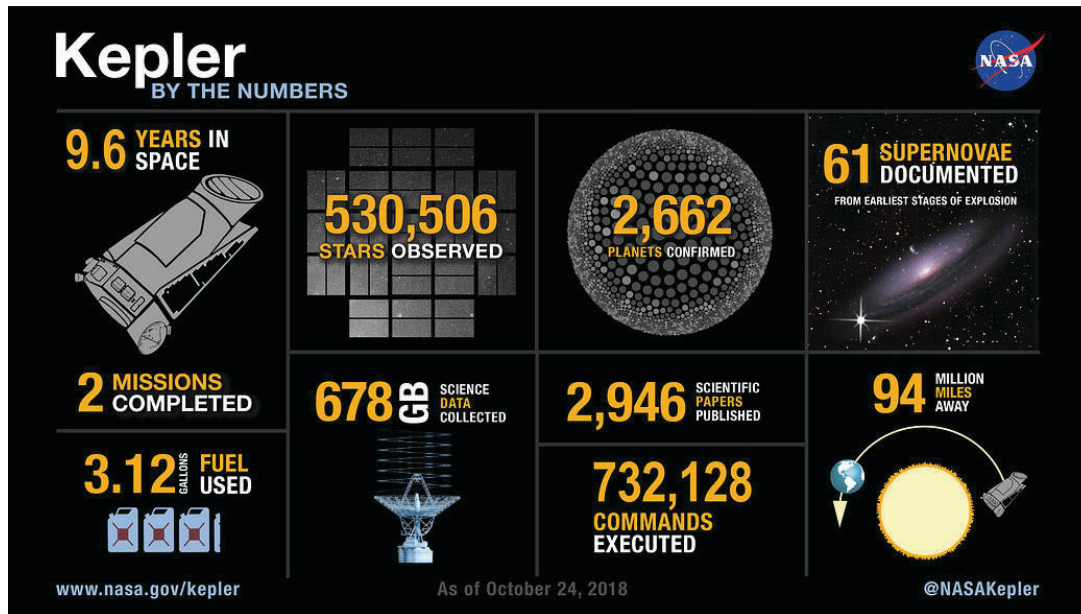
## Oumuamua

- Oumuamua is the **first Interstellar Object ever tracked by humans in the solar system.**
- It was tracked by **Panoramic Survey Telescope and Rapid Response System (Pan-STARRS)** instrument in Maui, **Hawaii in October 2017.**
- Oumuamua is a Hawaiian word meaning "scout" or "a messenger sent from far to reach out to us".
- Scientists have concluded that Oumuamua is a reddish-brown rock shaped like a cigar — about 800 m long and 80 m wide.

## NASA Kepler Telescope to Retire

- NASA has decided to retire the Kepler space telescope within its current, safe orbit, away from Earth after almost a decade of service. The telescope has run out of fuel needed for further science operations.
- The Kepler mission was named in honor of 17th-century German astronomer Johannes Kepler, who discovered the laws of planetary motion.
- **The Kepler Mission was launched in 2009 with the expected mission life of one year.**

Note:



- It was NASA's first planet-hunting mission – It discovered more than 2,600 of around 3,800 exoplanets — the term for planets outside our solar system — that have been documented in the past two decades.
- Kepler's observations have suggested that planets outnumber stars in the Milky Way and that potentially Earth-like worlds are common in the universe.
- Kepler is succeeded by NASA's Transiting Exoplanet Survey Satellite, or TESS, which was launched in April 2018. TESS is the new planet hunter for NASA.

## India-based Neutrino Observatory

The National Green Tribunal (NGT) has upheld the environmental clearance granted in March 2018 to the India-based Neutrino Observatory (INO) a major scientific research facility that is proposed to be constructed in the Bodi West Hills (Theni district) of Tamil Nadu.

- However, the project could not be implemented till the approval of the National Board of Wildlife is also received.
- According to Environmentalists such massive scale of construction underground, and controlled blasts, the vibrations from the explosions will badly affect the ecologically fragile Western Ghats.
- The site which is near the Kerala-Tamil Nadu border is close to the Mathikettan Shola National Park, and a number of hydroelectric projects, which accounts for the majority of the electricity generation in Kerala.

### Neutrino

- Proton, neutron, and electron are tiny particles that make up atoms. The neutrino is also a tiny elementary particle, but it is not part of the atom. Such particles are also found to exist in nature.
- Neutrino has a very tiny mass and no charge. It interacts very weakly with other matter particles.
- Neutrinos come from the sun (solar neutrinos) and other stars, cosmic rays that come from beyond the solar system, and from the Big Bang from which our Universe originated. They can also be produced in the lab.
- The INO will study atmospheric neutrinos only. Solar neutrinos have much lower energy than the detector can detect.

### India-based Neutrino Observatory (INO)

- The Tata Institute of Fundamental Research is the nodal institution. The observatory is to be built jointly with the Department of Atomic Energy and the Department of Science and Technology.

Note:

- The observatory will be located underground so as to provide adequate shielding to the neutrino detector from cosmic background radiation.
- The operation of INO will have no release of radioactive or toxic substances. It is not a weapons laboratory and will have no strategic or defence applications.

### ***Future Applications of Neutrino Science***

Basic sciences research is needed to understand the properties of particles before they can be applied.

- **Properties of the sun:** The visible light is emitted from the surface of the sun and neutrinos, which travel close to the speed of light, are produced in the core of the sun. Studying these neutrinos can help us understand what goes on in the interior of the sun.
- **Constituents of the Universe:** Light coming from distant stars can be studied by astronomers, for example, to detect new planets.
- **Probing early Universe:** Neutrinos interact very little with the matter around them, so they travel long distances uninterrupted. The extragalactic (originating outside the Milky Way galaxy) neutrinos we observe may be coming from the distant past and can give us a clue about the origin of the universe and the early stages of the infant universe, soon after the Big Bang.
- **Medical Imaging:** Apart from direct future uses of neutrinos, there are technological applications of the detectors that will be used to study them. For instance, X-ray machines, MRI scans, etc., all came out of research into particle detectors. Hence the INO detectors may have applications in medical imaging.

### **National Green Tribunal**

- The National Green Tribunal was established under the **National Green Tribunal Act 2010** for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources.
- It is a **specialized body equipped with the necessary expertise to handle environmental disputes involving multi-disciplinary issues.**
- The Tribunal is **not bound by the procedure laid down under the Code of Civil Procedure, 1908**, but shall be guided by principles of natural justice.
- The Tribunal's dedicated jurisdiction in environmental matters shall provide **speedy environmental justice** and help **reduce the burden of litigation in the higher courts.**
- The Tribunal is mandated to make an endeavour for disposal of applications or appeals finally within 6 months of filing of the same.
- **New Delhi is the Principal Place of Sitting of the Tribunal and Bhopal, Pune, Kolkata and Chennai** shall be the other four place of sitting of the Tribunal.

## **Global Cooling Innovation Summit**

- Global Cooling Innovation Summit was jointly organized by the **Department of Science and Technology, Government of India**, along with Rocky Mountain Institute, Alliance for An Energy Efficient Economy (AEEE), Conservation X Labs and CEPT University.
- The Summit was a first-of-its-kind solutions-focused event that will bring together leaders from around the world to explore concrete means and pathways **to address the climate threat that comes from the growing demand from room air conditioners.**
- The summit is going to launch Global Cooling Prize -Mission Innovation challenge that aims to spur development of a residential cooling solution that has at least five times (5x) less climate impact than today's standard.
- Global Cooling Prize is a competition with global reach and participation to achieve dramatic breakthroughs in cooling technologies.

Note:

## India's First Uterine Transplant Baby

- Recently, doctors in Pune have successfully delivered a child to a woman who had undergone a uterine transplant.
- This is the **first such birth in India** and the **12<sup>th</sup> in the world**.
- The first successful transplant was performed in Saudi Arabia in 2002 but did not result in pregnancy. The first birth after a transplant, in 2014, happened in Sweden.

### Uterus Transplant

- **In India, about 17% of all women face issues relating to infertility, and the reason is related to the uterus in 20% of such cases.**
- For women whose uterus is not healthy, or who do not have one since birth, a transplant of the uterus is the newest form of infertility treatment.
- Usually, women related to the recipient are potential donors. The donor may be either living or deceased, and is chosen from among women up to age 60.
- **The transplanted uterus is removed after the woman has gone through one or two child births.**
- Normal reproduction is not possible with a transplanted uterus. **Therefore, the egg is fertilised through in-vitro fertilisation.**
- The childbirth happens through surgical intervention.

## World's First Brain-Like Super-Computer

A supercomputer which is designed to work in the same way as the human brain was switched on for the first time.

- The supercomputer is named as **Spiking Neural Network Architecture (SpiNNaker) machine**.
- It has million-processor-core and is capable of completing more than 200 million actions per second, with each of its chips having 100 million transistors.
- The SpiNNaker machine is **designed and built in The University of Manchester, UK**.
- This supercomputer was conceptualized almost 20 years ago and its construction began in 2006.

### How It Works?

- Biological neurons are basic brain cells present in the nervous system that communicate by emitting 'spikes' of electrochemical energy.
- **Neuromorphic computing (electronic circuits mimicking neural-biological architecture)** uses large-scale computer systems containing electronic circuits to mimic these spikes in a machine.
- SpiNNaker is unique because it does not communicate by sending large amounts of information from point A to B via a standard network like in traditional computer but it mimics the parallel communication architecture of the brain, sending billions of small amounts of information simultaneously to thousands of different destinations.

### Applications

- The SpiNNaker machine will be capable of simulating a billion simple neurons, or millions of neurons with complex structure and internal dynamics.
- The supercomputer will help neuroscientists better understand how the human brain works. It does this by running extremely large scale real-time simulations which simply aren't possible on other machines.
- SpiNNaker has been used to simulate a region of the brain called the Basal Ganglia – an area affected in Parkinson's disease, thus it has massive potential for neurological breakthroughs in science such as pharmaceutical testing.

Note:

- **The SpiNNaker has been harnessed to control a robot, the SpOmnibot.** This robot uses the SpiNNaker system to interpret real-time visual information and navigate itself towards certain objects while ignoring others.

#### Human Brain Project

- Human Brain Project is an effort to construct a virtual human brain.
- The Human Brain Project (HBP) is building a research infrastructure to help advance neuroscience, medicine, and computing.
- It was started in October 2013 and is funded by the European Union.

#### Biologically-Inspired Massively Parallel Computation (BIMPC):

- It was a five-year project, which began in March 2013, funded by the European Union.
- Its main goal is to use the neuromorphic platform to build models of brain subsystems and of non-neural applications of the brain-inspired architecture.

## Mission to Explore Ocean Depths

A submarine mission called "Five Deeps" will explore the bottom of each of the world's oceans.

- The Five Deeps Expedition is the **first manned expedition** to the deepest points in each of the world's five oceans.
- Deep Oceans remain uncharted territory for humans, while hundreds of people have ventured into space, only three people have touched down on the deepest known places in oceans.
- The expedition provides the unprecedented opportunity to sample life across a gradient of depths, temperatures, salinity, food supply, latitude and in places around the world that were formed, split, or united millions of years ago by the shifting of the Earth's tectonic plates.
- **Five spots in oceans where expedition will go are:**
  - **Puerto Rico Trench** (Atlantic Ocean)
  - **South Sandwich Trench** (Southern Ocean)
  - **Java Trench** (Indian Ocean)
  - **Challenger Deep** (Pacific Ocean)
  - **Molloy Deep** (Arctic Ocean)

### DSV Limiting Factor

- The expedition crew will use **Deep Submergence Vehicle (DSV) Limiting Factor** submarine for exploring the ocean depths.
- Limiting Factor is the **only human-occupied vessel that can visit any place in oceans, at any depth**, and from any properly-equipped ship.



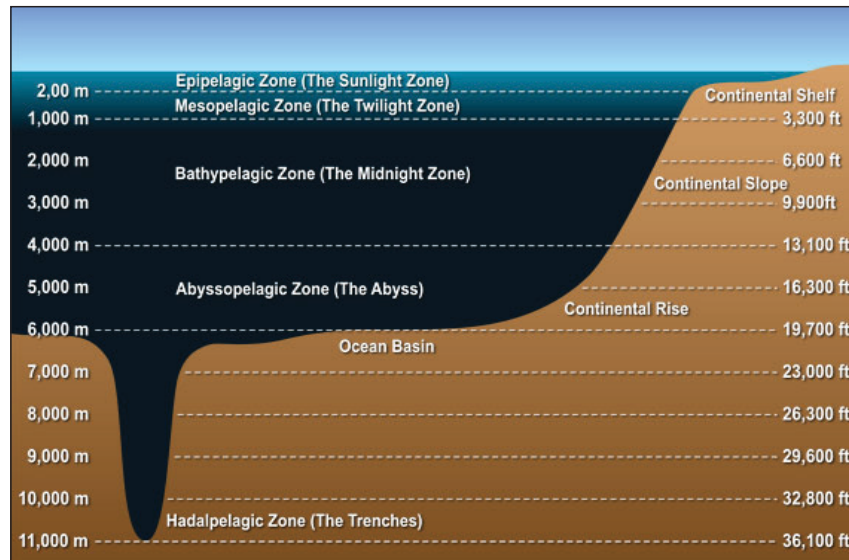
### Goals of the Mission

- To collect samples which will be used in research involving effects of **undersea seismic activity**.
- Find **deep-sea features and habitats** using high-resolution multibeam sonar and learn about lives in those habitats.
- Discover how organisms survive in **Hadalpelagic zones**.
- Determine the organisms' role in each given ecosystem.
- Connect the Five Deeps through genetic differentiation of species found on the dives.

Note:

## Zones in the Ocean

- Scientists have divided the ocean into five main layers. These layers, known as "zones", extend from the surface to the most extreme depths.



- **Epipelagic Zone:**
  - The surface layer of the ocean is known as the epipelagic zone.
  - It extends from the **surface to 200 meters (656 feet)**.
  - It is also known as the **sunlight zone** because this is where most of the visible light exists.
- **Mesopelagic Zone:**
  - Below the epipelagic zone is the mesopelagic zone, extending from **200 meters (656 feet) to 1,000 meters (3,281 feet)**.
  - The mesopelagic zone is sometimes referred to as the **twilight zone or the midwater zone**.
  - The light that penetrates to this depth is extremely faint.
  - **Bioluminescent creatures** (visible light produced by the creatures themselves) starts appearing in this zone.
- **Bathypelagic Zone:**
  - This zone extends from **1,000 meters (3,281 feet) down to 4,000 meters (13,124 feet)**.
  - It is sometimes referred to as the **midnight zone or the dark zone**.
- **Abyssopelagic Zone:**
  - It is also known as the **abyssal zone** or simply as the abyss.
  - It extends from **4,000 meters (13,124 feet) to 6,000 meters (19,686 feet)**.
  - The water temperature is near freezing, and there is no light at all.
- **Hadalpelagic Zone:**
  - This layer extends from **6,000 meters (19,686 feet) to the bottom of the deepest parts of the ocean**.
  - These areas are mostly found in deep water trenches and canyons.
  - **The deepest point in the ocean is located in the Mariana Trench off the coast of Japan at 35,797 feet (10,911 meters)**.
  - The temperature of the water is just above freezing, and the pressure is 800 times as that on the surface.
  - In spite of the pressure and temperature, life can still be found here.

Note:



**India's Deep Ocean Mission**

- Union Ministry of Earth Sciences, Government of India has also launched a '**Deep Ocean Mission**' for **exploration of polymetallic nodules in Central Indian Ocean Basin**.
- **Polymetallic nodules contain multiple metals** like copper, nickel, cobalt, manganese, iron, lead, zinc, aluminum, silver, gold, and platinum etc. in variable constitutions and are precipitate of hot fluids from upwelling hot magma from the deep interior of the oceanic crust.
- Of these, cobalt, copper, and nickel are of much importance and in great demand in India as cobalt is used extensively in medical treatment and nickel in batteries.
- It will reduce India's dependence on imports of cobalt and other rare earth metals.



drishti

# Environment and Ecology

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## Oceans Heating Faster: IPCC Study

The oceans are warming much faster than previously thought, new research has found, suggesting that global climate goals may be even harder to reach.

- The study concluded that the global oceans may be absorbing up to 60% more heat since the 1990s than older estimates had found.
- The higher-than-expected amount of heat in the oceans means more heat is being retained within Earth's climate system each year, rather than escaping into space, signalling that global warming is more advanced than scientists previously thought.
- This may have some grave implications for global efforts to meet the climate targets outlined under the Paris Agreement under which nations are striving to keep global temperatures within 2 degrees Celsius of their pre-industrial levels, or a more ambitious 1.5 degrees Celsius if possible.
- Recently, the [IPCC released a report on the 1.5 C threshold](#), concluding that meeting the target will require an "unprecedented" effort from world leaders and net-zero carbon emissions by 2050.
- The findings suggest if governments are to prevent temperatures from rising above 2°C, emission of carbon dioxide, the chief greenhouse gas produced by human activities, must be reduced by 25 per cent compared to what was previously estimated.

### Global Warming of 1.5°C – IPCC Report

A special report, which was commissioned to specifically explore the scientific feasibility of the 1.5°C goal set in the Paris Agreement, on global warming has been released by IPCC.

- It suggests that it has become **extremely improbable to achieve the 1.5°C goal** purely by reducing emission.
- As per the IPCC Report, at current rate of emissions, the world is set to breach the **global warming limit of 1.5°C between 2030 and 2052**. At present, the world is 1.2°C warmer compared to pre-industrial levels.
- The latest report was requested by various countries in 2015 to explore the possibilities of keeping the temperature rise within 1.5°C. This was the key demand made by a number of **smaller and poorer countries**, especially the small island states, which **face the maximum risks from the impact of climate change**.
- One of the key messages from this report is that we are already seeing the **consequences of 1°C of global warming** through more **extreme weather, rising sea levels and diminishing Arctic sea ice, among other changes**.

Note:

- An international consortium, in 2007 began a program, known as **Argo**, creating an international network of ocean-temperature and salt content measuring instruments.
- The latest research relied on measurements of oxygen and carbon dioxide in the atmosphere, dating back to 1991.
  - The oceans absorb more than 90% of the excess energy trapped within the world's atmosphere.
  - There's a strong relationship between ocean heat and the amount of dissolved gas from the atmosphere that oceans can hold. As the ocean warms, its ability to take in oxygen and carbon dioxide decreases and more of those gases remain in the atmosphere.
  - By observing changes in atmospheric oxygen and carbon dioxide levels—controlling for other factors, like human emissions of greenhouse gases—the scientists were able to estimate how the ocean's heat content had changed over the last few decades.

## Living Planet Report 2018

**World Wildlife Fund (WWF)** has recently released **Living Planet Report 2018** along with **Living Planet Index**.

- The report also explores three other indicators measuring **changes in species distribution, extinction risk and changes in community composition**. All these show severe declines or changes.
- The **Living Planet Index (LPI)** is an indicator of the state of global biodiversity and the health of our planet.
- It was **first published in 1998**.
- LPI tracks the population abundance of thousands of mammals, birds, fish, reptiles, and amphibians around the world.

### Key Findings of Report

- **Populations crashing (In the period of 1970-2014)**
  - The main reasons for biodiversity decline continue to be the overexploitation of species, agriculture, and land conversion.
  - 60% Loss of vertebrates (animals with a backbone).
  - 80% decline in freshwater fauna population.
  - 90% loss of wildlife in Latin America, which is the worst-hit region.
- **Species disappearing**
  - The index of extinction risk for five major groups birds, mammals, amphibians, corals and an ancient family of plants called cycads shows an accelerating fall.
- **Boundaries breached**
  - In 2009, scientists weighed the impact of humanity's expanding appetites on nine processes known as Earth systems within nature. Each has a critical threshold, the upper limit of a "**safe operating space**" for human species.
  - The critical threshold for climate change is global warming of 1.5 degrees Celsius.
  - So far, humans have clearly breached two of these planetary boundaries: species loss, and imbalances in Earth's natural cycles of nitrogen and phosphorous (mainly due to fertilizer use).
- **Forests shrinking**
  - Nearly 20% of the Amazon rainforest, the world's largest, has disappeared in five decades. Tropical deforestation continues unabated, mainly to make way for soybeans, palm oil, and cattle.
- **Oceans depleted**
  - Plastic pollution has been detected in all major marine environments worldwide, from shorelines and surface waters down to the deepest parts of the ocean, including the bottom of the Mariana Trench.
- Freshwater habitats, such as lakes, rivers, and wetlands, are most threatened.

Note:

- These are strongly affected by a range of factors including habitat modification, fragmentation and destruction; invasive species; overfishing; pollution; disease; and climate change.
- Since 1950, humans have extracted six billion tonnes of fish, crustaceans, clams, squids and other edible sea creatures.
- Climate change and pollution have killed half of the world's shallow-water coral reefs, which supports more than a quarter of marine life.
- Coastal mangrove forests, which protect against storm surges made worse by rising seas, have also declined by up to half over the last 50 years.

### **Way Forward**

- With two key global policy processes underway – the **setting of new post-2020 targets for the Convention on Biological Diversity** and the **Sustainable Development Goals** – there is currently a unique window of opportunity to reverse the trend.

## **Net Zero Energy Buildings**

The **Indian Green Building Council (IGBC)** has come out with **Net Zero Energy Buildings rating system** in collaboration with the **World Green Building Council** and the **United States Agency for International Development (USAID)**.

- IGBC also launched '**Green Building Rating System for Hill Habitats**' intended for hill cities, differentiating the sustainability needs of urban development in hills as compared to cities in the plains.
- The theme for **Green Building Congress 2018** was 'Green Built Environment for People & the Planet'.
- IGBC plans to promote the concept of '**Net Zero**' in India. Under this initiative, the focus is on reducing the annual energy consumption by 40-50% with respect to national baseline and cut down energy cost by about 30 per cent.
- The rating system launched during the IGBC's 16th Green building Congress 2018 seeks to complement the National Mission for Enhanced Energy Efficiency and the National Solar Mission.

### **Net Zero Energy Buildings (NZE)**

- A net-zero energy building is one that relies on renewable sources to produce as much energy as it uses, usually as measured over the course of a year.
- Homes and other structures that create almost as much energy as they use are sometimes called near-zero energy buildings.
- It is also possible for a building to produce an energy surplus, sending excess back to the electrical grid.
- Net-zero energy buildings start with energy-conscious design. Many features work without an energy source. For example:
  - In cold climates, south-facing buildings with large expanses of windows on that side can produce heat through passive solar gain.
  - On the cold north side of the building, smaller windows can angle to wider openings, permitting more light while limiting heat loss.
  - In warmer seasons, passive ventilation systems can pull cool air up from the lower levels and vent it through the building's highest point.
  - Rooftop systems can collect rainwater to reduce usage of treated water.
- Solar panels, heat recovery systems, geothermal heating and wind turbines are among the other technologies used to achieve net-zero status.

#### **Indira Paryavaran Bhavan**

- Indira Paryavaran Bhavan in New Delhi is India's first net zero energy building that has been constructed with the adoption of solar passive design and energy-efficient building materials.

Note:

- It is one of the exemplary projects to be rated under Green Rating for Integrated Habitat Assessment (GRIHA) and has set standards that can be emulated by upcoming buildings.
- The design allows for 75% of natural daylight to be utilised to reduce energy consumption.
- The entire building has an access friendly design for differently-abled persons.
- The building is fully compliant with the requirements of the Energy Conservation Building Code of India (ECBC).
- Total energy savings of about 40% have been achieved through the adoption of energy efficient system of air-conditioning.
- Green materials like fly ash bricks, regional building materials, materials with high recyclable content, high reflectance terrace tiles and rock wool insulation of outer walls have been used.

### ***Need for NZEB along with Green Building***

- Due to increasing urbanisation, it becomes imperative to plan and conceive the cities as green, right from the initial stages.
- While, various amenities like lighting, air conditioning, water heating provide comfort to building occupants, but also consume enormous amount of energy and add to pollution.
- Buildings have enormous impact on environment, human health and economy. The energy used to heat and power our buildings leads to consumption of large amounts of energy, mainly from burning of fossil fuels, oil, natural gases and coal, which generate significant amounts of carbon dioxide, the most widespread greenhouse gas.
- Further, building construction industry produces huge amount of demolition waste and greenhouse gases (35-40%).
- Building green is about creating buildings that optimize on the use of local materials, local ecology and most importantly they are built to reduce power, water and material requirements.
- Such sustainably built green buildings are environmentally responsible and resource-efficient, right from location selection to the demolition after its life cycle ends.
- According to TERI estimates, if all buildings in Indian urban areas were made to adopt green building concepts, India could save more than 8,400 megawatts of power, which is enough to light 550,000 homes a year.

### **Green Building Certifying Agencies**

There are various certifying agencies that help building developers to implement these principles and get green certification. Some of them are:

- LEED-India – Leadership in Energy & Environmental Design (LEED) is an international benchmark for the design, construction and operation of high performance green buildings (provided by IGBC).
- IGBC Ratings – The Indian Green Building Council (IGBC) is a division of the Confederation of Indian Industry that works closely with the government and aims at sustainably built environment.
- BEE-ECBC – The Energy Conservation Building Code (ECBC) was established by the Indian Bureau of Energy Efficiency (BEE) to set energy efficiency standards for design and construction of buildings.
- TERI GRIHA – The Green Rating for Integrated Habitat Assessment (GRIHA) is a national rating system for green buildings that is adopted while designing and evaluating new buildings.

## **Ozone Layer is Recovering**

A UN study 'Scientific Assessment of Ozone Depletion: 2018', has shown that the ozone layer is recovering at a rate of 1-3% per decade.

- The stratospheric ozone layer protects life on earth from harmful UV radiation.
- It prevents damage to the earth's ecosystems and provides protection against skin cancer.
- The study shows that years of dangerous depletion caused by the release of harmful chemicals is being reversed.

Note:

### World Ozone Day

- The theme for World Ozone Day (16 September) 2018: 'Keep Cool and Carry on: Montreal Protocol', is a motivational rallying call urging all of us to carry on with the exemplary work of protecting the ozone layer and the climate under the Montreal Protocol.

### Background

- The **1985 Vienna Convention** for the Protection of the Ozone Layer was an international agreement in which United Nations members recognized the fundamental importance of preventing damage to the stratospheric ozone layer.
- The [1987 Montreal Protocol](#) on Substances that Deplete the Ozone Layer and its succeeding amendments were subsequently negotiated to control the consumption and production of anthropogenic ozone-depleting substances (ODSs) and some hydrofluorocarbons (HFCs).
- Ozone depletion is caused by human-related emissions of ODSs and the subsequent release of reactive halogen gases, especially chlorine and bromine, in the stratosphere.
- The Montreal Protocol's control of ODSs stimulated the development of replacement substances, firstly hydrochlorofluorocarbons (HCFCs) and then HFCs, in a number of industrial sectors. While HFCs have only a minor effect on stratospheric ozone, some HFCs are powerful greenhouse gases (GHGs).
- ODSs include chlorofluorocarbons (CFCs), bromine containing halons and methyl bromide, HCFCs, carbon tetrachloride (CCl<sub>4</sub>), and methyl chloroform.
- These ODSs are long-lived (e.g., CFC-12 has a lifetime greater than 100 years) and are also powerful GHGs.
- The adoption of the [2016 Kigali Amendment](#) to the Montreal Protocol will phase down the production and consumption of some HFCs and avoid much of the projected global increase and associated climate change.

### Findings of the Study

- It found long-term decreases in the atmospheric abundance of controlled ozone-depleting substances and the ongoing recovery of stratospheric ozone.
- It shows that the Antarctic ozone hole is recovering while continuing to occur every year.
- As a result of the Montreal Protocol much more severe ozone depletion in the polar regions has been avoided.
- **The Kigali Amendment is projected to reduce future global average warming in 2100 due to hydrofluorocarbons (HFCs) from a baseline of 0.3–0.5°C to less than 0.1°C.**
- There has been an unexpected increase in global total emissions of **CFC-11**.
- The Antarctic ozone hole is expected to gradually close, returning to 1980 levels in the 2060s.
- At projected rates, Northern Hemisphere and mid-latitude ozone are scheduled to heal completely by the 2030s followed by the Southern Hemisphere in the 2050s and polar regions by 2060.
- The UN had already hailed the success of the Protocol which banned or phased out ozone depleting chemicals, including CFCs once used in refrigerators and spray cans, but the report said it was the first time that there were emerging indications that the Antarctic ozone hole had diminished in size and depth since 2000.

### Conclusion

- For over three decades, the Montreal Protocol has done much more than shrink the ozone hole; it has shown how environmental governance can respond to science, and how countries can come together to address a shared vulnerability.
- The same spirit of common cause and greater leadership to implement the Paris Agreement on climate change is the need of the hour.

Note:

**Kigali Amendment to Montreal Protocol**

- On October 15, 2016, with the United States' leadership, 197 countries adopted an amendment to phase down HFCs under the Montreal Protocol in Kigali, Rwanda.
- The Kigali Amendment aims for the phase-down of hydrofluorocarbons (HFCs) by cutting their production and consumption.
- The goal is to achieve over 80% reduction in HFC consumption by 2047.
- Given their zero impact on the depletion of the ozone layer, HFCs are currently used as replacements of hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) in air conditioning, refrigeration and foam insulation, however they are powerful greenhouse gases.
- **The Kigali Amendment to the Montreal Protocol is legally binding and will come into force from January 1, 2019.**
- Under the amendment:
  - developed countries will reduce HFC consumption beginning in 2019
  - most developing countries will freeze consumption in 2024
  - some developing countries including India with unique circumstances will freeze consumption in 2028.
- The plan also provides financing to certain countries, to help them transition to climate-friendly alternatives.
- With the Kigali Amendment, the Montreal Protocol has become an even more powerful instrument against global warming.

**China Lifts Ban on Trade of Tiger Bones and Rhino Horns**

China has lifted a 25-year old ban on the scientific and medical use of tiger bones and rhinoceros horn.

- According to conservationists, this lifting of ban would have devastating consequences globally for the endangered species.
- Tiger bone and rhino horns are used in Traditional Chinese medicine (TCM) and are used to treat insomnia and gout.

**Background**

- Tiger parts were removed from the official TCM pharmacopoeia, a list regulated by China's health ministry, when the country first banned the trade of tiger parts in 1993.
- In 2010, the World Federation of Chinese Medicine Societies, an international non-profit established in Beijing, urged its members to stop using tiger parts or parts from other endangered wildlife.
- China, under President Xi Jinping, has sought to portray itself as more environment-friendly, passing stricter protections over wildlife and natural resources.
- In 2016, China banned the sale of ivory which was believed to be a cure for everything from cancer to sore throats in order to reduce poaching of elephants.
- However, the more stringent regulations have come into conflict with Chinese medicine diplomacy, an effort to use TCM to expand the country's soft power globally.
- Further, higher living standards have increased Chinese demand for animal parts, valued for their supposed life-extending powers. A recent fervour for ejiao, a "blood-enriching" gelatin made from animal hides, has spurred scrutiny over donkeys, mainly from Africa, slaughtered annually to meet Chinese demand.

**India's Concern**

- Authorities and wildlife conservationists in Assam are concerned about the detrimental effect on the state's one-horned rhino after China has lifted a 25-year-old ban on use and trade of rhino horn and tiger bone-products.

Note:

- According to the latest count, [Kaziranga National Park](#) in Assam has 2,413 one-horned rhinos and in 2018, five rhinos fell to poachers. Rhino horns poached from here will turn up in China's markets as 'legal' products. This is an indirect way to open up markets for poached products.
- This might give a boost to rhino poachers and traffickers of horns, who might attempt a spurt in their activities with the hope of laundering the products as legally acceptable in China.
- Multiple researches and study papers have established that rhino horns poached from Assam land up in China through Myanmar. A report by the International Union for Conservation of Nature (IUCN) in 2017 noted that Myanmar's Shan state was a notorious backdoor wildlife trafficking hub through which rhino horns are taken to China.
- The World Wildlife Fund (WWF), a leading NGO in wildlife conservation and endangered species, has urged China to maintain the ban, adding that the trade will have devastating consequences globally.
- The Convention on International Trade in Endangered Species (CITES) clearly states that tigers should not be bred for trade in their parts and derivatives.

#### **World Wide Fund for Nature (WWF)**

- WWF is an international non-governmental organization founded in 1961, working in the field of wilderness preservation, and the reduction of human impact on the environment.
- Its headquarters is in Gland, Switzerland.
- Its mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.
- The **Living Planet Report** published every two years by WWF is based on a Living Planet Index and ecological footprint calculation.

#### **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

- CITES is an international agreement between governments.
- It was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union).
- **Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.**
- Although CITES is **legally binding on the Parties** but it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.
- The species covered by CITES are listed in three Appendices, according to the degree of protection they need.
- **Appendix I** includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
- **Appendix II** includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.
- **Appendix III** contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.
- A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit.

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## **Tropical Cyclones**

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Recently, both the Bay of Bengal and Arabian Sea experienced number of tropical cyclones which affected the eastern as well as western coasts of India.

Note:



- Both the Bay of Bengal and Arabian Sea experience cyclonic events, however the frequency and intensity of cyclones in the Bay of Bengal is higher. Moreover, nearly 58% of cyclones formed in the Bay of Bengal reach the coast as compared to only 25% of those formed in the Arabian Sea.
- It is very rare that the Arabian Sea and the Bay of Bengal host cyclonic storms. Recently, the cyclonic storms '**TITLI**' over the Bay of Bengal and another cyclonic storm '**LUBAN**' over the Arabian sea developed in the Indian Ocean Region.
- **Cyclone Titli was named by Pakistan, while Luban by Oman.**

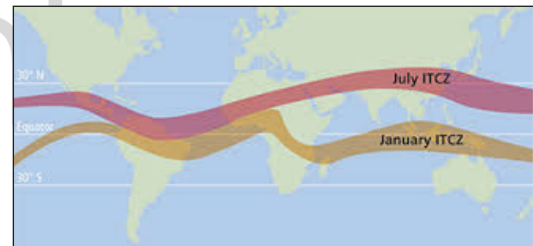
### Cyclone

- Cyclone is the formation of **very low-pressure system** with very **high-speed winds revolving around it**. Factors like wind speed, wind direction, temperature and humidity contribute to the development of cyclones.
- Before cloud formation, water takes up heat from the atmosphere to change into vapour. When water vapour changes back to liquid form as raindrops, this heat is released to the atmosphere.
- The heat released to the atmosphere warms the air around. The air tends to rise and causes a drop in pressure. More air rushes to the centre of the storm. This cycle is repeated.
- Since Hurricanes **derive their energy from heated seawater** which can be prevented by presence of upper-level-winds that disrupt the storm circulation forcing it to lose its strength.

### Factors Affecting Tropical Cyclones

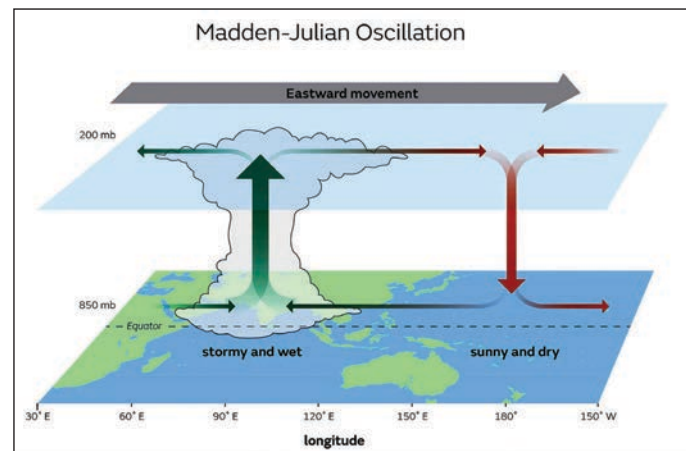
#### ➤ Intertropical Convergence Zone

- The Intertropical Convergence Zone, or ITCZ, is the region that circles the Earth, near the equator, where the **trade winds of the Northern and Southern Hemispheres**, i.e. the northeast trade winds and southeast trade winds **come together**.
- The intense ray and warm water of the equator heat the air in the ITCZ, **raising its humidity and making it buoyant**. Aided by the convergence of the trade winds, the buoyant air rises.
- As the air rises it expands and cools, releasing the accumulated moisture in an almost perpetual series of thunderstorms and heavy rainfall.
- The **ITCZ shifts north and south seasonally with the Sun**. Over the Indian Ocean, it undergoes especially large seasonal shifts of 40°-45° of latitude.
- Seasonal shifts in the location of the ITCZ drastically affects rainfall in many equatorial nations, resulting in the wet and dry seasons of the tropics rather than the cold and warm seasons of higher latitudes.



#### ➤ Madden-Julian Oscillation

- The Madden-Julian Oscillation is a major fluctuation in tropical circulation and rainfall that **moves eastward along the equator**, and circles the entire globe in a span of 30–60 days on an average.
- The MJO, therefore is **not static** and is a moving system of wind, cloud and pressure that brings rain as it circles around the equator.
- The phenomenon takes its name from the two scientists who identified it in 1971 — Roland Madden and Paul Julian.



Note:

- In the **active phase**, **MJO results in more than average rainfall** for that time of the year, while in the **suppressed phase**, **the area receives less than average rainfall**.
- The effect of the MJO is witnessed **mainly in the tropical region**, in the band between 30 degrees North and 30 degrees South of the equator, even though the mid-latitude regions in both hemispheres also feel its impact.

### **Temporal and Spatial Distribution of Cyclone**

- The reason that cyclones such as Titli, Phailin (2013) and Hudhud (2014) typically strike in October is that **wind shear (the difference within wind speeds and direction at two different levels) is low during this time**; low wind shear, when combined with **surface sea temperatures greater than 26°C**, raises the likelihood of cyclones. In monsoon season, **cyclones are rare because of high wind shear**.
- Since sea surface temperatures and humidity both directly correlate with chances of cyclone formation, the **Bay of Bengal is a more likely target because it gets higher rainfall, and because the slow winds around it keep temperatures relatively high**: about 28°C around the year. Warm air currents enhance this surface temperature and aid the formation of cyclones.
- In addition, the Bay receives **higher rainfall and constant inflow of fresh water from the Ganga and Brahmaputra rivers**. This means that the Bay's surface water keeps getting refreshed, making it **impossible for the warm water to mix with the cooler water** below, making it ideal for a depression.
- On the other hand, the **Arabian Sea** receives stronger winds that help dissipate the heat, and the **lack of constant fresh water supply** helps the warm water mix with the cool water, reducing the temperature.
- Due to the **lack of any large landmass between the Pacific and the Bay of Bengal**, cyclonic winds easily move into the Bay of Bengal. Once here, the winds encounter the Western Ghats and the Himalayas, either becoming weak or getting blocked in the Bay, but never reaching the Arabian Sea.
- Adjacent to the **northwest Pacific, which is one of the world's most active basins for typhoons, the Bay of Bengal receives the remnants of major landfalls** in the Philippines, China and South Asia. From these places come low-pressure systems that develop into a monsoon depression or a cyclone.

### **Prediction and Evacuation**

- According to scientists, the **prediction is difficult because of budgetary and meteorological factors**. E.g.:
  - The US has dedicated aircraft that fly directly into the clouds to study moisture levels and gather various data on cyclone profile. India largely relies on satellite images (a top view) that reveal little data on moisture content and intensity. Indian scientists get a more detailed picture only when a cyclone is 300-400 km from the coast, which reduces preparation time.
- **The evacuation exercises are classified into three types:**
  - **Preventive** – In preventive (or horizontal) evacuation, the impact area is meant to be completely evacuated, but this is a measure rarely taken in India because of poor roads and inadequate public transportation. Also, poor people rarely have the resources to find alternative accommodation.
  - **Shelter-in-place evacuation** involves fortification of existing houses and community buildings, which again require financial resources.
  - **In vertical evacuation**, people are directed to specially designed buildings within the impact area.

### **Naming of Cyclones**

- Hurricanes, typhoons, cyclones are all the same, just different names for tropical storms in different parts of the world - **Hurricane in the Atlantic, Typhoon in the Pacific and Cyclone in the Indian Ocean**.
- For the Indian ocean region, the host nations constitute of Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand and the name **governing body is Regional Specialised Meteorological Centre (RSMC)**, New Delhi.

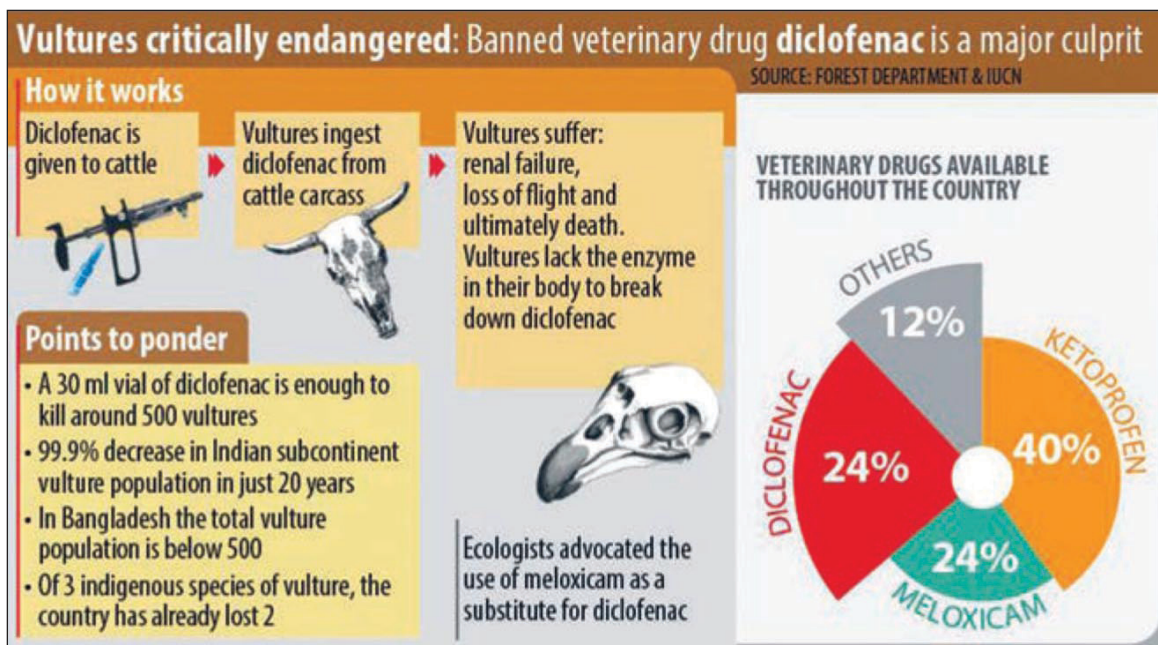
Note:

- Each nation prepares a list of ten names which they think is suitable to be assigned to a cyclone. Out of these, **RSMC**, selects eight names from each country and accordingly prepares eight lists which consist of the names approved by the governing body.
- Since 2004, the cyclones have been named according to the list approved by RSMC.
- The practice of naming storms (tropical cyclones) is to help in the quick identification of storms in warning messages as names are easier to remember and facilitate disaster risk awareness, preparedness, management and reduction.

## India to Release Vultures

In a first, eight captive-reared critically endangered white-backed vultures were released with tracking devices.

- The Vultures were bred in the Jatayu Conservation Breeding Centre and were released in the **Bir Shikargaha Sanctuary** where the Bombay Natural History Society (BNHS) is working to declare it as vulture safe zone, which extends transboundary into Himachal Pradesh.



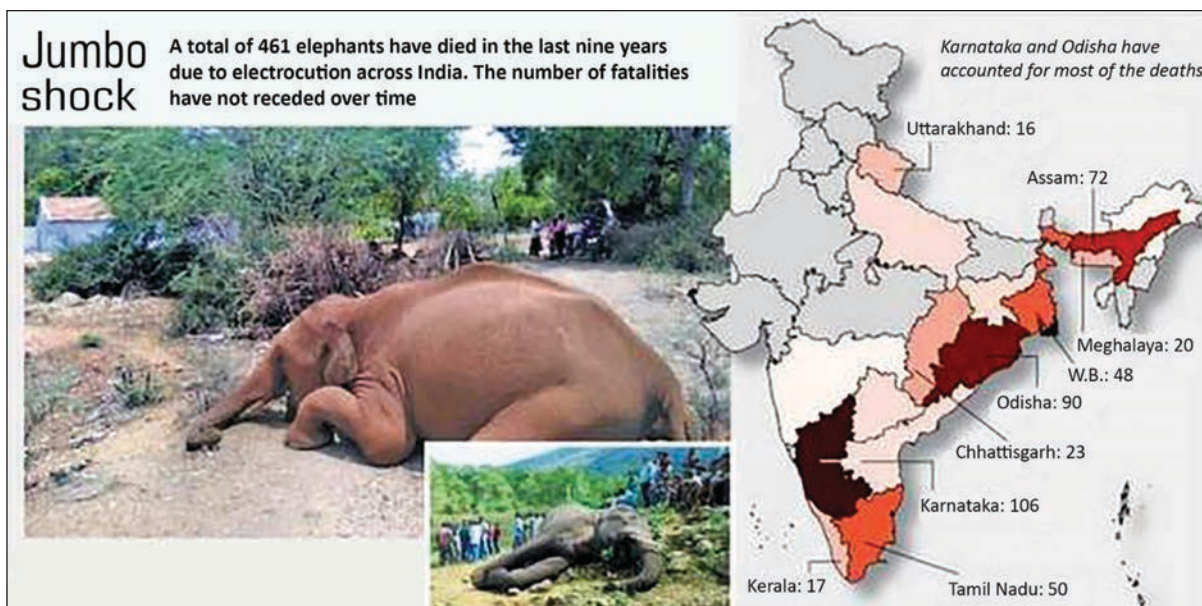
- If there is **no toxicity-related death of these eight birds in two years, then 20-25 birds will be released every year.**
- In the first event of its kind in South Asia, the government of Nepal and national and international conservation organizations released critically endangered white-backed vultures in the wild in November 2017.
- The Jatayu Conservation Breeding Centre is on the edge of the Bir Shikargaha Wildlife Sanctuary.
- **It was set up in 2001 and is a joint project of Haryana and the Bombay Natural History Society (BNHS)** to investigate the massive decline of three critically endangered Gyps species of vultures in India.
- **India is home to nine species of vultures.** Three of these species, the white-backed, Long-billed and slender-billed vultures, underwent catastrophic population declines of greater than 90% in the mid-1990s. The birds are now listed as critically endangered.
- The **reason** for bringing the vultures to the brink of extinction in South Asia mainly to **the extensive use of diclofenac in treating cattle.** Vultures that consumed the carcass of animals treated with diclofenac **died with symptoms of kidney failure.** The Indian government banned its veterinary use in 2006.

Note:

## Electrocution of Elephants

Electrocution of elephants is turning out to be a critical area in the management of India's elephant population as 461 elephants got electrocuted between 2009 and 2017.

- States in the eastern and northeastern region of the country have accounted for most of these deaths. This is because elephants are expanding base all across the country and moving out of forests towards agricultural areas.
- For instance, there were no elephants in Chhattisgarh for centuries, and now [human-elephant conflict](#) is being witnessed there.
- There needs to be greater coordination between the Forest Department and different agencies, including the Power Department, as well as continuous monitoring of electrical wires passing through areas of elephant movement.



- Other measures to check electrocution of Elephants are:
  - stop illegal electrical fencing,
  - have proper guidelines for maintaining the height of high tension electrical wires,
  - proper zone-wise management plan for different elephant landscapes — where to allow elephants and where to restrict their movement.
- According to the all-India synchronised census of elephants in 2017, their population was 27,312. The States with the highest elephant population are Karnataka (6,049), followed by Assam (5,719) and Kerala (3,054).

### Elephants

- There are three subspecies of Asian elephant – the **Indian, Sumatran** and **Sri Lankan**. The Indian has the widest range and accounts for the majority of the remaining elephants on the continent.
- IUCN Red List of threatened species status- African elephants are listed as “vulnerable” and Asian elephants as “endangered”.
- **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** status- Appendix I lists species that are the most endangered among CITES-listed animals and plants and CITES prohibits international trade in specimens of these species.

### Conservation Efforts

- **Project Elephant** launched by the Government of India in the year 1992 as a Centrally Sponsored Scheme.

Note:

- Establishment of **elephant reserves** and adoption of the “**World Elephant Day**” (**August 12**) to help conserve and protect elephants in India and improve their welfare.
- ‘**Gaj Yatra**’ a **nationwide awareness campaign** to highlights the importance of National Heritage Animal (Elephants) and highlight the necessity of securing elephant corridors.
- The **Wildlife Trust of India (WTI)**, had come out with a publication on the right of passage in 101 elephant corridors of the country in 2017, stressed on the need for greater surveillance and protection of elephant corridors.
- The **Monitoring the Killing of Elephants (MIKE)** programme launched in 2003 is an international collaboration that tracks trends in information related to the illegal killing of elephants from across Africa and Asia, to monitor effectiveness of field conservation efforts.

## Palau Becomes First Country to Ban Sunscreen to Save Coral Reefs

- The **Western Pacific nation of Palau** has become the first country to ban many kinds of sunscreen, to protect its coral reefs from chemicals that scientists say cause significant damage.
- **Damage to coral reefs worldwide from climate change has been widely reported**, but according to scientists there is growing evidence that chemicals from sunscreen, which washes off swimmers or enters the ocean through sewer systems, also causes grave harm.
- It has been estimated that 14,000 tonnes of sunscreen ends up in the world’s oceans each year.
- **Studies have shown that chemicals in sunscreen can cause localized [coral bleaching](#) and can disrupt the reproduction of fish by interfering with their hormonal systems.**
- A 2015 study found that oxybenzone (organic compound used in sunscreens) stunts coral growth and is toxic for the algae that live within reefs.

## Nandankanan Zoological Park

The Central Zoo Authority opposed the move to shift a tigress captured from Odisha Satkosia Tiger Reserve to Nandankanan Zoological Park.

- As per the National Zoo Policy, (1998) except for obtaining founder animals for approved breeding programme and infusion of new blood into inbred groups, no zoo shall collect animals from the wild.

### Nandankanan Zoological Park

- Nandankanan, literally meaning The Garden of Heaven, is located near Bhubaneswar, Odisha.
- Unlike other zoos in the country, Nandankanan is built right inside the forest and set in a completely natural environment.
- Nandankanan is among the six participating zoos for the conservation breeding of White-backed vulture.

### Few Unique Features of the Nandankanan Zoological Park

- First zoo in the World to breed White tiger and Melanistic tiger.
  - **White Tiger** is a rare form of Bengal Tiger with a unique (recessive) gene which gives it a white color. A white tiger is not a sub-specie of tiger. White tigers are born only when two bengal tigers that possess a recessive gene (gene that affect the coat color) are bred together.
  - **Melanistic Tigers** are black striped tigers which are born purely due to genetic reasons. Increased development of melanin pigment in the body causes black stripes. Melanistic tigers are rarely found in the world.
- Only conservation breeding centre of Indian Pangolin in the world.

Note:

- Only zoological park in India to become an institutional member of World Association of Zoos and Aquarium (WAZA).
- Gharials have bred for the first time in captivity in the world at Nandankanan Zoological Park in 1980.
- The first zoo in India where **endangered Ratel** was born in captivity.
- The second largest heronry for Open Billed Storks in Odisha.

#### Central Zoo Authority

- Central Zoo Authority is a **statutory body** whose main objective is to enforce minimum standards and norms for upkeep and health care of animals in India zoos.
- Zoos are regulated as per the provisions of Wild Life (Protection) Act, 1972 and are guided by the National Zoo Policy, 1992. The Wild Life Protection was amended in 1991 to establish the Central Zoo Authority.

## Bannerghatta Park Eco-Sensitive Zone Reduced

The Ministry of Environment and Forests (MOEF) had issued a new draft notification for Bannerghatta National Park (BNP), nearly 2.5 years after the first draft notification had declared an ESZ of 268.96 sq.km. In the latest notification, the Eco-Sensitive Zones (ESZs) was reduced to 169 sq.km.

- The **reduction in the ESZ**, which regulates and prohibits certain activities that may destroy the forest, may **open up more areas** in the vicinity **for mining and commercial development** around the rapidly-urbanising Bengaluru city.
- Areas, where ESZ has been cut down drastically, are either being mined or are prospective mining areas. The other sector that will benefit from the cutting down of ESZ is real estate as land has now been freed from environmental constraints along highways close to BNP.

#### Eco-Sensitive Zone (ESZ)

- Eco-Sensitive Zones or Ecologically Fragile Areas are **areas notified by the Ministry of Environment, Forests and Climate Change (MoEFCC)**, Government of India around Protected Areas, National Parks and Wildlife Sanctuaries.
- Activities conducted in eco-sensitive zones are regulated under the **Environment (Protection Act) of 1986** and no polluting industry or mining is allowed to come up in such areas.
- As a general principle width of the eco-sensitive zone could go up to 10 km around a protected area. In case of places with sensitive corridors, connectivity and ecologically important patches, crucial for landscape linkage, even area beyond 10 km width can also be included in the eco-sensitive zone.
- Industries classified as prohibited under guidelines for declaration of eco-sensitive zones around national parks and wildlife sanctuaries are not allowed to operate in these zones.
- The guidelines prohibit activities such as commercial mining, commercial use of firewood and major hydropower projects.
- Activities such as felling of trees, commercial use of natural water resources, including groundwater harvesting and setting up of hotels and resorts, are regulated in these areas.
- The basic aim is to regulate certain activities around National Parks and Wildlife Sanctuaries so as to minimise the negative impacts of such activities on the fragile ecosystem encompassing the protected areas.

#### Significance of ESZ

- In order to preserve certain regions/areas bestowed with unique plants, animals, terrains Government has declared them as national parks, wildlife sanctuaries, etc.
- Further, **to minimise the impact of urbanisation** and other developmental activities, areas adjacent to such protected areas have been declared as Eco-Sensitive Zones.

Note:

- The **National Wildlife Action Plan (NWAP) 2017-2031** endeavours to protect areas outside the protected area network to prevent isolation/destruction of fragments of biodiversity.
- The purpose of declaring eco-sensitive zones around protected areas is for **creating some kind of 'Shock Absorber'** to the protected area. They would also **act as a transition zone** from areas of high protection to areas involving lesser protection.

#### **Bannerghatta National Park**

- The Bannerghatta National Park is located near Bangalore in **Karnataka**.
- Wildlife such as elephants, gaur, leopard, jackal, fox, wild boar, sloth bear, Sambar, Chital, spotted deer, barking deer, common langur, bonnet macaque, porcupine and hares are found in abundance.
- The **Bannerghatta Biological Park** has been an integral part of Bannerghatta National Park and emerged out as an independent establishment during the year 2002.
- In order to meet the growing demand for eco-recreation, eco-tourism and conservation, some area of forest from the National park were set aside to constitute as Biological Park.
- Bannerghatta Biological Park is **one among the few places in the world** where **wildlife is preserved so close to a big city**. It is having different units such as **Zoo, Safari, Butterfly Park and Rescue Center (Conservation of captive animals)**.

### **Indian Star Tortoises**

- Customs officials have seized Indian Star Tortoises which were believed to be smuggled to Kuala Lumpur in Malaysia.
- **Star Tortoises are protected under Schedule IV of Wild Life Protection Act, 1972** and Convention on International Trade in Endangered Species of Wild Fauna and Flora.
- The **International Union for Conservation of Nature (IUCN)** has listed it under the **vulnerable category**.
- Indian star tortoise is **found across the Indian sub-continent**, more specifically, in the central and Southern parts of India, in West Pakistan and in Sri Lanka.
- Indian star tortoise is most commonly found in semi-arid scrub forest, along with thorny and grassland habitats, where there is plenty of vegetation both to hide in and feed upon.
- The tortoises are traded for food, used in traditional medicines and also kept as exotic pets.
- They are in great demand in the international market and command premium prices. Consumer demand is growing among middle-classes of countries like Malaysia, Thailand and Singapore.
- Malaysia is a major hub of growing illegal wildlife trade as the country's law does not allow effective implementation of the CITES.

#### **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

- CITES is an **international agreement between governments**.
- It was drafted as a result of a **resolution adopted in 1963** at a meeting of members of IUCN (The World Conservation Union).
- Its aim is to ensure that **international trade in specimens of wild animals and plants does not threaten their survival**.
- Although CITES is legally binding on the Parties but it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.
- The species covered by CITES are listed in three Appendices, according to the degree of protection they need.
- **Appendix I includes species threatened with extinction**. Trade in specimens of these species is permitted only in exceptional circumstances.

Note:

- **Appendix II includes species not necessarily threatened with extinction**, but in which trade must be controlled in order to avoid utilization incompatible with their survival.
- **Appendix III contains species that are protected in at least one country**, which has asked other CITES Parties for assistance in controlling the trade.
- A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit.

## Monkeypox in Central Africa

- A new and emerging contagious disease threat, caused by monkeypox, has been declared a 'public health threat' in parts of **Central Africa**.
- According to World Health Organisation, monkeypox is a **rare viral zoonotic disease** that occurs primarily in remote parts of central and west Africa, near tropical rainforests.
- The virus is mostly **transmitted to people from various wild animals such as rodents and primates**, but has limited secondary spread through human-to-human transmission.
- There is no specific treatment or vaccine available although prior smallpox vaccination was highly effective in preventing monkeypox as well.
- **Human monkeypox was first identified in humans in 1970 in the Democratic Republic of Congo.**
- In 2017, Nigeria experienced the largest documented outbreak.
- Since May 2018, the virus has been spreading in parts of Africa.
- **It is similar to human smallpox, a disease that was eradicated in 1980. Although monkeypox is much milder than smallpox, it can be fatal.**

## Two New Gecko Species

- The **spot-necked day gecko (Cnemaspis Maculicolis)** and the **Anaimudi day gecko (Cnemaspis Anamudiensis)** are the two new gecko species found in India.
- These two very distinctly-patterned lizards are found only in the higher reaches of the **Agasthyamalai and Annamalai hill ranges in the Western Ghats.**
- Spot-necked day gecko has bluish-white spots in a distinct 'necklace-pattern' on its nape.



## LMDC and BASIC

- India hosted two key meetings in New Delhi with a group of countries called the LMDC (Like Minded Developing Countries-India, China, Venezuela, Iran, etc.) and BASIC (Brazil, South Africa, India, China), ahead of December climate talks in Katowice, Poland.
- BASIC is a group of four large newly industrialized countries – Brazil, South Africa, India and China. It was formed in 2009.
- The Conference of Parties (COP), a league of at least 190 countries signatory to the United Nations Framework Convention on Climate Change (UNFCCC), meets annually to discuss ways to address issues related to climate change.
- The **Katowice talks** will be 24th Conference of the Parties to the United Nations Framework Convention on Climate Change or **COP24**.



Note:



# Security

## Highlights

- India's Nuclear Triad Complete (54)
- Indian Army Inducts Major Artillery Gun Systems (55)
- Global Compact on Migration (COM) (56)

## India's Nuclear Triad Complete

Indigenous ballistic missile nuclear submarine **INS Arihant** achieved a milestone by completing its first deterrence patrol.

- With this, India's **Nuclear Triad** stated in its **Nuclear Doctrine** is now complete.
- With Arihant, India has now entered into a club of nations that have the technological capability to design, build and operate nuclear-powered ballistic missile submarines or ship submersible ballistic nuclear (SSBNs).
- The US, France, Britain, China, and Russia currently have such capabilities.
- The **SSBN is the most dependable platform for a second-strike**. Because they are powered by nuclear reactors, these submarines can stay underwater indefinitely without the enemy detecting it.
- The **second submarine** in the series, **Arighat** is now undergoing sea trials after which it will be inducted into service.
- **Arihant was indigenously made** under the **Advanced Technology Vessel** programme which was **launched in the 1990s**.

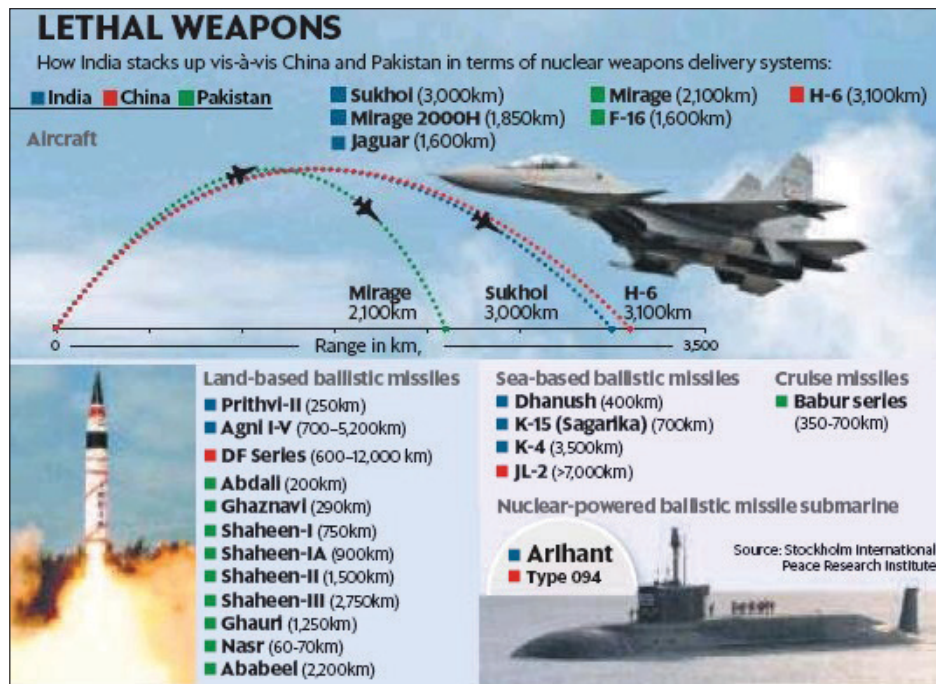
### Deterrence Patrol

- Deterrence Patrol means sailing the deep seas carrying ballistic missiles equipped with nuclear warheads.
- A deterrence patrol is meant to deter an adversary from launching a first nuclear-strike since the SSBN can launch a retaliatory strike within minutes.

### India's Nuclear Doctrine

- India **conducted its first nuclear test in 1974** and the second nuclear test in 1998.
- India **declared herself a nuclear weapon state in 1998** and came forward with **Nuclear Doctrine in 2003**.
- India's Nuclear Doctrine consist of the following major points:
  - India will build and maintain a **credible minimum deterrence**.
  - India will follow a **No First Use policy** i.e. India will use the weapon only in retaliation to a nuclear attack on Indian territory or against Indian forces anywhere.
  - Nuclear retaliation to a first strike will be **massive to inflict unacceptable damage**.
  - Retaliatory attacks will be **authorized only by the civilian political leadership** through the Nuclear Command Authority.
  - Nuclear weapons will **not be used against non-nuclear weapon states**.
  - India can **retaliate with nuclear weapons** in the event of an **attack against on it with biological or chemical weapons**.
  - India is committed to the **goal of a nuclear weapons-free world**, through global, verifiable and non-discriminatory disarmament.

Note:



### Nuclear Triad

- Nuclear triad, a three-sided military-force structure consisting of land-launched nuclear missiles, nuclear-missile-armed submarines, and strategic aircraft with nuclear bombs and missiles.

## Indian Army Inducts Major Artillery Gun Systems

The Indian Army has received the first batch of its new artillery weapons at Devlali Field Firing Ranges in Maharashtra.

- The artillery gun systems include the **M777 American Ultra Light Howitzers**, **K9 Vajra**, and a **'Composite Gun Tractor'** for towing some existing guns in service.
- More than three decades have passed since a modern artillery system was inducted by the army, the last being the Bofors FH77B02 in 1987.

### K9 Vajra

- The K9 VAJRA-T 155mm/ 52 is a tracked self-propelled howitzer, which has its roots in the K9 Thunder, the mainstay of the South Korean Army.
- The Vajra offers a high rate of fire at a long range and is compatible with Indian and standard NATO ammunition.
- The K9 Thunder platform is made of all-welded steel armour protection material.
- The K9 gun has been developed under the **'Buy Global' programme of the Defence Procurement Procedure (DPP)** where foreign companies are allowed to participate —in this case Hanwha Techwin of South Korea is the technology partner of L&T.
- The first 10 K9 Vajra guns have been imported from **South Korea** and have been assembled by **L&T** in India. The balance 90 guns will be largely manufactured in the country.

### M777 Ultra Light Howitzer

- The 155mm, 39 Calibre Ultra light Howitzers have been procured from USA under Government to Government Foreign Military Sales in 2016 and will be assembled by U.S.A.'s BAE Systems in partnership with Mahindra Defence.

Note:

- It is one of the lightest guns that was actively used in Iraq and Afghanistan, the M777 will be deployed on the high altitude borders with China and Pakistan and is especially useful with the Chinook helicopters that can transport them quickly.
- It is smaller and lighter, as it is made of titanium and aluminium alloys and weighs just 4 tonnes. It has effective firing range of 24 km.
- It has been procured through the **Foreign Military Sales (FMS) route under the 'Buy Global' programme of the Defence Procurement Procedure (DPP)**.

### **Significance**

- The artillery has always been a battle winning factor. It possesses the ability to strike deep with great accuracy and cause maximum damage to even well-constructed shelters and bunkers.
- Other than the Bofors inducted in 1984, Indian Army possessed the 130 mm guns and 105 mm guns inducted in the 1960's and 70's. The 130 mm lacked the ability to fire in mountains and the 105 mm lacked range. Both guns fired limited type of shells with lesser level of fragmentation.
- Both M777 and K9 Vajra would enhance firepower in a region where spread of deployment restricts fire support to troops holding ground in the defensive role.
- The procurement of state of the art defence equipments not only enhances the capability of armed forces, but also provides technological know-how to the domestic manufacturers. This in turn will push the indigenous manufacturing of defence equipments.

### **Defence Procurement Procedure**

- The Defence Procurement Procedure (DPP-2016) had replaced the DPP-2013 based on the recommendations of the **Dhirendra Singh Committee** that was appointed in May 2015 to review the DPP, 2013.
- DPP, 2016 focuses to boost the **Make-in-India** initiative of the Government of India, by promoting indigenous design, development and manufacturing of defence equipment, platforms and systems.
- The government has introduced a **newly incorporated procurement** class called **"Buy Indian (IDDM)"**, where IDDM stands for **Indigenous Designed Developed and Manufactured**. This would have the first preference in all acquisitions once the DPP comes into effect.
- Besides this, **preference** has been accorded to **'Buy (Indian)'** and **'Buy and Make (Indian)'** categories of capital acquisition over **'Buy (Global)'** & **'Buy & Make (Global)'** categories.

## **Global Compact on Migration (COM)**

Recently, Austria announced that it would not sign the Global Compact on Migration, criticising its pro-migration approach, which represented a danger to Austria's national security.

### **Background**

- In September 2016, with Europe overwhelmed by waves of migrants from Africa and West Asia, all 193 UN member states adopted [New York Declaration for Refugees and Migrants](#) for a **comprehensive approach to human mobility and enhanced cooperation at the global level** leading to the adoption of a global compact in 2018.
- In December 2017, US pulled out of the negotiations on the compact, stating that its provisions were "inconsistent with US immigration and refugee policies".

### **Global Compact for Migration (GCM)**

- **The Global Compact for Safe, Orderly and Regular Migration is the world's first, intergovernmental non-legally binding negotiated agreement covering all dimensions of international migration in a holistic and comprehensive manner.**

Note:

- It was **finalised under United Nations** auspices on July 2018, and has been formally approved at Marrakech, Morocco, on December, 2018.
- The **compact has 23 objectives that seek to boost cooperation** to manage migration and numerous actions ranging from technical issues like the portability of earnings by migrant workers to reducing the detention of migrants.

### ***Need for GCM***

- The UN estimates that there are **over 258 million migrants** living outside their country of birth today — a figure that is likely to rise with growing population, increasing connectivity and trade, rising inequality, and climate change.
- **Migration provides immense opportunity and benefits – for the migrants, host communities and communities of origin.**
- However, **when poorly regulated it can create significant challenges** which include overwhelming social infrastructures with the unexpected arrival of large numbers of people and the deaths of migrants undertaking dangerous journeys.
- The **global compact** is a significant opportunity to improve the governance on migration, to address the challenges associated with today's migration, and to strengthen the contribution of migrants and migration to sustainable development.



# Art & Culture

## Highlights

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- Veer Surendra Sai (59)

## Dispute Over Restoration of Konark Sun Temple

The 13<sup>th</sup> century Sun Temple at Konark (Odisha) has entered into controversy over allegations that the stone carvings on the outer surface are being replaced with plain blocks of stones causing irreplaceable loss to the uniqueness of the temple.

- As per a regional news report, it is alleged that 40% of the artistic stone carvings of the existing Konark Sun Temple have been replaced by ASI with plain stones.
- It is alleged that the stones used in restoration do not match the quality of the original stone blocks, which are still available nearby.
- UNESCO guidelines on restoration of World Heritage Sites mandate that when an original stone carving is lost, it cannot be replicated. The understanding is that as monuments deteriorate, if one keeps on replicating then nothing original will remain.
- However, ASI has denied the allegations of replacement of artistic stone works at the world heritage monument.

### About Sun Temple at Konark

- The Sun temple at Konark was constructed by the Eastern Ganga ruler Narasimha Deva I in about 1250 A.D.
- The name of Konark temple is an amalgamation of two words-Kona meaning corner and Arka meaning the Sun. That is to say that the Sun god worshipped in Ark Kshetra is called Konark.

### Architecture of the Temple

- The temple was also known as 'BLACK PAGODA' due to its dark colour and used as a navigational landmark by sailors to Odisha.
- It is carefully oriented towards the east so that the first rays of sunrise strikes the principal entrance. The temple is built from Khondalite rocks.
- A masterpiece of creative genius in both conception and realisation, the temple represents a chariot of the Sun God, with twelve pairs of wheels drawn by seven horses evoking its movement across the heavens.
- The original temple had a vimana (the structure over the Garbhagriha or inner sanctum), which was supposedly 229 feet (70 m) tall. But it has fallen off.
- The audience hall (Jagamohana), which is about 128 feet (30 m) tall, still stands and is the principal structure in the surviving ruins.
- Among the structures, which have survived to the current day, are the dance hall (Nata Mandira) and dining hall (Bhoga Mandapa).



Note:

- The sanctum sanctorum and the Jagamohana together stand on a lofty platform, richly ornamented by friezes of elephants, decorative ornaments interspersed with figures sculptures, often of a highly sensuous character.

### **Significance of the Temple**

- **The Sun Temple is directly associated with the idea and belief of the personification of the Sun God, which is represented in the Vedas and classical texts.**
- **Directly and materially linked to the Brahman beliefs, Konark is the invaluable link in the history of the diffusion of the cult of Surya, which originating in Kashmir during the 8<sup>th</sup> century, finally reached the shores of Eastern India.**
- The Sun Temple is the culmination of Kalinga temple architecture, with all its defining elements in complete and perfect form.
- **It was declared a UNESCO world heritage site in 1984.**

#### **Other Important Sun Temples in India**

- Modhera Surya Temple, Gujarat
- Martand Sun Temple, Kashmir
- Katarmal Sun Temple, Uttarakhand
- Dakshinarkaa Temple, Gaya, Bihar
- Bhramanya Temple, Unao, Madhya Pradesh
- Surya Prahaar Temple, Assam
- Suryanar Kovil Temple at Kumbakonam in Tamil Nadu
- Suryanarayana Temple at Arasavalli, Andhra Pradesh

#### **Archaeological Survey of India (ASI)**

- ASI is the premier organization for archaeological research, scientific analysis, excavation of archaeological sites, conservation and preservation of protected monuments.
- It is an attached office under the **Department of Culture (Ministry of Culture)**.
- **ASI was founded in 1861 by Alexander Cunningham** who became its first Director-General.

## **Bandi Chhor Divas**

- **Bandi Chhor Divas is celebrated a day after Deepavali to mark the arrival of the sixth Sikh Guru Hargobind (1595-1644) in Amritsar after his release from Gwalior Fort. The Mughal emperor Jahangir (1605-1627) viewed the buildup of Sikh power as a threat and jailed Guru Hargobind in the Gwalior Fort.**
- Guru Hargobind developed a strong Sikh army and gave the Sikh religion its military character, in accord with the instructions of his father, Guru Arjan, the first Sikh martyr, who had been executed on the order of the Mughal emperor Jahangir.

## **Veer Surendra Sai**

- The Union Cabinet has approved renaming of Jharsuguda Airport, Odisha as “Veer Surendra Sai Airport, Jharsuguda”.
- **Veer Surendra Sai was a well-known freedom fighter of Odisha. He played a significant role in the first Indian struggle for freedom of 1857.**
- **Though the great revolt of 1857 was suppressed elsewhere in India in 1858, it continued till 1862 in the district of Sambalpur in Orissa, largely due to efforts of Veer Surendra Sai.**

Note:

## Dhokra Sculpture

- **Dhokra sculptures, a type of folk art, is an age-old wax-casting technique also known as Lost-wax process.**
- **Dhokra is an alloy of brass, nickel and zinc which gives an antique look.**
- **The oldest specimen using such technique was during Harappan Period (famous Dancing Girl of Mohenjo-daro).**
- Dhokra Tradition is practised in the following states:
  - **Odisha, Madhya Pradesh, Chhattisgarh, Andhra Pradesh, West Bengal, Nagaland (Konyak Naga Tribe).**
- Its motifs are mostly drawn from folk culture which includes animal figures like elephant, horse, gods and goddesses, containers with lids, lamp and lamp stands, intricate designs in shape of trees and branches.

Lost-wax process or the cire-perdue is a method of metal casting in which a molten metal is poured into a mould that has been created by means of a wax model. Once the mould is made, the wax model is melted and drained away. A hollow core is then filled with molten metal which takes the shape of the mould.

## Balti Community

- **The Balti community of Ladakh's Turtuk village, on the India-Pakistan border and enclosed by Karakoram and Hindu Kush ranges, has a distinct culture and a strong sense of self-reliance.**
- The village was part of the **Silk Route** and Balti caravans shepherded Central Asian and European traders through the steep, mountainous land.
- **Even today, the Baltis display their riding skills in polo matches and are hired to provide transport to isolated posts of the Indian army.**
- Turtuk was under Pakistan's control until India took it over after the 1971 war and is geographically part of the Baltistan region bordering Pakistan and China.

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# Social Issues

## Highlights

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- Solutions to Drinking Water Crisis in India: Water ATMs (62)

## Two New Initiatives of Ministry of Human Resource Development

Recently, the Ministry of Human Resource Development launched two new initiatives viz. **Leadership for Academicians Programme (LEAP)** and **Annual Refresher Programme In Teaching (ARPIT)**.

### **Leadership for Academicians Programme (LEAP)**

- It is a three weeks Flagship leadership development training programme (2 weeks domestic and one week foreign training) for second level academic functionaries in public funded higher education institutions. The main objective is to prepare second tier academic heads who are potentially likely to assume leadership roles in the future.
- The programme would provide senior faculty, with high academic credentials, the required leadership and managerial skills including skills of problem-solving, handling stress, team building work, conflict management, developing communication skills, understanding and coping with the complexity and challenges of governance in Higher Education Institutions (HEIs), financial & general administration.
- The implementation of LEAP Programme will be through 15 National Institutional Ranking Framework (NIRF) top ranked Indian Institutions and foreign Universities within the top 100 in the world global rankings.

### **Annual Refresher Programme in Teaching (ARPIT)**

- It is an initiative for online professional development of 15 lakh higher education faculty using the Massive open online courses (MOOCs) platform SWAYAM.

#### **Massive Open Online Course (MOOC)**

- MOOC is a free Web-based distance learning program that is designed for the participation of large numbers of geographically dispersed students.

### **SWAYAM**

- SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged.
- SWAYAM also seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.
- SWAYAM platform is indigenously developed by Ministry of Human Resource Development (MHRD) and All India Council for Technical Education (AICTE) with the help of Microsoft.
- For implementing ARPIT, 75 discipline-specific institutions have been identified and notified as National Resource Centres (NRCs). NRCs are located in a mixed range of institutions such as, Central Universities, IISc, IUCAA, IITs, IISERs, NITs, State Universities. The training materials will be uploaded and made available through SWAYAM. NRCs will also publish the list of the faculty who have been certified.

Note:



## Solutions to Drinking Water Crisis in India: Water ATMs

Recently, [Safe Water Network \(SWN\)](#) has released a report suggesting 'Safe Water Enterprise' as a solution to providing drinking water in Indian cities.

### **Small Water Enterprise**

- **Small water enterprises such as water ATMs and community purification plants can prove to be an alternative solution to the safe drinking water challenge.** Mostly in urban slums where piped water infrastructure is difficult to build, and in rural areas with contaminated water sources.
- According to government data, to reach the government's Har Ghar Jal target of 100% piped water by 2030, almost Rs. 5 lakh crore of infrastructure investment will be required.
- **Water ATM's**
  - The water ATM is a dispensation system, which can be automatic with a coin or smart card, or manual.
- **Community Purification Plant**
  - Unlike a household Reverse Osmosis System, the community purification plants treat water locally and provide clean drinking water to residents.

### **Background**

- According to data from the World Bank:
  - 163 Million Indians lack access to safe drinking water.
  - 210 Million Indians lack access to improved sanitation.
  - 21% of communicable diseases are linked to unsafe water.
  - 500 children under the age of five die from diarrhea each day in India.
  - India ranks a dismal 120 out of 122 nations for its water quality index and 133rd out of 180 nations for its water availability.
- **Nearly 75% of India's surface water is contaminated by human, animal, agricultural and industrial waste, and its groundwater often contains high levels of fluoride and other mineral contaminants.**
- A recent report by the Comptroller and Auditor General of India (CAG) pointed out that only 18% of the rural population has access to potable piped water, failing to meet the 2017 target of 50%.
- **The Asian Development Bank has forecast that by 2030, India will have a water deficit of 50%.**
- Water supply in India has two principal sources, water from rivers and groundwater. Both the rivers and [groundwater sources are shrinking](#) mainly because of pollution, overpopulation, and industrialization.

### **National Rural Drinking Water Program (NRDWP)**

- The National Rural Drinking Water Programme (NRDWP) was launched in April 2009 by modifying the Accelerated Rural Water Supply Programme (ARWSP) and subsuming earlier sub-missions/schemes.
- The objective of the Programme is to provide safe and adequate water for drinking, cooking and other domestic needs to every rural person on a sustainable basis.
- NRDWP is a Centrally Sponsored Scheme with 50:50 fund sharing between the Centre and the States.
- A sub-programme under NRDWP called National Water Quality Sub-Mission (NWQSM) has been started by the Ministry of Drinking Water and Sanitation in February 2017 to address the urgent need for providing clean drinking water in about 28000 Arsenic & Fluoride affected habitations.
- The NWQSM aims to cover all rural population in Arsenic/Fluoride affected habitations with clean drinking water on a sustainable basis by March 2021.



Note:

# Miscellaneous

## Highlights

- Ayurveda Day (63)
- Bhungroo (63)
- Hima Das : Unicef India's First Youth Ambassador (63)

## Ayurveda Day

- Ayurveda Day is observed on **5<sup>th</sup> November**.
- **Ministry of AYUSH** observes [Ayurveda Day](#) every year on **Dhanvantari Jayanti (Dhanteras)**.

## Bhungroo

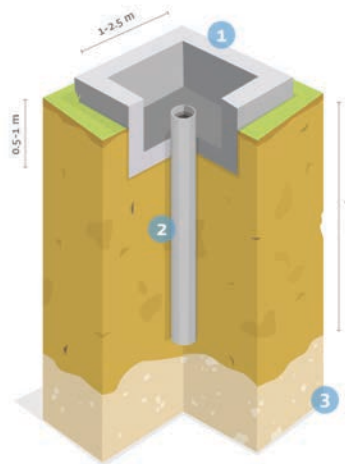
- **Bhungroo is a water management system that injects and stores excess rainfall underground and lifts it out for use in dry spells.**
- Adoption of this technology has decreased salt deposits on soil and increased fresh water supply, saving farmers from drought.

## Hima Das : Unicef India's First Youth Ambassador

- **The United Nations Children's Fund — India (Unicef – India) has appointed Asian Games gold-medalist sprinter Hima Das as the country's first ever youth ambassador.**
- The name of the woman **athlete from Assam** (nicknamed Dhing Express) was announced by the world organisation on the Children's Day celebrated on November 14 commemorating the country's first Prime Minister Jawaharlal Nehru's birthday.
- UNICEF India works with central government to ensure that each child born in this country gets the best start in life, thrives and develops to his or her full potential.

### The Bhungroo

The technology is open source so that it is scalable in other places. Bhungroo does have a non-negotiable principle, however—that the technology should be used by poor people only.



1. The land on which the unit is made has a slight tilt or gradient to ensure drainage through the pit. The cemented area of the pit is usually 1 to 2.5 metres in width and breadth, and 0.5 to 1 metres in depth.
2. The pipe has a diameter of 10 to 15 centimeters, and goes to a depth of 30 and 100 metres.
3. The subsoil strata must have a coarse sand soil layer within a depth of 120 metres.

For more information, visit [Momentum4Change.org](http://Momentum4Change.org)

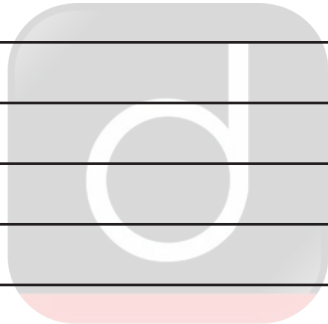


Key Points

Details

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Summary

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