

WEEKLY CURRENT AFFAIRS MAGAZINE for

**U.P.S.C.- C.S.E.**

**OCTOBER-VOL-II-2022**

8 October to 15 October



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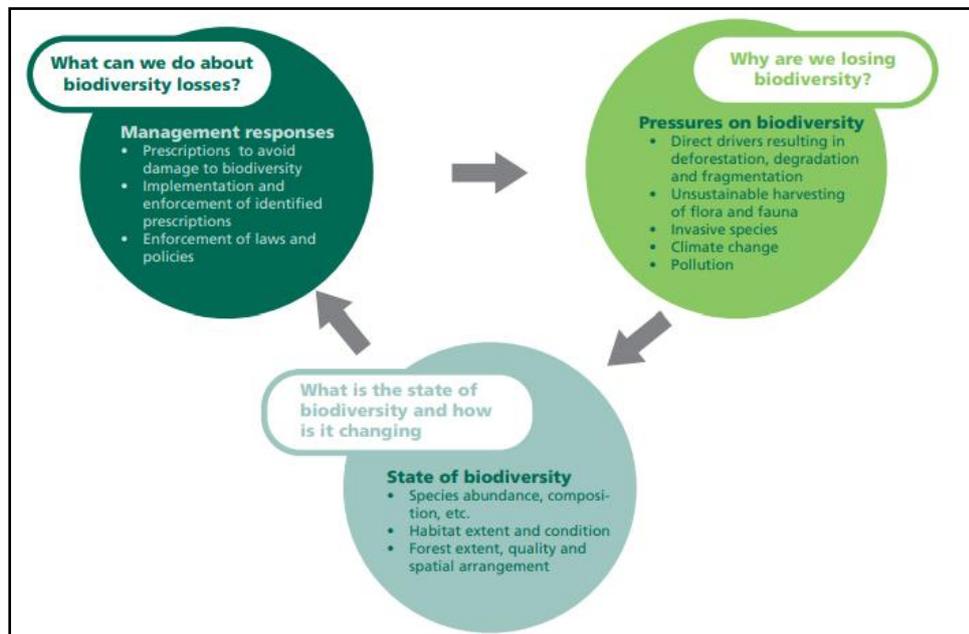
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## Topic 1. SUSTAINABLE FORESTRY PARAMOUNT FOR BIODIVERSITY CONSERVATION: FAO

*Important for subject: Environment*



For biodiversity conservation, forests that are managed solely for their economic benefit are crucial.

- It is crucial to integrate biodiversity into these 'production forests.
- The United Nations Strategic Plan for Forests 2017-2030 explicitly recognizes the importance of forests for maintaining biodiversity.
- The Strategy on Mainstreaming Biodiversity in Agricultural Sectors was adopted by FAO in 2019.
- Forests make up 31 percent of the earth's surface and store 296 gigatonnes carbon. They also house most of the terrestrial biodiversity in the world.

### **What is Mainstreaming Biodiversity?**

- Mainstreaming biodiversity is the process of incorporating biodiversity considerations into strategies, policies, and practices of key public or private actors in order to encourage conservation and sustainable use.
- Forest policies, programs, projects, and investments that have a positive effect on biodiversity at all levels (ecosystem, species, and genetic) must be prioritized in order to mainstream biodiversity in forestry.

- Integrating biodiversity into the forest sector requires multistakeholder approaches, that transcend sectors.
- The biggest obstacles to biodiversity conservation in protected areas are poor governance and law enforcement.

### **FAO's report Mainstreaming Biodiversity -**

- FAO's forestry statutory entity, Committee on Forestry (COFO), asked FAO to examine biodiversity mainstreaming in forestry at its 25th session in 2020.
- It asked the UN to share best practices for solutions that balance conservation with sustainable use of forest biodiversity.
- The report was published at the 8th World Forest Week, which took place from October 3-7 in Rome, Italy.
- It was created through a partnership between FAO and CIFOR, the non-profit Center for International Forestry Research, which is the main centre for the CGIAR Research Program for Forests, Trees and Agroforestry.
- CGIAR is an international partnership that brings together international organizations involved in research on food security.
- Forests around the world provide habitats to about 80 percent of amphibian species, 75% of bird species, and 68% of mammal species.
- A further 60 percent of all vascular plant species are found in tropical forests.

### **Report findings:**

- This report evaluated tools and methods to ensure that the conservation and sustainable use biodiversity is integrated into strategy, management, and forest policy.
- The report examined lessons learned and identified best practices through a series of case studies involving the Democratic Republic of the Congo (Ethiopia), Japan, Malaysia and Peru as well as the United Kingdom of Great Britain & Northern Ireland (a case from Scotland).
- These country case studies demonstrated that there has been much progress towards mainstreaming biodiversity in forest management.
- However, the global decline in biodiversity is not stopping.
- The report states that in the Democratic Republic of the Congo, the participation of

Indigenous Peoples, local communities, and the private sector should be a priority. Laws, policies, and national strategies for biodiversity conservation must also take into consideration forests outside of protected areas.

- The study revealed that Ethiopia has some significant gaps in documentation, including a lack of documentation about species that need to be protected, and inadequate definitions of institutional mandates, instruments for cross-sectoral cooperation, and that there is no way to know if these are actually documented.

### **Recommendations for reports**

- According to the report, forests and their biodiversity are losing at alarming rates.
- The greatest cause of biodiversity loss is deforestation, which results in the loss of around 10 million hectares each year. This is primarily due to agricultural expansion.
- Other threats include timber over-harvesting, invasive species and climate change.
- The report suggested a variety of actions and measures that governments and development partners could take to promote the inclusion of biodiversity in forest management.
- Stopping and reverse deforestation. Combating illegal and unregulated activities in the forest
- Recognizing the forest tenure of Indigenous Peoples, and local communities
- Preventing conversion of natural forests to monospecific forest plantations
- Sustainable management of harvested species
- Management and control of invasive and excessively abundant species
- To increase biodiversity conservation, we must harness global momentum for restoration
- Multisectoral Perspective
- Economic incentives
- Facilitating market-based instrumentation
- Invest in knowledge and capacity building

## **Topic 2. ENVIRONMENTAL PATH CLEARED FOR GREAT NICOBAR MEGA PROJECT**

*Important for subject: Environment*

The Indian Ministry of Environment, Forest and Climate Change's expert appraisal committee recommended that the Coastal Regulation Zone (CRZ), and environmental clearance be granted for a large infrastructure and tourism project on Great Nicobar Island.

- This will allow for the diversion of 15% of the island's forest area and the cutting of 8.52 lakh (8522,000) trees in stages.
- Under a vision plan formulated by the NITI Aayog, Andaman and Nicobar Islands Integrated Development Corporation is leading the project.
- The majority of the island is covered in forests and has never seen large-scale human activity.

### **Project and its timeline:**

- The Rs. 75,000 crore (Rs. 75,000 crore (Rs.
- The Indian Navy would operate the airport.
- The first phase would be extended to 2036 (from 2020), while the second phase would run from 2037 to 2051. However, the container terminal would go into operation around 2027-28.
- Development will take place on 166 square kilometers.

### **Conditions**

- The EAC has set specific conditions for wildlife conservation, tribal welfare, and mangrove restoration.
- The committee observed that three new wildlife sanctuary areas had been established at Little Nicobar (14 kilometres for leatherback turtles), Menchal (1 kilometre for megapodes), and Meroe Islands (2 kilometres for corals).
- Biodiversity on the Island
- More than 95% of the island's 911-kilometre-long Great Nicobar Island are national parks, protected forests, and tribal reserve areas.
- The Great Nicobar Biosphere Reserve encompasses a large portion of this largely

unspoiled island.

- Two national parks are included in the reserve. The reserve includes two national parks: one is Campbell Bay National Park and the other is Galathea National Park.
- Nearly all of the island is covered by dense forests and vegetation.
- Is the Island at risk from the proposed project?
- The project will be implemented on a long stretch of the island that is dominated by forests. Surrounding 122 kilometres of the project's 166 kilometres are covered by forests. Nearly 9 kilometres are considered forests.
- The northern tip is located within the biosphere reserves, so approximately 71 square kilometers of biosphere reserve would have to be reserved for it.
- Galathea Bay was once a key nesting area for leatherback turtles and is now home to the Galathea Bay wildlife sanctuary.
- It was removed from its protected status and denotified.
- This area will be home to the ICTT and international airport, which are the two central components of this project.
- The buffer zone will not be used for the Galathea National Park that is adjacent to the project area.
- Although a large portion of the park's immediate area has been designated for eco-tourism, where major construction projects are not allowed, the park will still be subject to the effects of large-scale construction and drilling activity. The port and airport will need to reclaim approximately 421 hectares (4.21 km<sup>2</sup>).

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### **Topic 3. LEGACY WASTE: DID MUSTARD GAS FROM WORLD WARS DUMPED IN BALTIC CAUSE NORD STREAM EXPLOSIONS**

*Important for subject: Environment*

After explosions in the area, the Nord Stream pipelines that carry gas from Russia to Germany via the Baltic sprung a leak on September 26, 2022.

- The methane plume, which is a powerful greenhouse gas, was then spread throughout northern Europe, before eventually dissipating.
- The leak was deemed the largest methane emission by the United Nations Environment Programme.

### The extent of explosion-

- According to Sweden, Denmark, and other countries, the explosions that caused the ruptures in the underwater gas pipelines were equal to several hundred kilograms TNT. This is the equivalent to many conventional aerial bombs during the last World War.
- The connection to World War I and II.
- The explosions occurred to the northeastern of Bornholm, where an estimated 30,000-35,000 tons of chemical weapons from World War I or II were dumped between August 1945 and July 1965.
- Germany did not use these chemicals.
- In post-World War II Germany, these chemicals were also used to make raw materials and other additives.
- The dumping was later carried out by the German Democratic Republic (or East Germany).

### These chemicals contain:

- These chemicals and raw materials include vesicants and irritants as well as lachrymogens and vomitants.
- The site also contained infamous and deadly products that were developed by German chemists, such as tabun and mustard gas.

### Burns in the Baltic

- During the preparation works for Nord Stream 1 at the Danish Exclusive
- **Economic Zone:** Four KC 250 mustard gas explosives were found between seven and seventeen metres from the route.
- Before being laid in autumn-winter 2010, they were checked.
- Because they didn't consider the bombs to be a threat, the Danish authorities let them remain where they were.
- After the installation of the pipeline, they were again inspected. According to reports, no further damage was observed.
- However, mustard gas has caused severe burns to people living in the region.
- The chemicals have had a severe impact on marine life around Bornholm. Between

1994 and 2012 HELCOM (Baltic Marine Environment Protection Commission), reported that approximately 4 tonnes of mustard gas lumps were brought up to the surface by fishing equipment in the Bornholm region.

- After rescuing a barrel of mustard gas from the sea, 102 children were burned to death on Darlowo beach, Poland.
- Between 1968 and 1984, 196 tonnes of fish that had been contaminated by mustard gas particles in nets used by Danish fishermen were removed from the market and destroyed.

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#### **Topic 4. UNDER CHEETAH DEAL, SOUGHT INDIA'S SUPPORT ON LIFTING THE IVORY BAN: NAMIBIA**

##### ***Important for subject: Environment***

India signed a deal with Namibia to fly in cheetahs. It also agreed to support "sustainable utilisation and management of diversity" through bilateral cooperation at international forums, including meetings of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES).

- Although the term "ivory" is not mentioned, Namibia has already asked India for support under its commitment to "sustainable management" at CITES. This was in response to its longstanding proposal to allow ivory derived from the elephants of Namibia and Botswana, South Africa, Zimbabwe, and South Africa.

##### **India's standpoint-**

- Since the 1980s, India has supported a total ban of the ivory trade.
- Namibia seeks India's support at the 19th meeting of the CITES Conference of the Parties, (CoP19), due in Panamanext Month.
- India opposed the removal of the ban on international ivory trade, despite holding an ivory stockpile worth more than \$250 million that is stored in various forest departments across the country.
- India and Kenya jointly sponsored the proposal in CoP-12 2002 to include the southern African elephants in Appendix I.
- Namibia's position on ivory trade
- India's Environment Minister, Netumbo Nandi Ndaitwah, signed the agreement on "Wildlife Conservation & Sustainable Biodiversity Utilisation", July 20, 2022. This

was to bring home cheetahs.

- Namibia, Botswana and South Africa, along with Zimbabwe, argue that their elephant populations are recovering and that their ivory stockpiles, if sold abroad, can provide much-needed income for elephant conservation and incentive communities.
- The key points of the India-Namibia Agreement-

**It has been revealed that the India-Namibia agreement's key areas of cooperation are:**

- Conservation of biodiversity with a special focus on the restoration and conservation of cheetahs within their former range areas through the sharing of knowledge and capacities.
- Sharing good practices in technology applications, mechanisms for livelihood generation for local communities and sustainable management of biodiversity are key to wildlife conservation and sustainable biodiversity utilization.
- These spheres can be supported at international forums, including meetings of the CITES.
- Collaboration in the areas of climate change and environmental governance, as well as pollution and waste management.
- Training Namibian personnel in population estimation and smart patrol techniques. Facilitate surveillance and monitoring equipment.
- Two seats for Namibia in the Wildlife Institute of India Dehradun.
- The five-year agreement is legally binding for both parties.
- It will automatically renew for subsequent five-year periods, unless either party gives notice within six months.
- An agreement can be modified mutually by giving a notice of three months.
- CITES stands for Convention on International Trade in Endangered Species
- According to CITES, elephant poaching rose sharply after ivory trade was permitted by the CITES between 1999 and 2008.
- In 1989, the ivory trade was banned worldwide and all African elephants were added to CITES Appendix I.
- In 1997, the populations of Botswana, Zimbabwe and Namibia were moved to Appendix II. South Africa's was added in 2000.
- Trade is not allowed for species that are listed in CITES Appendix I, but is strictly

regulated for those that are under Appendix II.

- CITES granted Namibia permission to sell ivory from ivory stocks resulting from natural elephant deaths or poachers' seizures in 1999 and 2008.
- Eventually, Namibia's proposal to allow regular controlled ivory trade by delisting elephant populations from the four countries of CITES Appendix 2 was rejected at the CoP17 (2016) & CoP18 (2018).
- Living Planet Report 2022: Wildlife population declines by 69% over 50 years

### Report findings

- According to the most recent Living Planet Report from World Wide Fund for Nature (WWF), there has been a 69% decline in wildlife populations across the globe of mammals, birds and amphibians in the past 50 years.
- Annual report for the 1st time links climate change to biodiversity loss
- Because they are interconnected, it is important to treat biodiversity loss as well as climate crisis as one issue.
- The Caribbean and Latin America had the highest drop (94%).
- Africa saw a 66% drop in wildlife population between 1970-2018, while the Asia Pacific experienced a 55% decline.
- Globally, freshwater species populations fell by 83%. This confirms that our planet is in a "biodiversity crisis"
- About half of all threats to monitored migratory fish species were caused by habitat loss or barriers to migration routes.
- At 0.13 percent per year, mangroves are still being lost to aquaculture and agriculture.
- Overexploitation and pollution are two of the main causes of degrading mangroves.
- Mangrove destruction is a loss in habitat for biodiversity, and a loss in ecosystem services for coastal communities.
- The analysis revealed that around 137 kilometres of Sundarbans mangrove forests in India and Bangladesh have been destroyed since 1985.
- This has reduced land and ecosystem services for many 10 million people who live there.

### Key threats

- WWF identified six major threats to biodiversity -- pollution, hunting, logging and pollution -- to highlight "threat hotspots" for terrestrial vertebrates.
- Living Planet Report
- The WWF publishes it every two years.
- It provides a complete analysis of global biodiversity trends and planet health.
- Through the Living Planet Index (LPI), the report provides a comprehensive overview on the current state of the natural environment.
- Living Planet Index (LPI).
- The Living Planet Index (LPI) showed that the number of vertebrate species in the world's tropical regions is falling at an alarming rate. It included about 32,000 of 5,230 species.
- It measures the global biological diversity by comparing the population trends of vertebrate species living in terrestrial, freshwater, and marine habitats.

#### **Ecological footprint:**

- The ecological footprint refers to the area that is biologically productive and can provide food for all people, including fruits and vegetables, timber, fish, fibres, carbon dioxide absorption from fossil fuels and space for buildings and roads.
- Global Footprint Network, an independent think tank, is currently developing it.
- Ecological Footprint also includes the GHG footprint as well as carbon footprint.
- The 2014 Ecological Footprint of Humanity was 7.
- This means that humanity's needs were 1.7 times greater than the Earth's ecosystems renewal.
- According to the National Footprints Accounts (2014) India has a bio-capacity approximately 0.45 gha/person.
- This means that India is either a 'biocapacity debtor or an ecologically deficient country' with a 148% higher demand for its natural resources than it supplies.

## Topic 5. WHAT DOES THE DNA SAY ABOUT THE FUTURE OF THE RHINO IN INDIA?

*Important for subject: Environment*



The rhinoceros unicornis (one-horned rhino) is now found in India and Nepal. It has a population of 4,034 individuals.

- The rhino population has been rehabilitated by the Indian and Nepali governments and other stakeholders. Conservation laws are also being enforced.
- India: Evolution of Rhinos
- It was also discovered that the most recent ancestor of this species arrived in India around one million years ago via northeast India.
- They then moved inland along the Siwalik range, through the Siva–Malayan route, and eventually reached their destination at the Holocene climate period (approx. 19,000 to 5,000 years ago)
- The rhino population grew in Nepal and the northern parts of India.
- Slowly, it was restricted to the grasslands along the Ganga-Indus and Brahmaputra floodplains.
- Translocation success but skewed distribution
- One-horned rhinos were once widespread in the Brahmaputra–Ganges Indus plains.
- It also spread further up the Himalayan foothills.
- However, currently it can only be found in 11 locations in India and Nepal, covering an area of approximately 4000 sq. km.

- This shows that translocation is an effective and safe conservation tool to restore rhino populations.
- About 65% of the global one-horned rhino population is found in Kaziranga National Park, India, and 17% in Chitwan National Park in Nepal.
- India adopted the National Rhino Conservation Strategy in 2019 to increase rhino distribution by 5% before 2030.
- It can be argued that translocation could play a crucial role in the survival of this species, based on the successes to date.
- Understanding the genetic status of rhino populations in each country is crucial to the survival of the species.

### **DNA Study of Indian Rhinos:**

- Under the RhoDIS (Rhino DNA Index System India) program, the Ministry of Environment, Forest and Climate Change has been studying the DNA of Indian rhinos.
- It is implemented by WF India, Wildlife Institute of India, and other states that have rhinos.
- These findings revealed that the Indian rhino population has three evolutionary significant units, which correspond to the Assam, West Bengal, and Uttar Pradesh populations.
- This conclusion was based on analysis of whole mitochondrial genome data. Long-term survival and health are dependent on genetic variation.
- We also examined the genetic variation in each of the three genetically important units during the study on rhino evolution.
- The Assam population has high mitochondrial diversity. However, the Assam population is genetically poor.
- We also analysed the genetic composition of two Indian reintroduced population groups.
- These were the Dudhwa and Manas populations, which were reintroduced in the 1984-85 period.
- Due to the fact that most of the Dudhwa's breeding females were from Chitwan National Park, Nepal, and the dominant male was a Pobitora Wildlife Sanctuary in

Assam, the genetic makeup of the Dudhwa was very poor.

- Because mitochondrial DNA can only be passed from one mother to another, Dudhwa's skewed genetic signature can be attributed solely to the founding population.
- This information can be used to plan future translocations in order to establish new rhino populations, particularly in the context the greater one-horned.
- There is still concern
- Because there is little habitat connectivity, the rhino population in question is scattered and isolated. This makes it difficult for them to exchange genetic information.
- This could prove to be a problem as rhinos, unlike elephants and tigers, are not known for their ability to travel long distances.

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### **Topic 6. WE NEED A FOREST-LED COP27**

#### ***Important for subject: Environment***

According to a study published in Science, earth could have reached five tipping points because of the 1.1 degree Celsius global warming caused by human activity to date.

- While technology has become a survival strategy, the level of techno-determinism in the strategy to reverse climate changes is alarming.
- The history of technological innovation is on our side.
- Norman Borlaug was one example. He introduced the Green Revolution which fed billions and increased yields.
- Technological optimism
- The COP26 conference in Glasgow also fueled technological optimism.
- COP26 participants observed that each technological solution relies on three resources.
- nelectricity is a non-emitting electric power that is generated from hydropower, renewables, or nuclear fission.
- Carbon capture and Storage (CCS).

#### **Biomass**

- 2050 will not be enough to meet the entire demand for resources as per the plans

discussed at COP26.

- We currently have 4kWh/day nelectricity per household. However, the COP26 plans call for 32 (range 16 to 48).
- We currently have 6kg CCS per person/year, but the COP26 plans call for 3,600 (range 1,400-5700).
- Each person consumes 100kg of plant-based foods each year. However, to produce enough bio-kerosene for today's flying levels, 200kg additional harvest is required.
- It is unlikely that we will have enough of these to meet the requirements of the plans discussed at the COP26.
- Tech-centric mitigation conversations have left forest economies and important for subjects like conservation and forests, which can be the best means of carbon removal, at the ideological fringes.
- Although there was a deforestation-ending climate pledge at COP26 the nature of that pledge was not clear.
- It is possible for countries to easily achieve their "net zero deforestation" goals.
- Monoculture farming. Naturally preserved forests are 40 percent more productive than those that have been planted.
- Climate solutions that are multi-faceted and interconnected.
- Here, forests shine too. This is best illustrated by the intersection of climate change and biodiversity crises.
- This intersection is home to forests, which house 80% of terrestrial wildlife.
- The forest absorbs 7.6 billion tonnes of CO<sub>2</sub> per year.
- New research has shown that the earth's biophysical features have a tendency of cooling it by 0.5% more.
- Together with other nature-based solutions to climate change, the conservation of forests can contribute up to 37% to emissions reductions.
- According to the Dasgupta Review, Independent Review on the Economics of Biodiversity, green infrastructure (salt marshes or mangroves), is 2-5 times more affordable than grey infrastructure (breakwaters).
- Another study found that the annual carbon dioxide emissions from the loss of tropical tree cover between 2015 and 2017 was equivalent to 4.8 million tonnes.
- This creates more greenhouse gases each year than 85,000,000 cars did in their lifetime.

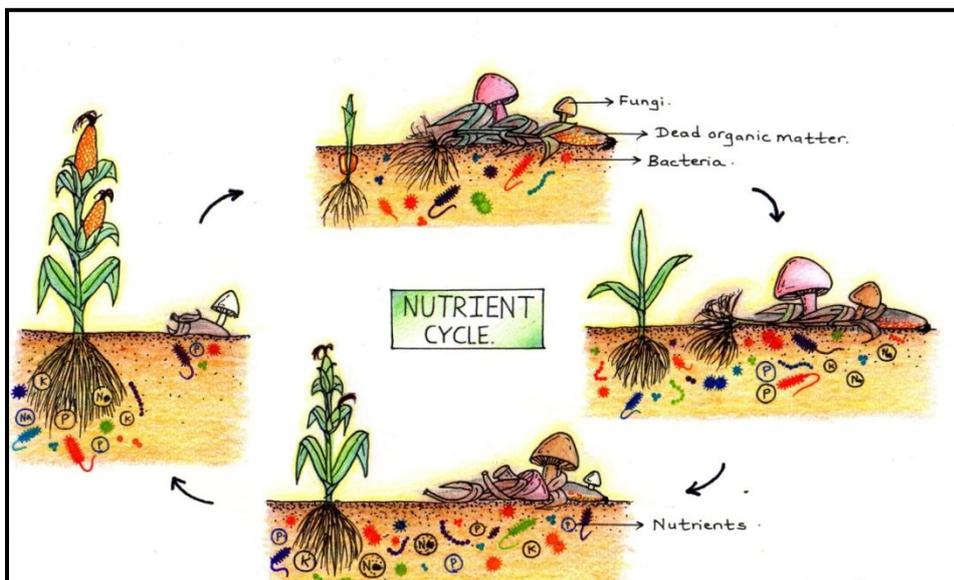
- 2019 saw 34% of net anthropogenic greenhouse gases emissions come from the energy supply industry, 24% from industries, 22% from agriculture and forestry, and 15% from transport.

### Conservation of natural sinks:

- According to the IPCC Land Report, land is a significant CO<sub>2</sub> sink.
- A growing body of evidence shows that natural sinks can be used to reduce the need for removal, improve biodiversity protection and restore ecosystems.
- Conserving the earth's cyclical processes through protection of terrestrial ecosystems, natural sinks, and trans-formative agriculture practices under the leadership and guidance of indigenous peoples and local communities is a more equitable and cost-effective way to address the climate crisis than what is currently being done.
- **About the COP27 UNFCCC-**
- **When: 7-18 Nov 2022**
- **Sharm El-Sheikh, South Sinai (Egypt)**

## Topic 7. ORGANIC FERTILISER: A MUST FOR THE NEXT GREEN REVOLUTION

*Important for subject: Environment*



India's economic reforms have led to a remarkable growth story that has made it one of the most dynamic economies in the world.

- The central government announced schemes in the amount of millions for different

sectors.

- Similar steps are needed for the organic fertilizer industry. India has the potential of becoming the global hub of organic fertiliser manufacturing.

### **Organic fertilizer:**

- According to government regulations, organic fertiliser can be divided into two categories: bio-fertilizer and organic manure.
- Bio-fertilizers are made up of living microorganisms that are attached to liquid or solid carriers.
- They are useful for cultivable soil as they increase the productivity of soils and crops.
- Organic manure is a partially decomposed organic material such as digestate from a Biogas Plant, compost, and vermicompost.
- This provides nutrients to soil/crops, and improves yield.

### **Production:**

- Based on estimates of India's municipal solid waste (MSW) generation, based upon data from the National Solid Waste Association of India or the Central Pollution Control Board, India produces more than 150,000 tonnes.
- With a collection efficiency of 81% and an organic portion of MSW at 50%, India's total organic waste is approximately 65,000 tonnes each day.
- Even if only half of it is diverted to biogas, the government can still leverage this by reducing imports of fertilisers and fossil fuels.
- Demand for Organic Fertilizers is high
- In recent years, organic farming has seen a rise in popularity on the domestic market.
- Indian organic packaged foods will grow at 17% annually and reach Rs 871 millions by 2021.
- This sector has seen a significant increase in demand due to rising awareness about the negative effects of synthetic fertilizers on soil, growing health concerns, an expanding urban population base, and increased consumer spending on food products.
- Organic manure can be made more nutritious by using bio fertilizers. This could eliminate the need for synthetic fertilizers.
- Organic fertilizers are not well-absorbed.
- In 2018-19, the proportion of organic fertilizers in overall fertilizer consumption was

0.29 percent and 0.34 percent respectively.

- The government can reap the rewards of biogas production by encouraging fertiliser.

### **Fertilizer from Biogas:**

- The biogas/gobar gas plant produces not only biogas, but organic fertilisers as well.
- The organic fertiliser, also known as dig estate and which is the effluent of a biogas plant, is also very valuable.
- Biogas can be used for heating, electricity, and even vehicle purposes after upgrading. Dig estate can also be used to help realize the vision of a second green revolution.
- Apart from its normal nutrition value, dig estate can add organic carbon to continuously depleting soil.
- India's current bio-fertilizer production is just above 110,000 tonnes ( carrierbased 79,000 tonnes, liquid-based 33,000 tonnes), and 34 million tonnes organic manure. This includes city compost, vermicompost and farmyard manure.
- Organic manure (dig estate), can be applied to cultivable land at a rate of approximately 40 tonnes per hectare.
- The government took this step
- Through its SATAT scheme, the Centre has demonstrated its intent to promote the industry.
- It was able to allocate 468 crores for Central Financial Assistance under the previous budget.
- To save future governments billions of US dollars, the industry requires more support. If all projects under SATAT scheme are realized, it will save \$16 billion annually.
- The SATAT program allows for the production of large quantities of bio-compressed natural gas, or bio-CNG, and solid organic manure/digate. More than 5,000 projects have been launched across the country under this programme.

### **Topic 8. NOBEL PEACE PRIZE FOR 2022: A STATEMENT AS RUSSIA-UKRAINE WAR RAGES**

*Important for subject: International Relations*



The Nobel Peace Prize 2022 was awarded to a Belarusian civil rights activist and an organisation in Russia each for their rights in Ukraine. It now focuses on Russia's war against Ukraine, which is in its eighth month.

- The Prize winners all stand against Russia, or an ally of Russia, as a common thread.
- Ales Bialiatski is currently in prison since 2021 and is a vocal critic Putin's ally, President Alexander Lukashenko from Belarus.
- Putin closed Memorial, a Russian civil rights organization, and Center for Civil Liberties, a Ukrainian rights organization, is documenting the alleged war crimes committed by Russia in Ukraine.

### **Ales Bialiatski from Belarus:**

- Bialiatski established the Belarus human rights group Viasna in 1995 (Spring). According to a patreon.com fund-raising page, Viasna "defends and promotes human right, and exposes violations".
- The activist, 60, was initially jailed for evading taxes in 2011. He was released in 2014. In 2021, he was again arrested during mass protests in Minsk against the election that opposition activists claimed had kept Lukashenko at power.
- Lukashenko, who was the first and only president of Belarus after it became independent, described himself in a November 2021 interview as "last dictator of Europe".
- Putin's close ally, Lukaschenko offered Russia's territory since the start of the war to Russian troops in exchange for attacks on Ukraine.
- Belarus shares a long border in the northwest with Ukraine. The distance between Minsk and Kyiv is just over 500km.
- Russian missile launchers were stationed on Belarusian territory. Belarusian soldiers are believed to have fought alongside Russian troops despite Lukashenko's denials.
- Viasna outlines its mission as "working towards building a just society and ensuring the rights of all without exception".

### **Russia Memorial Group:**

- Human rights activists from the Soviet Union established Memorial during the Gorbachev years in glasnost/perestroika.

- Among its founders were Andrei Sakharov, a 1975 Nobel Peace Prize winner, and Svetlana Gannushkina, a Russian mathematician.
- Its purpose was to document atrocities committed under the communist regime, particularly Joseph Stalin.
- The Nobel Committee stated that the Memorial was based on "the notion that facing past crimes is essential for preventing new ones".
- According to the Committee, Memorial rose to be the largest Russian human rights organization after the fall of the Soviet Union.
- It created a center to document the victims of Stalinist era, and collected information about Russian political oppression.
- Memorial is the authoritative source for information about political prisoners held in Russian detention facilities.
- It also leads efforts to promote human rights and combat militarism.
- Memorial collected and verified information about war crimes and abuses by pro-Russian and Russian forces during the Chechen War.
- This work led to Natalia Estemirova being killed as the head of Memorial's Chechnya branch.
- Early on, the organisation was marked as a "foreign agency" and, in December 2021 the Supreme Court ruled it had to be liquidated.
- The documentation centre would have to be closed permanently.
- Center for Civil Liberties, Ukraine
- The Center was established in Kyiv in 2007 to promote democracy and human rights in Ukraine.
- The Center, in collaboration with international partners, has been working to document and identify Russian war crimes against the Ukrainian civilian population since Russia invaded Ukraine in February 2022.
- **Nobel Peace Prize 2022:** The selection of the winner
- The Nobel Peace Prize often mirrors the geopolitical decisions of the West.
- This is why the selection of laureates was as contentious politically as the word "peace" itself, including the question of who can make peace.
- The Committee is often asked why Mahatma Buddha, a man almost universally regarded as an apostle for peace, was not addressed.

- A committee of five people selected by Norway's Parliament chooses the winner of Peace Nobel.
- This year's prize was won by 343 candidates, 25 individuals and 92 organizations.
- It is the second-highest after the record 376 nominations in 2016.
- For 50 years, the names of nominees and nominators cannot be disclosed.
- Members of national assemblies, national governments of sovereign countries as well as current heads of states and members The International Court of Justice or The Permanent Court of Arbitration at The Hague are eligible to nominate.

### Topic 9. AATMANIRBHAR IN DEFENCE: IN THE INDO-PACIFIC, INDIA AND OTHERS

*Important for subject: International Relations*



INDIA RANKS 4th among the 12 Indo-Pacific countries in terms of their self-reliant arms production capabilities according to a Stockholm International Peace Research Institute study (SIPRI), a respected independent resource on global security.

- China is the top-ranked country, followed by Japan, South Korea, and Pakistan.
- The study measures self-reliance up to 2020 based on three indicators:
- **Armes procurement** - Imports, licensed, and domestic production are all part of the total government's purchase of major conventional arms.
- **The Arms Industry--** This study lists the five most important arms companies in each country. Data are available for all countries. It ranks them by their sales of arms and other military services to domestic and export customers in 2020.

- Uncrewed maritime vessels, the sea equivalent to drones - covers both uncrewed surface vehicles (USVs), and uncrewed underwater vehicles (UUVs).
- This report is meant to give a qualitative insight into how countries engage domestic research institutes and companies to create cutting-edge systems.
- Study's selection of maritime domain was made because the Indo-Pacific is a "maritime theater", and most flashpoints there involve navies.
- The study included 12 countries that had the highest military spending in the region: Australia, China India, Indonesia and Japan.

### Indian scenario:

- In 2016-20, India was ranked second in terms of imports of arms for its armed force.
- India relies heavily on imports for complete foreign major arms.
- This includes many that are produced under licence or used as components in its domestic production.
- 20.84 percent of India's total 2016 procurement volume was from foreign sources.
- Only 16 percent of total arms procurement comes from domestic companies.
- The study shows that India is fourth on the list due to its high-level of licensed production and significant arms sales by local companies.

### Topic 10. CRIMEA

*Important for subject: International relations*



A powerful blast damaged the bridge that links Russia and the Crimean Peninsula via road and rail.

- The Crimea Bridge, which spans 19 km (12 miles) over the Kerch Strait, is the only link between Russia's transport network and the Crimean. This bridge provides a vital

supply route for Russian troops in Ukraine.

- This bridge was inaugurated in 2018 as a major project by Russian President Vladimir Putin.

### Location:

- Crimea is a peninsula located in Eastern Europe on the Black Sea's northern coast.
- The Black Sea and the smaller Sea of Azov surround the peninsula almost completely.
- The peninsula is connected to the Kherson Oblast on mainland Ukraine by the Isthmus of Perekop.
- The Crimean Bridge, which spans the Strait of Kerch to the east and links the peninsula with Krasnodar Krai (Russia) is located to the east.
- The Arabat Spit is located to the northeast. It is a narrow strip of ground that divides the Sivash lagoons and the Sea of Azov.

### History:

- Following the fall of USSR, Crimea was transferred from the USSR to Ukraine on the 300th anniversary the Pereyaslav Treaty of 1954.
- The clash between the Ukrainian central government and Crimea after independence in 1991 culminated in Ukraine forcibly taking control of Crimea.
- Although the Soviet fleet in Crimea was also under consideration, a 1997 treaty allowed Russia's fleet to remain in Sevastopol.
- Pro-Russians took control and organized a dispute referendum in support of Russian annexation.
- The Russian military intervention in Crimea, which took place after the 2014 Ukrainian revolution, was part of wider unrest in southern and eastern Ukraine.
- Two agreements were signed by the two countries following the annexes:
- **Minsk I:** In September, the capital of Belarus and Ukraine signed a 12-point ceasefire agreement.
- It included provisions for prisoner exchanges, humanitarian aid deliveries and the withdrawal heavy weapons.
- Both sides violated the agreement, and it quickly fell apart.
- **Minsk II:** An open conflict was avoided in 2015 after Minsk II, a peace agreement,

was signed under mediation by France and Germany.

- It was intended to end fighting in rebel areas and to hand over the border to Ukraine's national troops.
- It was signed by representatives of Russia, Ukraine and the Organization for Security and Cooperation in Europe(OSCE), as well as the leaders of the two pro-Russian separatist regions.

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## **Topic 11. UN CHARTER**

### ***Important for subject: International Relations***

The long-term process of UN reform involves five important issues: Membership categories.

- Question about the veto exercised by the five permanent members
- Representation at the regional level
- The size and working methods of an expanded Council.
- Relationship between the Security Council and General Assembly
- The principles upon which the United Nations works:
- These principles are the basis of United Nations action.
- **Article 2(1):** All member countries are sovereign and equal.
- **Article 2(2):** All parties are bound to honor their Charter obligations in good faith.
- **Article 2(3):** All parties are committed to settling international disputes peacefully and without threatening international peace, security, and justice.
- **Article 2(4):** They must refrain from using force or threat of violence against other states in international relations.
- **Article 2(5):** They must provide UN assistance for any action taken in accordance to the Charter.
- **Article 2(6):** Organization shall make sure that non-member states of UN act in accordance with international peace principles.
- **Article 2(7):** The United Nations is not allowed to intervene in matters that are essentially domestic affairs of any state, except when it is acting for international peace.

### **What is the UN Charter?**

- The founding document of the United Nations is the Charter of the United Nations.

- It was signed in San Francisco on 26 June 1945 at the conclusion the United Nations Conference on International Organization. It entered force on 24 Oct 1945.
- The UN Charter codifies key principles of international relations, including sovereign equality of states and the prohibition of using force in international relationships.
- Since 1945, it has been modified five times.

### **How to reform the UN Charter?**

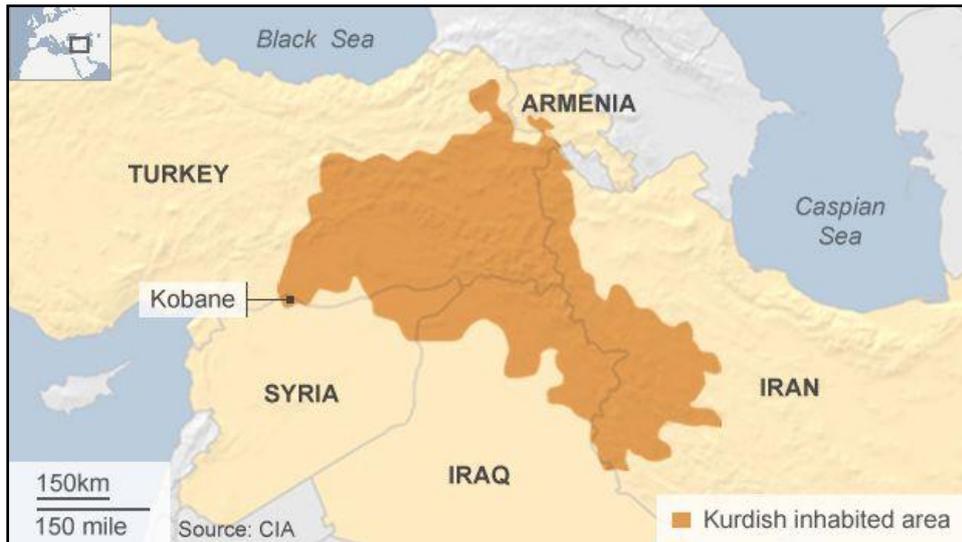
- Article 108 of Charter states that amendments must be approved by two-thirds of members of General Assembly and ratified or endorsed by two-thirds of members of United Nations including all permanent members of Security Council.

### **History of Charter Amendment:**

- Five times, the Charter was amended.
- **1965:** Articles 23 were amended to increase the Security Council's membership from 11 to 15.
- **1965** - Amendment to Article 27 to increase the number of votes required by the Security Council from 7 to 9.
- **1965**-Article 61.1 was amended to increase the number of members in the Economic and Social Council to 27.
- **1968** - Amendment to Article 109 to modify the requirements for a General Conference of Member States in order for the Charter's review
- **1973**- Articles 61 and 62 were amended to increase the number of members in the Economic and Social Council to 54.

## **Topic 12. THE KURDS**

*Important for subject: International relations*



Recent protests in Iran over the death of a young Iranian Kurdish girl, MahsaAmini (22 years old), have intensified.

### **Who are the Kurds?**

- Kurds, an Iranian ethnic group, are native to the mountainous Kurdistan region in Western Asia. It spans southeastern Turkey and northwestern Iran.
- They are the fourth largest ethnic group in Middle East, after Arabs and Persians.

### **Kurds follow religion:**

- The majority of Kurds are Sunni Muslims and adhere to Shafii Islam. However, a substantial minority adheres to Hanafi school as well as Alevism.
- Many Shafi'i Kurds also adhere to one of the two Sufi orders Naqshbandi or Qadiriyya.
- Yarsanism, Yazidism and Yarsanism are two other religions that have significant Kurdish adherents.

### **History of Kurds Nationalism:**

- Kurdish nationalism was a result of the Ottoman Empire's decline in 1890s.
- The 1920 Treaty of Sevres, which imposed a settlement and colonial carving-up of Turkey following World War One, promised Kurds autonomy.

- The accord was broken by Kemal Ataturk, the Turkish leader.
- In 1924, the Treaty of Lausanne was ratified.
- It divided the Kurds into the new Middle East nations.
- The 1946 Republic of Mahabad was the first Soviet-backed state to rise above Iran's border with Turkey.
- 1979 Iran's Islamic Revolution triggered bloodshed in Kurdistan.
- There were heavy clashes between Shi'ite revolutionaries, and the Kurdish Party of Iranian Kurdistan, which fought for its independence.

### **What are the needs of Kurds?**

- Except in Iraq, where they have a region government called Iraqi Kurdistan, the Kurds have not been granted nation-state status.
- Kurds are seeking to create an independent nation-state Kurdistan, which includes five regions in southeastern Turkey and northeastern Syria, northwestern Iran, northern Iraq, and southwestern Armenia.

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### **Topic 13. INDIA VOTES AGAINST RUSSIA'S DEMAND FOR SECRET BALLOT IN UNGA**

#### *Important for subject: International Relations*

India voted against Russia's request for a secret vote in the UN General Assembly to consider a resolution condemning Moscow's illegal annexation and annexation. New Delhi, along with more than 100 nations, favored a public vote.

- A motion was made by Albania to the UN General Assembly of 193 members, calling for a recorded vote on the draft resolution condemning Russia's illegal so called referendums and attempted illegal annexe of the Donetsk-Khorask, Luhansk, Zaporizhzhia areas of Ukraine.
- Russia demanded that the resolution was voted on secretly.
- An unofficial vote was taken on Russia's appeal. India was one of the 100 countries that voted against Moscow's challenge.
- Russia sought to reconsider the decision to accept the motion submitted for a recorded vote by Albania.
- After 104 countries, including India, voted against the motion, 16 voted for it, and 34

- abstained, the General Assembly decided to not reconsider the motion.
- After 107 UN member countries, including India, voted for a recorded vote, Moscow's request for a secret ballot failed.
  - Only 13 countries voted for Russia's request for a secret vote, while 39 abstained.
  - Russia and China were two of the countries that didn't vote.
  - Russia opposed the decision of the president after the motion for a recorded vote had been adopted.
  - The UN Security Council of 15 nations had voted on the draft resolution regarding Illegal So-Called Referenda In Ukraine.
  - This was just hours after Russian President Vladimir Putin had signed treaties to annexe the Ukrainian regions Luhansk and Donetsk, Kherson, Zaporizhzhia, in a ceremony at the Kremlin.
  - Because Russia, a permanent UNSC member, vetoed the resolution, it was not adopted.
  - Ten nations voted in favor of the resolution out of 15 and China, Gabon, India as well as Brazil abstained.
  - India abstained from voting on the Ukraine conflict at the UN General Assembly (and the Security Council)

### **UNGA Resolutions:**

- Resolutions of United Nations are formal expressions or wills of United Nations organs.
- A United Nations General Assembly Resolution refers to a decision or declaration that all members of the United Nations vote on in the General Assembly.
- General Assembly resolutions require a simple majority (50% of all votes plus one) in order to be passed.
- If the General Assembly decides that the issue has been deemed "important", then a simple majority vote is necessary.
- "Important questions" refer to those that are significant in maintaining international peace and security, admissions of new members to United Nations, suspensions of rights and privileges, expulsions of members, operation or budgetary issues.
- General Assembly resolutions are not binding on member states, but they can be used

to help them.

### Consensus Vs unanimity:

- A decision taken by consensus in the GA does not require a vote.
- A unanimous decision refers to a decision that all Member States vote in the same manner.
- GA resolutions and GA decision
- GA resolutions and GA decision have the same legal status.
- GA resolutions reflect the views and recommendations of Member States, give policy recommendations, and assign UN mandates.
- Secretariat and subsidiary bodies of the GA decide on all questions concerning the UN budget.
- With the exception of decisions regarding payments to the regular and peacekeeping budgets of the UN, GA resolutions/decisions are not binding for Member States.
- The implementation of the policy recommendations contained in resolutions/decisions is the responsibility of each Member State. Most resolutions are recurrent, i.e., they are adopted every year or in a multi-year rhythm under the same agenda item. GA decisions are divided into "elections" and "other decisions."
- The majority of "other decisions" are procedural questions, and they tend to be very brief.
- A draft resolution/decision may be adopted either by consensus or by vote. The GA takes decisions by simple majority, two-thirds majority.
- The GA Rules of Procedure include "important questions" that require a two-thirds majority. They are: Maintenance of international peace, security, admission of new members, suspension and expulsion of member all budgetary questions.
- The GA votes by simple majority to add additional questions to the list of "important questions".
- The number of members present and voting (i.e. casting an affirmative vote or a negative vote) is what determines the majority.
- United Nations General Assembly (UNGA).
- The UN's main representative, deliberative and policymaking organ is the General Assembly.

- The General Assembly is made up of all 193 UN Member States. It is the only UN body that has universal representation.
- Each year, the General Assembly elects the President to serve a term of one year.

#### **Topic 14. COURT OF JUSTICE OF THE EUROPEAN UNION (CJEU)**

*Important for subject: International Relations*



The top court of Europe has ruled that EU companies may ban headscarves, provided that it is not discriminatory against employees.

- This case involved a Muslim woman who was told she could not wear a headscarf while applying for a six-week job traineeship at a Belgian firm.
- What is the Court of Justice of the European Union?
- It is the principal judicial authority of Europe and supervises the uniform application of EU law and its interpretation in collaboration with national judiciary of member states.
- It is located in Luxembourg City's Kirchberg quarter.
- Histories of the Court of Justice of the European Union
- In 1952, the Court of Justice of the European Coal and Steel Communities was the first institution to establish the CJEU.
- It was renamed the Court of Justice of the European Communities in 1958.
- The General Court, also known as the Court of First Instance or the Civil Service Tribunal, was established in 1988.
- The Treaty of Lisbon was signed in 2009 and the Court of Justice of the European

Union became the Court of Justice of the European Union. The original court was renamed the "Court of Justice".

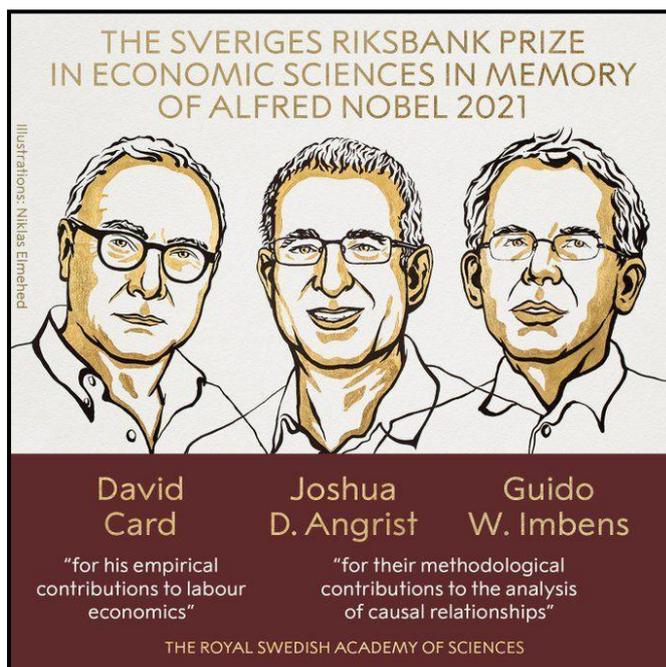
- French Composition of the Court of Justice of the European Union will be the working language of the Court of Justice of the European Union.

**It is made up of two main courts:**

- **The Court of Justice:** Also known as the European Court of Justice (ECJ), it hears appeals from national courts regarding preliminary rulings, annulment or appeals. It is composed of one judge from each EU country and 11 advocates general.
- **The General Court:** This court hears annulment applications from individuals, businesses, and, less frequently, national governments. It focuses on competition law, state assistance, trade and trade marks. The court has 54 judges since 2020.

## Topic 15. NOBEL PRIZE IN ECONOMICS

*Important for subject: Economy*



For their contributions to research on how banks work, Philip Dybvig and Douglas Diamond have been awarded the Nobel Prize for Economics 2022.

- **Role of banks and financial crises in the economy** - Why banks exist, how to make banks less vulnerable during crises, and how bank collapses can exacerbate financial

crises

### Ben S Bernanke:

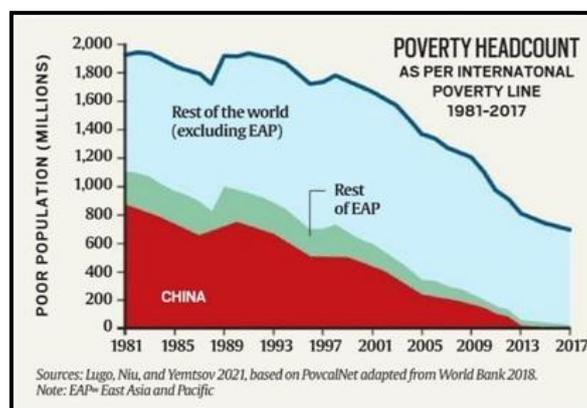
- Bernanke used historical source research and statistical analysis to show how the failure of banks played a crucial role in the 1930s global depression, which was the worst economic crisis in modern times.
- This added to the importance of bank regulation that is well-functioning.
- Douglas W Diamond and Philip H Dybvig
- They created theoretical models that explain why banks exist and how they are vulnerable to rumours of their imminent collapse.

### Nobel Prize for Economics:

- **Established:** The economics prize was established, and not in Alfred Nobel's will.
- It was instead established by the Swedish central bank in his honor in 1968.
- This prize was established in 1968 by a donation from Sweden's central bank, "SverigesRiksbank", to the Nobel Foundation to celebrate the 300th anniversary.
- Officially, the Nobel Peace Prize in Economics is called "SverigesRiksbank Prize for Economic Sciences" in Memory Alfred Nobel.
- The Nobel Prize money consists of a medal, diploma, and a cheque for 10,000,000 Swedish Kronor.
- This roughly amounts to Rs 8.33 crore.

## Topic 16. HOW CHINA BEAT EXTREME POVERTY; AND WHAT LESSONS IT HOLDS FOR INDIA

*Important for subject: Economy*



According to the World Bank's latest report on global poverty, India has the highest number of people living in poverty (5.6 million).

- According to the report, 56 million Indians lived in extreme poverty (living on less than Rs 46 per day) and this number rose by 5.6 crores in 2020.
- It also states that 600 million Indians can survive on Rs 84 per day.
- China, a country comparable in size, has alleviated poverty at a historically unprecedented pace and scale between 1978-2018.

### **What is extreme poverty? What is extreme poverty?**

- The World Bank (WB), a World Bank: A person living on less than \$2.15 per day is considered to live in extreme poverty. This was the case for 648 million people worldwide in 2019.
- In 1990, the first international poverty line was created -- one dollar per day -- using 1985 prices.
- The price was raised to \$1.08 per day in 1993, \$1.25 per day in 2005, and \$1.90 per day in 2011. Based on 2017 prices, the \$2.15 one was created.

### **What has China achieved?**

- According to the World Bank, China's poverty head count dropped from 770million people in 1978 to 5.5 million in 2018.
- This means that China has lifted 19 million people from extreme poverty every year for 40 years.
- It was responsible for nearly 75 percent of the global decline in extreme poverty over this time.
- China declared in 2021 that it had eradicated extreme poverty according the national poverty threshold. It lifted 765 million people from 1978 to 1978 and built a "moderately wealthy society in all aspects".

### **How did China do it?**

- China's success in reducing poverty was largely due to two pillars.
- The first pillar was rapid and sustainable economic growth that was supported by broad-based economic transformation.

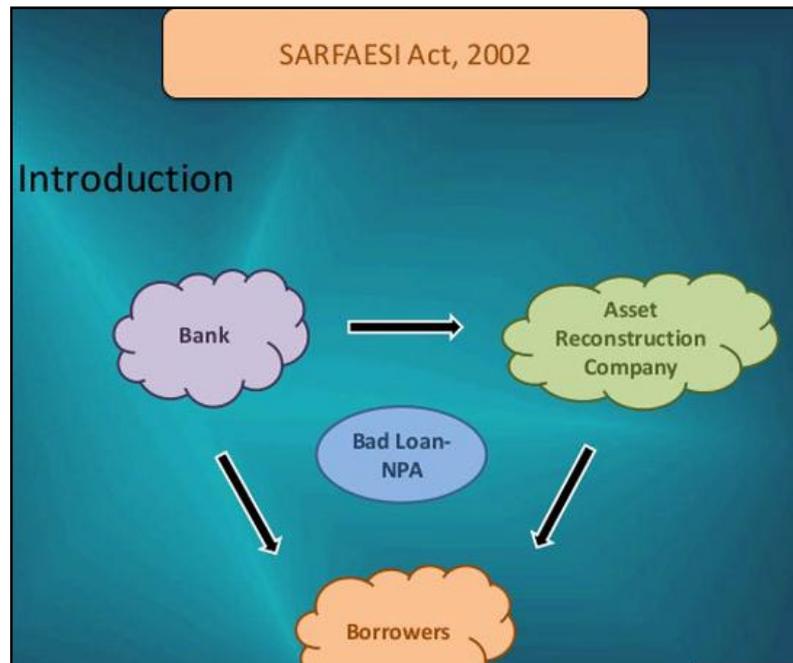
- Reforms were initiated in the agricultural sector. Poor people could directly benefit from the improvements in productivity that resulted from the introduction of market incentives.
- Workers who had been released from agriculture were able to find employment in low-skilled, labour intensive industries.
- Urbanization helped migrants to take advantage of new opportunities in cities. Migrant transfers also boosted the incomes of relatives who remained in villages.
- Infrastructure investment by the public improved rural living conditions and connected them to urban and export markets.
- The second pillar was government policies that alleviate poverty. These initially focused on areas with poor economic opportunities and geography, but later on, they were refocused to all poor households regardless of their location.
- These policies included social protection policies for poor households. This includes programs in welfare, insurance, social assistance and social assistance.

**Other factors:**

- China's large size required decentralised implementation arrangements.
- These arrangements allowed for significant local experimentation and high levels of competition among local governments.
- China also enjoyed favourable conditions during the opening process, including a high level of human capital endowments.
- 7 percent of the 15-64 year olds had attended primary school in China.
- Massive investments in education and health care expansion since 1950s have resulted in real successes: In 1978, the infant death rate was 52 per 1000 births, less than half the average for China's income group.
- Life expectancy at birth was 66 years, which is far higher than other developing countries. Primary school enrollment was 96% and secondary school enrollment was 49%.

## Topic 17. SARFAESI ACT AND ARCS

*Important for subject: Economy*



The Reserve Bank of India (RBI), has given permission to asset reconstruction companies to be resolution applicants under the Insolvency and Bankruptcy code (IBC).

- The SARFAESI Act does not allow ARCs to act as resolution applicants.
- Companies must have a minimum of Rs1000 crore in net assets and a policy approved by the board to qualify for the role as an RA.
- It should be composed of a majority independent directors to submit resolution plans under IBC.
- Additional disclosures by the ARCs regarding assets acquired under IBC should be made in their financial statements.
- Non-compliance with ARCs shall be Important and subject to supervision.
- This includes prohibition of undertaking incremental business until it reaches the required minimum NOF.
- The RBI has also increased the minimum capital requirement to set up ARCs from Rs100 crore to Rs300 crore.
- 2002 Act on Securitisation, Reconstruction of Financial Assets, and Enforcement of Security Interests (Sarfaesi).
- This act was created to address the problem with Non-Performing Assets (NPAs), or

bad assets of banks/financial institution through various mechanisms.

- Only secured creditors (lenders with loans backed by security like a mortgage) can take over collateral security if the debtor defaults on repayment.
- Banks/financial Institutions can take possession of the pledged assets and manage them. They can also appoint anyone to manage them.
- This act regulates asset reconstruction companies (ARC), and permits them to operate the following business:

#### **Reconstruction of assets:**

- It's the conversion of NPAs (or bad assets) into performing assets.
- The ARCs may acquire financial assets (NPAs), from banks, and attempt to recover dues.
- These measures include: the proper management by the borrower, changing or takingover the management, the sale or leasing of a portion or all of the business, rescheduling payment of debts payable, etc.
- **Securitization:** It's the conversion of existing loans into marketable security by ARCs via issue of security receipts.
- **Central Registry:** Established by the Central Government to register transactions of securitization, reconstruction of financial assets, and creation of security interests.
- Application against secured debt recovery measures:
- Applicants/lenders can file a complaint with Debt Recovery Tribunal (with appeals to Debts Recovery Appellate Tribunal), established under the Recovery of Debts Due to Banks and Financial Institutions Act 1993.

#### **This Act does not apply to:**

- Any security interest in agricultural land.
- Any case where the amount due exceeds twenty percent of principal and interest.
- Any security interest to secure repayment of financial assets less than 1 lakh rupees.
- The Act offers three alternatives to the traditional methods of recovering nonperforming assets:
- **Securitization-** This is the process of pooling different types of debt instruments (assets), and then selling them to investors as bonds.

- **Asset Reconstruction**-Asset restoration is the process of turning a non-performing or bad asset into a performing asset using the assistance of Asset reconstruction companies.
- Enforcement of Security without the intervention from the Court - If the borrower defaults, the Bank may enforce security interests by
  - You can take possession of the security.
  - The right to the security can be sold, leased or assigned.
  - Designate a Manager to oversee security.
  - Ask all borrowers to pay the amount owed to the borrower.
- Asset reconstruction companies (ARCs)
- Asset reconstruction refers to the acquisition of banks/financial institution rights or an interest in any financial assistance provided by an ARC.
- Bad banks, also known as ARCs, are specialized agencies that facilitate banks' resolution of bad loans.
- They buy the bank's debtors at a mutually agreed price and attempt to recover the securities or debts.
- Then they make their own profit by selling the loan for a higher price than the amount it paid to acquire it.
- India's ARCs are registered with RBI under section 3. of the Securitisation, Reconstruction of Financial Assets & Enforcement of Security Interest Act (SARFAESI) Act 2002.
- ARCs must maintain a minimum NOF of Rs 100 cr (raised up to 300 cr) as well as a capital adequacy of 15% of their risk-weighted assets.
- Asset Reconstruction Company (India Ltd) or Arcil was the first ARC of India established in 2002 by four banks: ICICI Bank (India), PNB, PNB, and IDBI Bank.

### **SARFAESI vs IBC**

- SARFAESI Act 2002 only covers secured financial creditors, while IBC protects both secured and unsecured creditors.
- Section 14(1)(c), 2016 of the IBC states that the Code will prevail over the SARFAESI Act during insolvency resolution as defined in the Code.
- IBC has separate adjudication authority for limited liability partnerships (LLP),

companies, and individuals (dealt by NCLT) under the jurisdiction of DRT).

- The SARFAESI Act appoints DRT as the adjudicator for matters relating to the act.

## Topic 18. WORLD ECONOMIC OUTLOOK

*Important for subject: Economy*



The International Monetary Fund's World Economic Outlook reveals that the worst is yet to be.

### **The Report:**

- A third or more of the world's economy will shrink this year or next along with the three largest economies, the United States, Europe, and China.
- It has reduced the global growth forecast -- from 6.0 percent in 2021 to 3.2% in 2022, and 2.7% in 2023.
- India's growth rate in 2022-2023 will be 5.8 percent.
- The greatest threat to future and current prosperity is the escalating price pressures.
- Global inflation is expected to reach a peak of 9.5% in 2022.
- It could stay elevated for longer periods than originally thought.
- However, it is expected to fall to 4.1% by 2024.
- Core inflation worldwide is expected to reach 6.6%.
- This means that food and fuel price inflation which has often spiked headline inflation has now seeped into core inflation. It will take longer for it to disappear.
- Downside risks

- Miscalibration of policy
- Financial stability and dollar appreciation

### **Ukraine: War**

- Core inflation
- It is the inflation rate at which fuel and food prices are not taken into account.
- Core inflation tends to rise and fall more slowly than inflation in fuel and food.
- Core inflation is, conventionally speaking (CPI-C), calculated by subtracting 'food and drinks' and 'fuel & light' from overall inflation.

### **IMF Reports:**

- Global Financial Stability Report.
- The World Economic Outlook.
- World Economic Outlook
- The IMF publishes this survey twice a year, in April and October.
- It predicts and analyzes economic trends worldwide in the near and mid-term.
- The WEO Update, which is published between the two main WEO publications, April and October, was created in response to growing demand for frequent forecast updates.

### **Policy Miscalibration:**

- This is when fiscal and monetary policies clash.
- **Exemple:** In the UK, the Liz Truss government used an expansionary fiscal policy to cut taxes and increase expenditures while the Bank of England tried to raise interest rates.
- Inflation levels that are historically high
- It was a mini-financial crash that saw investors lose faith in policymakers and sell off British assets.
- If other errors are made, it can also happen when fiscal and monetary policies are aligned.
- Monetary policymakers, for example, can either tighten their stance (that's, raise interest rates beyond what is necessary) or the reverse.

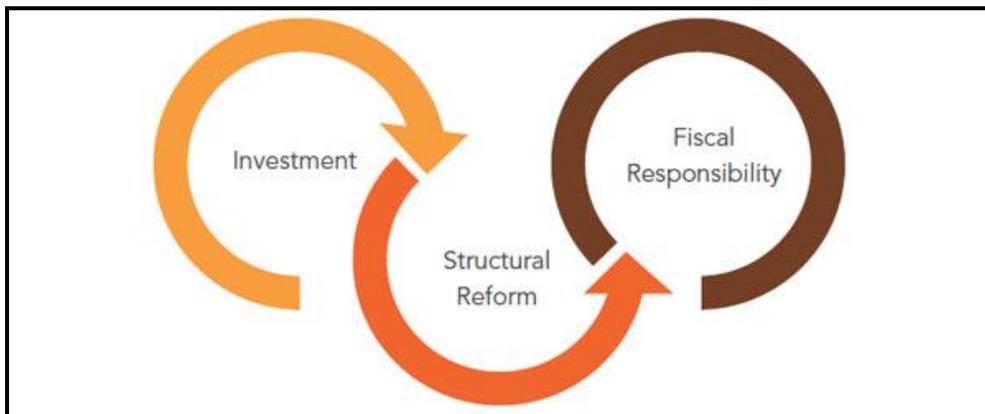
- Over-tightening the risk- Cost of borrowing rises, reducing investment and growth. While under-tightening the risks- Inflation seeping through into core inflation and taking longer time to contain.

### Stagflation:

- This happens when the economy experiences both stagnant growth and persistently high levels of inflation.
- Because of stagnant economic growth, unemployment tends increase and incomes don't rise fast enough. People also have to deal with rising inflation.
- This will decrease demand if prices are higher. In turn, fewer goods and services will be demanded, which will discourage businesses from investing in new capabilities. This will increase unemployment and result in lower incomes.
- This leads to Stagflation.

## Topic 19. STRUCTURAL REFORMS

*Important for subject: Economy*



India's chief economist at the International Monetary Fund (IMF), needed to implement key structural reforms to reach the ambitious goal of becoming a USD 10 Trillion economy.

### Challenges India facing:

- Inflation will rise in the domestic market if crude oil and fertilizer prices are higher
- A global slowdown will affect exports, reducing domestic growth and increasing the trade deficit.
- Strong dollar results in lower forex reserves and reduced import capacity.
- Due to rising fiscal deficit, due to lower demand from most Indians. The government

may be forced into spending more on basic relief such as food and fertiliser subsidies.

### Structural reforms:

- Structural Reforms address the main drivers of growth through liberalizing labour, product, and service markets. This encourages job creation, investment, and improves productivity.
- They are designed to boost an economy's competitiveness, growth potential and adjustment capacity.
- The most common structural reforms are those that make labour markets more flexible and responsive, liberalize service sectors, increase competition in product-service markets, certain sectors, or improve overall business conditions, encourage innovation, improve the quality and efficiency of public taxation, and address the problems of the ageing population.
- **Exemple:** India launched a New Economic Policy in 1991 to overcome the macro-economic crisis.
- It was based on LPG, Liberalisation, Privatisation and Globalization.
- The LPG model allowed for a wide range of reforms.
- The beginning of privatization: Bank reforms, deregulation of markets, etc.
- **Globalization:** Exchange rate correction, liberalizing foreign direct investment and trade policy, Eliminating mandatory convertibility, etc.

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### Topic 20. GOLD PRICES

#### *Important for subject: Economy*

According to the World Gold Council, "gold was not the crisis hedge it had often been historically" (certainly when measured in US Dollars).

- The high inflation and rising interest rates have kept gold prices low. There is also ongoing conflict in Ukraine. Gold futures declined to their lowest net position in four year, while gold ETF outflows have continued.

#### **Low gold prices are due to:**

- The US Federal Reserve raises rates
- This causes the dollar to strengthen against other major currencies, making gold more

expensive.

- Inflation is rising further, which leads to the selling of gold. People are moving their money into fixed deposit accounts and other avenues that offer higher returns.

### Is gold still a safe haven?

- Value stability-Gold has been traditionally regarded as a strong hedge against inflation, and a safe haven in times of uncertainty.
- Its value fluctuates relative to equities or other risky assets, so it retains its value more effectively and acts as a capital protection safe haven.
- Acceptability and availability of gold are generational assets and will continue to rise over the long-term (due to the gap between demand & limited supply).
- Investors should consider investing in sovereign gold bonds (SGBs).

### Pricing for gold:

- The four types of companies that deal with gold are exploration or development, mining and consumers, as well as recyclers.
- These three categories include investors, jewellery producers, and industrial consumers.
- The gold prices are set on a daily basis.
- It's an agreement between participants on the market to buy or sell gold at a fixed rate.
- London Bullion Market Association is responsible for gold fixing. Prices are set daily at 10:30 GMT and 3 PM GMT in US dollars.

### Types of prices - There are two types of prices: spot price and futures.

1. **Spot price** - This is the current market price at what gold can be bought or sold to pay immediate delivery and payment.
2. **Futures price** - This is the price at the which participants to a futures contract agree that they will transact on the settlement date.
  - Pricing sources
  - Spot prices can be found at:
    - **OTC markets** - This is an unlisted market for securities that is not traded on any exchange.
  - Large banks and bullion trader-They purchase and sell gold as part the trading

process, resulting in reliable spot prices for gold.

- Futures prices can be sourced at:
- Exchanges are the main source of futures prices for gold. These are the major gold exchanges:
  1. TOCOM, Japan
  2. Shanghai Gold Exchange, China
  3. MCX, Mumbai
  4. DGCX, Dubai
  5. Istanbul Gold Exchange, Istanbul
  6. COMEX, New York
- Drivers will determine the gold rate
- The gold rate is determined by 6 key drivers. These are the six fundamental drivers that determine gold rates:
  - Prices of other commodities are affected by the demand. Indirect pricing of production costs
  - Inflation in the USA and Global is caused by rising money supply.
  - Two deficits that are the result of trade and growth imbalances towards the US. Fear is the result.
  - The Central Bank's activities include money printing, sales and gold purchases.
  - The real interest rates in the US are lower than inflation and wages.
  - Use the production or demand formula or inventory formula to determine the demand and supply.

### **India's gold pricing:**

- Banks in India import gold at a determined international rate.
- After paying a fee, banks supply the gold to dealers.
- Indian Bullion Jewellers Association IBJA then enters the process of determining prices through talks with the ten largest gold dealers in India.
- They give their respective buy' and sell' quotes depending on the gold price at which they bought it.
- IBJA then averages these 'buy' or 'sell' quotes to determine the gold rate for that day.
- This average rate is adjusted to account for local taxes, and a rate has been set accordingly.

- Dealers generally arrive at their 'buy' and 'sell' rates by taking the international cost of gold and multiplying/adjusting it to the exchange value of the Rupee and adding any import duties and taxes such as VAT.
- Dealers make sure that their margin is added to the rates they offer, while keeping in mind their needs.

## Topic 21. GAMBIA

*Important for subject: Geography mapping*



The World Health Organisation (WHO), recently issued an alert regarding four Indian-manufactured cough drops. These syrups are linked to acute kidney injury in children, and 66 deaths in The Gambia, a small West African country.

- Samples were tested by WHO for unacceptable levels of diethylene glycol or ethylene glycol.
- These ingredients should not be used in drugs or food as they can cause nausea, vomiting, diarrhoea and headaches.

### **Gambia is located:**

- It is the smallest country on mainland Africa.
- It is surrounded only by Senegal.

- Banjul is capital of Gambia.

### Geography of Gambia:

- Gambia is a small country with narrow borders that mirror the Gambia River.
- It is located between 13 and 14degN and 13 and 17degW.
- Senegal is located on three sides of Gambia, with 80km of coastline along the Atlantic Ocean marking its western end.
- It includes three terrestrial ecoregions, the Guinean forest-savanna mosaic and West Sudanian Savanna.
- Ethnic groups
- The largest ethnic group is the Mandinka.
- Other ethnic groups include Fula, Wolof and Jola/Karoninka.

## Topic 22. LEBANON

*Important for subject: Geography mapping*



A draft agreement has been reached between Israel and Lebanon to end a dispute that dates back to the 1960s over control of an eastern section of the Mediterranean Sea.

- Lebanon: Where are you?
- Lebanon is located in Western Asia.

- It is the second-smallest country in Asia.
- It lies between Syria and Israel to its north and east, and Cyprus to its west across to the Mediterranean Sea.
- It is located at the crossroads between the Arabian hinterland and the Mediterranean Basin.
- It is located in the Levant region of Middle East.
- Beirut is the capital city of Lebanon.

### Geography of Lebanon:

- Lebanon lies in Western Asia, between latitudes 33deg & 35deg N, and longitudes 35deg & 37deg E.
- Its coastline and border spans 225 kms along the Mediterranean Sea to its west, 375 kms with Syria to its north and south, and 79kms with Israel to the South.
- In a small area called Shebaa Farms, Lebanon disputes the border with Israel-occupied Golan Heights.
- It can be divided into four distinct physiographic areas: the coastal plain; the Lebanon mountain range; the Beqaa Valley and the Anti-Lebanon Mountains.
- Lebanon enjoys a mild Mediterranean climate. The winters in coastal areas are usually cool and rainy, while the summers can be hot and humid.

### Topic 23. POLAND

*Important for subject: Geography mapping*



A leak occurred recently in a pipeline that carried oil from Russia to Europe through one of the Druzhba pipes in Poland.

- Poland: Where are you?
- It is located in Central Europe, and is the fifth most populous member state within the European Union.
- Poland's capital is Warsaw.
- It borders Russia and Lithuania to the northeast, Belarus, Ukraine and Ukraine to east, Slovakia, Czech Republic and Germany to south, and Germany towards the west.
- It shares maritime borders with Denmark and Sweden.

### **Poland's Geography:**

- Poland is Europe's ninth largest country.
- The flat Central European Plain includes the central and northern regions of Poland, bordering the Baltic Sea. However, the south is mountainous and hilly.
- The country's coastline extends for 770km from the Baltic Sea shores to the Gulf of Gdansk east.
- The beaches are dotted with sand dunes or coastal ridges. They are indented by lagoons and spits, including the Hel Peninsula, and the Vistula Lakeon which is shared between Russia and China.
- Wolin National Park is home to the largest Polish island in the Baltic Sea.
- Poland shares the Szczecin lagoon and Usedom islands with Germany.
- The mountainous belt of extreme south Poland is divided into two mountain ranges: the Sudetes in west and the Carpathians east.
- The highest point in Poland is Mount Rysy, at 2,501m elevation. It is located in the Vistula Valley. RaczkiElblaskie, at 1.8 metres below the sea level, is the lowest point in Poland.
- The Vistula and Oder are Poland's longest rivers. It also has one of the largest concentrations of lakes in the world.
- At 108.5 metres deep, Lake Hancza is the deepest

## Topic 24. NEW ANDAMAN ISLANDS: STRATEGIC AND ECOLOGICAL SIGNIFICANCE

*Important for subject: Geography mapping*



Composition and location

It is located in India Ocean, in the south reaches of Bay of Bengal nearer to Indonesia. This includes two islands groups, the Andaman Islands (or Nicobar Islands), which divide the Indian Ocean to the east and the Andaman Sea.

- These two groups are separated at the 10deg N parallèle, with the Andamans lying north and the Nicobars south.
- Port Blair is the capital of this territory.
- There are 836 Islands/Islets/Rocky Outcrops within the territory. Only 38 of these are permanently inhabited.
- There are 22 main islands on the Nicobars, with 10 inhabited.
- A channel that is approximately 150km wide separates the Nicobars from the Andamans. It is called "The Ten Degree Channel".
- Demography of A&N Island
- According to the most recent (2011) Census of India, the territory had a population of

3,79,944 people and a literacy rate of 86.27%.

- The total area of the territory's land is 8,249km<sup>2</sup>.
- The area of the Andaman Islands totals 6,408 km<sup>2</sup>, while that of the Nicobar Islands totals 1,841 km<sup>2</sup>.
- Hindi and English are the official languages on the islands.
- Bengali is the most widely spoken language in Bangladesh, and 26% of the population speaks it.
- According to the 2001 Census of India, Hindi (18.23%) and Tamil (17.68%) are the other major languages in the islands. Telugu (12.81%) is also spoken. Malayalam (8.1%), Nicobarese (8.5%), and Malayalam (8.1%).
- Kurukh/Oraon and Munda are other minor languages. In the Andamans, Andaman Creole Hindi can be used extensively as a trade language.

#### **Flora & Fauna -**

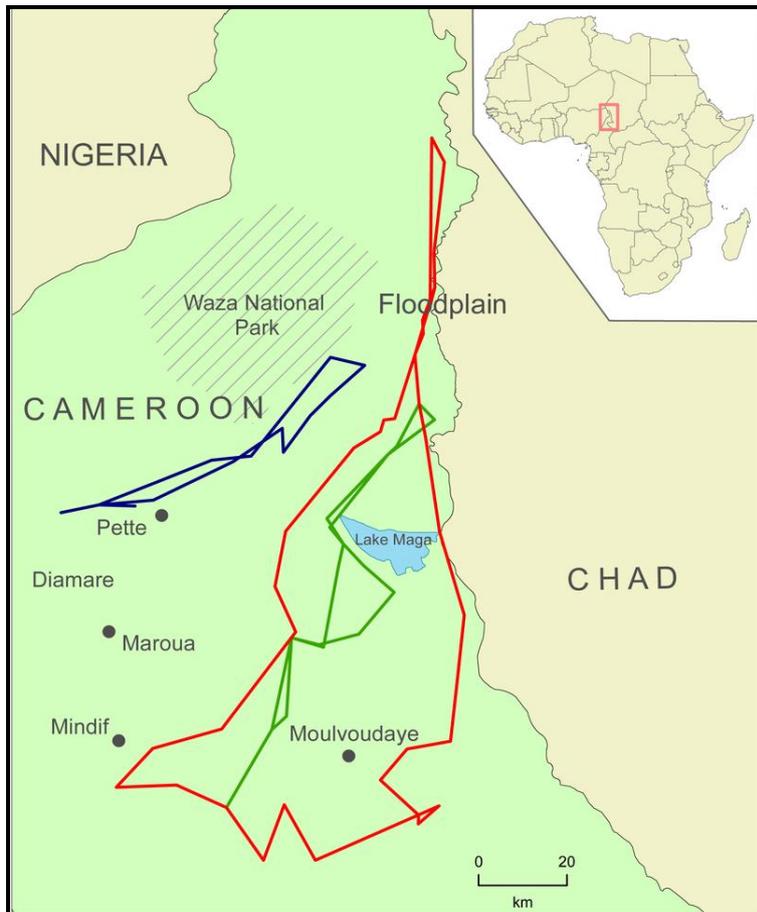
- Unique' tropical rainforest canopy of evergreen tropical rainforest, which shelters a mixed germ bank made up of Indian, Myanmarese and endemic flower strains.
- There are approximately 2200 plant species that have been identified so far. 200 of these plants are endemic, while 1300 don't exist on the Indian mainland.
- Only the Nicobars have grasslands, but deciduous forests are rare in the Andamans.
- According to estimates, the forest cover is currently 2% of total land.
- Timber
- Andaman Forest is home to a wide variety of timber species, with around 200 varieties. Of these, about 30 are major commercial timber species. and Padauk (Pterocarpus dalbergioides). Ornamental woods such as (1) Marble Wood, (Diospyros Marmorata), (2) Padauk (Pterocarpus albergioides), (3) Silver Grey, (a special wood formation in white chuglam), (4) Chooi and (5) Kokko are known for their prominent grain formation.
- The holy Rudraksha (Elaeocarpssphaericus) and aromatic Dhoop/Resin trees also occur here.
- Fauna-
- MAMMALS -
- There are approximately 50 species of forest mammals found in A&N Islands. Most

of them were brought in from the outside, and are now considered to be endemic because of their insular adaptation.

- Rat has 26 species, followed by 14 bat species.
- Two endemic wild pig species are found among larger mammals: *Sus Scrofa andamanensis*, Andaman and *S.nicobaricus*, Nicobar.
- Sambar, Barking deer, and the spotted deer *Axis Axis* are all found in Andaman District. Interview island in Middle Andaman is home to a good number of feral elephants.
- Corals and fishes
- Moths and Butterflies-
- The A&N Islands are home to approximately 225 species of butterflies.
- These ten species are endemic.
- Mount Harriet National Park has the highest concentration of moth and butterfly diversity in these Islands.
- Shells
- These islands are known for their shell wealth, including Turbo, Trochus and Murex. They are also being used as novelty items to support cottage industries that produce a wide variety of ornaments and decorative items.
- State symbols
  1. State Bird- Andaman Wood Pigeon
  2. State Animal- Dugong
  3. State Tree- Andaman Padauk
  4. Particularly vulnerable Tribal groups (PTGs), have been identified in the Andaman and Nicobar Islands. These are:
    5. Great Andamanese from Strait Island
    6. Little Andaman Onges
    7. Jarawas of South Andaman and Middle Andaman
    8. Sentinelese from Sentinel Islands
    9. Shompens of Great Nicobar

## Topic 25. TRANSHUMANCE

*Important for subject: Geography*



To aid their biannual migration, the J&K nomadic communities were given smart cards and transport for free

- Jammu and Kashmir's nomadic communities, also known as Bakerwals and Gujjars, have been making long, difficult journeys on foot for centuries as part of their seasonal migration in search of better pastures for their livestock.
- They lose cattle often and sometimes their families to accidents or hardships.
- To help them travel long distances faster and safer, however, they have access to transport services and technological solutions.

### What is transhumance?

- Transhumance refers to a type of pastoralism or nomadism that involves the movement of livestock between mountains pastures during warm seasons and lower altitudes throughout the year.

- Transhumance is a practice that involves crop cultivation, permanent settlement and seasonal migration.
- These practices are mostly found in highlands and mountains.

## Topic 26. OCEAN CURRENTS PROTECT GALÁPAGOS ISLANDS FROM GLOBAL WARMING

*Important for subject: Geography*



According to a new study, the Galapagos Islands have been protected from global warming by cold ocean currents.

### **What the study found:**

- A cold, eastward-equatorial ocean current protects the islands from the warming Pacific Ocean. This current has been growing in strength for many decades.
- Since the 1990s, temperatures along the Galapagos' west coast have fallen by 0.5 degrees Celsius.
- This is reason to be cautiously optimistic for the second largest marine reserve in the entire world.
- It is home to many endangered species and is a biodiverse ecosystem. It has been designated a UNESCO World Heritage Site.
- The Galapagos' fauna and Flora could help reseed struggling ecosystems and sustain the region's fisheries.
- These waters off Ecuador's west coast do not cause corals to die or bleach. The

marine food chain is not affected by the warm waters around, however.

**Other threats:**

- However, the island group needs to be protected from overfishing and the growing pressures of eco-tourism.
- Both the human and natural pressures that are placed on this area, as well as the mechanism that keeps them alive, are in conflict. It is a valuable resource that must be protected.

**Geographical advantage:**

- The Galapagos might appear small specks in the eastern Pacific Ocean from space. Their exact position at the Equator is what makes them so significant.
- The force of planet's rotation binds the Pacific Ocean's equatorial subcurrent to the Equator.
- Below the ocean's surface, there is a rapid circulation of cold, nutrient rich water that flows from west to west.
- When it reaches the Galapagos Islands, some of this water is forced onto the surface.
- The photosynthesis is stimulated by the nutrient-rich water, which results in an explosion of food sources for many animals.
- The ocean current is cooler and more stable for coral reefs, marine life, and birds. They are often closer to the poles.
- The UNESCO World Heritage Convention describes it as a "living museum" and "showcasing evolution."
- Galapagos is home of the critically endangered Galapagos penguins, Galapagos fur seals and Galapagos Sea Lions.
- El Nino Effects
- El Nino refers to a weather pattern that causes unusually high temperatures in the eastern tropical Pacific Ocean.
- El Nino is a threat to the island population. It causes penguin populations to plummet by shutting down the cold current every two years.
- Ocean Currents and their Effects

### **Climatic Conditions:**

- The climate conditions in the areas where they flow have been affected by currents.
- Warm Equatorial currents increase the temperature in the area where they flow. The temperature in the areas where they flow is also affected by the cold currents.
- Without the North Atlantic Drift, for example, the British Isles might have been very cold.
- The cold Peru Current cools the hot climate in Peru.

### **Rainfall:**

- Warm currents are blown by winds that pick up moisture from the air. This can lead to rainfall, such as the North Atlantic Drift. It is a phenomenon that occurs in certain areas along the western coasts Europe.
- However, cold currents don't bring rain and instead make the area cooler and drier.
- Due to the cold Benguela current, Kalahari Desert doesn't get much rain.

### **Fog Formation:**

- Fog is formed when the warm currents meet the cool ones.
- Due to the collision of warm currents and cold currents, the ship is at risk.
- Many ships have been lost to icebergs because of poor visibility.
- Establishes a Fishing Zone
- Planktons are formed when warm and cold currents mix.
- Fishes are abundant in these areas.
- Grand Bank, USA (major fishing area), is an example of a warm gulf stream meeting Cold Labrador current.
- Major fishing zone formed when the warm Kuroshio current meets the cold Oyashio current at Japan coast.

### **Desert formation:**

- Desert formation on the west coast of subtropical and tropical continents is directly affected by cold ocean currents.
- The fog is common and the majority of the area are dry due to desiccating (loss) of moisture. These include the largest Sahara Desert (3.5 Million square miles), Great

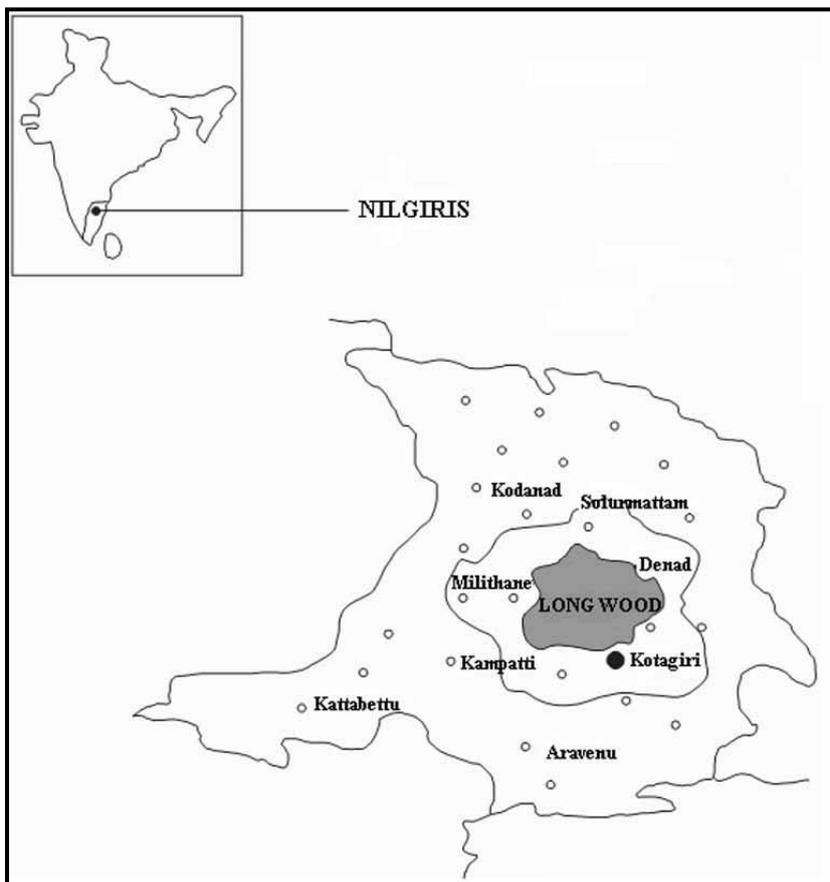
Australian Desert, and other hot deserts such as the Arabian Desert and Iranian Desert, Thar Deserts, Kalahari, Kalahari, Namib Deserts, and Thar Deserts.

**Violent storms:**

- Sometimes, a strong storm can form when a warm current meets a cold one.
- The line at which the Gulf Stream and the Labrador Current merge is where hurricanes occur offshore the U.S.A.

**Topic 27. LONGWOOD SHOLA FOREST**

*Important for subject: Geography*



The Queen's Commonwealth Canopy (QCC), a program to preserve unique forest areas in commonwealth countries, was granted recently to the Longwood Shola, which is the last and only urban shola for the Nilgiris District of Tamil Nadu.

- Longwood Shola
- Longwood Shola is the Nilgiris' only urban shola forest. It covers a 116-hectare area and is interspersed with grasslands.

- The forest patch is rich with biodiversity. It has helped to preserve the hydrological system of the area by capturing rainwater from marshes and then releasing it through streams. The ecosystem is home to the Nilgiritahr.
- Longwood Shola, an ancient forest with nutrient-rich soil that has been cultivated over hundreds of years, is one example.
- Longwood Shola, like other shola forest, is nestled between two hills. It acts as an aquifer perched high, and retains the water flowing from these hills.
- The soil is deep and retains water well.
- Even with heavy rainfall, soil can absorb water and release it slowly throughout the year.
- Longwood Shola's ecosystem services make it clear that urban forests must be preserved around the globe.
- Shola forest
- It is classified as "southern montane, wet temperate forest".
- You will find the sholas in the Nilgiris, Anamalai hills and Palani hills, Kalakadu and Mundanthurai in the states Tamil Nadu and Kerala.
- This unique system can be seen at elevations of 1400-2700km. It is interspersed by forest made up evergreen native trees that are dwarf in nature, and hill slopes covered native grass species.
- The vegetation has a double-layered canopy and a storey. Many characteristics of shola forests (shola is derived from Tamil solai, which means tropical rainforest) such as persistent cloud cover and moisture-capturing abilities make them a crucial part in hydrology and biogeochemistry.
- One of the most endangered and diverse landscapes in the Western Ghats is the sholagrassland ecosystem.
- These ecosystems are extremely sensitive to climate changes, which makes them vulnerable.
- They have been affected by many natural and anthropogenic forces, such as land use changes to support agriculture and infrastructure.

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### **Topic 28. DARK SKY SANCTUARY**

*Important for subject: Science and Technology*

Dark Sky Sanctuary is a sanctuary that preserves a unique or distinguished quality in starry

nights, nocturnal environments, and its cultural heritage.

- A sanctuary is different from a Dark Sky Park/Reserve in that it is usually located in a remote area with few nearby threats to its dark skies. It also does not meet other requirements for designation as either a park, reserve or park.
- Because of the geographic isolation of Dark Sky Sanctuaries, outreach opportunities are severely limited.
- A sanctuary designation is therefore specifically designed to raise public awareness and encourage long-term conservation.
- The Department of Science & Technology, Govt of India has taken the initiative to establish India's first ever "Night Sky Sanctuary" (Ladakh) within three months.
- As part of Changthang Wildlife Sanctuary, the proposed Dark Sky Reserve will be at Hanle in Ladakh.
- It will increase Astrotourism in India and be one of the most well-located sites for optical and infrared telescopes.
- The Indian Astronomical Observatory (IAO) is the entire set-up, which can be found on the mountain DigpaRatsa R, also known as Mt Saraswati.
- Recently, a tripartite MoU between the UT administration and Ladakh Autonomous Hill Development Council Leh (LAHDC), was signed to launch the Dark Space Reserve.
- Multicolored dishes are part of the Major Atmospheric Cherenkov Experiment Telescope (MACE), built by a consortium of Bhabha Atomic Research Centre and Tata Institute of Fundamental Research as well as the Electronics Corporation of India Ltd., the IIA, and the Tata Institute of Fundamental Research.
- It measures 21m in diameter and is the largest dish of its kind anywhere on the planet.
- Its mission is to detect Cherenkov radiation in space.
- The seven-telescope contingent called HAGAR (High Altitude Gamma Ray) also examines Cherenkov radiation but at a lower energy range.
- The highest observatory is the metallic capsule.
- It is located at the Himalayan Chandra Telescope, HCT, which has been active since 2000.
- A 2-metre optical infrared telescope is equipped with a 2-metre lens.
- It can detect light in the visible spectrum of the electromagnetic spectrum, as well as

- the spectrum just below it.
- The GROWTH India telescope is the second capsule.
  - It is a 70cm telescope that IIA and the Indian Institute of Technology (Mumbai) have made.
  - It is capable of tracking cosmic events over time such as the afterglows of a Gamma Ray Burst or the path of asteroids.
  - Remote control of the IAO telescopes is possible via satellite link.
  - Ladakh is a desert region with great potential to make uninterrupted astronomical observations.
  - Hanle is a natural setting for skygazing and setting up astronomical observatories.
  - Hanle, at 4,500m, is home to an optical, an infrared and a gamma-ray telescope at the Indian Astronomical Observatory complex, which is operated by the IIA.
  - These telescopes are used to study galaxies, stars, and the evolution of the Universe.

### Topic 29. ISRO'S NEXT-GEN LV MAY ASSUME PSLV'S ROLE

*Important for subject: Science and technology*

			
<b>SLV-3</b>	<b>ASLV</b>	<b>PSLV-XL</b>	<b>GSLV Mk II</b>
Height : 22.7m Lift-off weight : 17 t Propulsion : All Solid Payload mass : 40 kg Orbit : Low Earth Orbit	Height : 23.5m Lift-off weight : 39 t Propulsion : All Solid Payload mass : 150 kg Orbit : Low Earth Orbit	Height : 44m Lift-off weight : 320 t Propulsion : Solid & Liquid Payload mass : 1860 kg Orbit : 475 km Sun Synchronous Polar Orbit (1300 kg in Geosynchronous Transfer Orbit)	Height : 49m Lift-off weight : 414 t Propulsion : Solid, Liquid & Cryogenic Payload mass : 2200 kg Orbit : Geosynchronous Transfer Orbit

ISRO is currently developing Next Generation Launch Vehicles (NGLV) that will replace its

'trusted worker' PSLV in future.

- ISRO's NGLV is a three-stage reusable, heavy-lift vehicle. The payload capacity for Geostationary transfer orbit (GTO), will be approximately 10 tonnes, and the capacity for Low Earth orbit (LEO) will be twice that.
- Semi-cryogenic propulsion will be used for booster stages in NGLV, which is more economical and more efficient.
- Potential applications include future human missions, deep space missions, and cargo missions.
- It allows for bulk manufacturing, and the turnaround time can be minimal.
- PSLV and GSLV have been the main launch vehicles used by ISRO for satellite launches.

### **PSLV vs GSLV**

- ISRO has developed two satellite-launch vehicles (rockets), PSLV (Polar Satellite Launch Vehicle), and GSLV [Geosynchronous Satellite Launch Vehicle].
- PSLV was designed to provide "earth-observation" and "remote sensing" satellites. It has a lift-off mass of approximately 1750 kg to Sun-Synchronous circular orbits at 600-900 km altitude.
- Remote sensing satellites orbit earth pole-to-pole (at approximately 98 degrees orbital-plane inclined).
- Sun-synchronous orbits are those where the angle between the Sun and the satellite is constant over the entire orbit.
- These orbits are also known as "Low Earth Orbit" (LEO) because they have sun-synchronism.
- This allows the onboard camera to capture images of the earth in the same conditions. The satellite covers the same area, making them useful for monitoring earth resources.
- The PSLV can also be used to launch remote sensing satellites into Sun-synchronous Polar orbits.
- PSLV is a four-staged launch vehicle that uses solid rocket motors for the first and third stages, and liquid rocket engines for the second and fourth.
- The PSLV also has strap-on motors that augment the thrust provided the first stage. Depending on how many of these boosters are used, the PSLV can be classified into

different versions such as core-alone (PSLV–CA), PSLV–G, or PSLV–XL.

- The GSLV is designed mainly to deliver the communication-satellites to the highly elliptical (typically 250 x 36000 Km) Geosynchronous Transfer Orbit (GTO).
- GTO raises the satellite to its final destination of Geo-synchronous Earth orbit (GEO), at 36000 Km altitude. (and zero deg tilt on the equatorial plan).
- These satellites are useful because of their geo-synchronous nature. They appear to be permanently fixed in the sky as seen from a specific location on Earth.
- ISRO is currently developing two versions of the GSLV. ISRO is currently developing two versions of the GSLV Mk-II.
- The first version can launch satellites with lift-off masses of up to 2,500kg to the GTO, and satellites with lift-off masses of up to 5,000kg to the LEO.
- The GSLV MK-II has three stages. It uses a solid rocket motor for the first stage and liquid fuel for the second stage. The third stage is called Cryogenic Upper Stage and it uses a cryogenic engine.

### **Semi-Cryogenic Engine:**

- Semi Cryogenic engines use Refined Kerosene, not liquid hydroge. The liquid oxygen is used to make an Oxidiser.
- Semi Cryogenic engines require Refined Kerosene, which is lighter than liquid fuel. They can also be stored at a normal temperature.
- The rocket can be boosted by liquid oxygen and kerosene.
- Refined Kerosene takes up less space and can be carried in a Semi Cryogenic Engines fuel compartment.
- Semi cryogenic engines are more powerful, cost-effective and friendly to the environment than cryogenic engines.

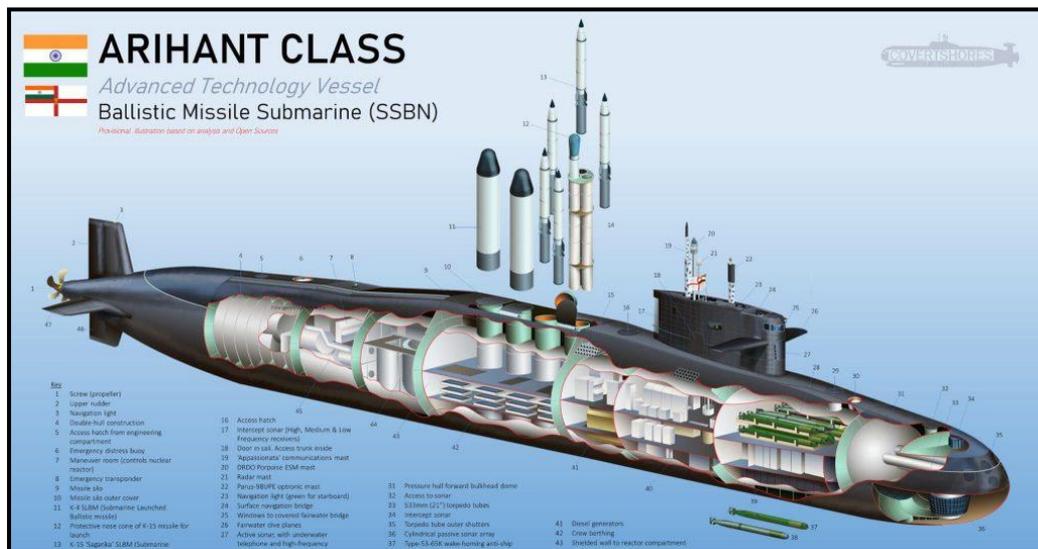
### **Reusable Rockets**

- Future rockets will be reusable. Only a small portion of the rocket would be damaged during the mission.
- It would return to the earth's atmosphere in large quantities and be used for future missions.
- Reusable rockets could cut costs and energy and reduce space debris which is growing rapidly due to the high number of launches.

- While fully-reusable rockets remain to be developed and tested, partially-reusable launch vehicles have been in service for some time.
- ISRO also created a reusable rocket called RLV-TD (Reusable Launch Vehicle Technology Demonstrator), which was tested successfully in 2016.

### **Topic 30. INS ARIHANT SUCCESSFULLY FIRES SLBM; VERY HIGH ACCURACY: GOVT**

*Important for subject: Science and Technology*



STRATEGIC STRIP Nuclear Submarine INS Arihant successfully launched a Submarine Launched Ballistic Missile (SLBM) on October 20, 2022.

- According to the Ministry of Defence, the test was significant for the SSBN program, which is a critical element of India's nuclear defense capability.
- The missile was tested at a predetermined range, and it impacted the Bay of Bengal target area with high accuracy.
- India's policy of having a 'Credible Minimal Deterrence' is consistent with its commitment to 'No First Use'. This means that there should be a robust, resilient and secure retaliatory ability.
- About Ballistic Missile Submarine (SSBN).
- INS Arihant, India's nuclear-powered missile capable submarine was commissioned in 2016.
- The hull classification symbol for nuclear powered ballistic missile-carrying submarines is the SSBN.

- The SSBN fall under the control of India's Strategic Forces Command.
- The submarine-launched ballistic missiles (SLBMs) family, sometimes referred to by the K family missiles, are code-named after Dr A P J Abdul Kalam who was a key figure in India's missile and space programs. He also served as the 11th President.
- Under the SLBM family missiles of different ranges were developed, including K-15, also known as Sagarika and with a range of at most 750km.
- India also tested and developed the K-4 missiles, which are part of the same family. They have a range 3500km.
- According to some, there are more K-family members with higher ranges. In 2016, INS Arihant, which was launched in 2009, was commissioned.
- The 2017 launch of INS Arighat, the next class in the series, was reported to have occurred in 2017.
- According to reports, it is currently undergoing sea trials.
- In the context of building a nuclear triad, it is crucial to be able launch nuclear weapons from submarines. This is especially true in light of India's 'no first uses' policy.

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### **Topic 31. AGRICULTURE IN INDIA**

#### ***Important for subject: Agriculture***

Sometimes, India's agricultural production statistics can be inconsistent with India's consumption data.

- The household consumer spending data are more than a decade outdated and a timely update is needed.
- NSO data
- The National Statistical Office's (NSO), household consumer expenditure (HCE), survey for 2011-12 showed that the per capita milk consumption was 4.33 litres in rural India compared to 5.42 litres urban India.
- An average consumption of 5.15 kg (5.15 kg) and 1.03 kg (1.03 kg) of milk equals nearly 75 million tonnes (mt), according to the 2011 Census.
- This milk would be 25% more than what is consumed by households. It would add up to approximately 94 mt, or a daily per-capita availability of 212 grams.

### What production data are you looking for?

- According to Department of Animal Husbandry & Dairying statistics (DAHD), India's milk production for 2011-12 was 127.9 mt and per capita availability of 289 gm.
- In 2020-21, they were respectively 210mt (and 427gm)
- After 2011-12, data from the HCE Survey have not been published.
- Most likely, the gap between NSO's consumption based estimates of production and the DAHD's production numbers would have only widened.
- India's average annual milk production increased by 6.2% between 2013-14 and 2020-21.
- This is not reflected in liquid milk marketing by dairy cooperatives which increased by just over 3 percent annually in volume terms in this time.
- The average nominal growth in sales for 12 major dairy companies between 2014-15 and 2020-21 was 4.93%.
- After accounting for an average wholesale price inflation rate of 3% for dairy products over the same period, their real sales growth was slightly higher than 1.9%.
- Discrepancies can be very apparent
- Clearly, the 6.2% increase in milk production based upon official DAHD statistics doesn't seem to match the sales growth at organised dairies which average only 2-3% per annum.
- It is also interesting to note that India's per capita milk supply of 427 grams for 2020-21 is an average across all regions.
- The key to success is demand
- In the 2011-12 survey, the monthly household consumption of all cereals was 9.28 kg in urban India and 11.22 kg in rural India.
- An average 10 kg household cereal intake would require 1,400 million people to consume around 168 mt of cereal annually. If 25% of the total cereal consumption is in processed form (breads, biscuits cakes, cookies, cakes, noodles vermicelli, flakes etc.), then this would be a staggering 168 mt. The total early demand for grain would be approximately 235mt, with 25 mt more of maize (mainly) as feed or starch.
- This is in contrast to the average cereal production of 267 mt from 2016-17 through 2020-21.

- The output estimates of the Agriculture Ministry are correct.
- This is partly due to the fact that the country produces 30 mt plus of surplus grain each year.
- For a commodity such as sugar, where the majority of the cane has been crushed by organized mills, discrepancies in production might be lower.
- For a population of 1,400,000,000, direct household consumption would be 16.8 mt at an average of 1kg per person per month.
- The indirect consumption of sugar may also be 50% because it has more bulk users than milk and wheat -- soft drink, confectionery, etc.
- This brings the domestic total demand to 25-26mt. It is a significant increase from the 32 mt averaged over the past five years.
- Overproduction of sugar has been a problem, except in exceptional years.
- A new HCS survey is needed
- It is important to know what and how many Indians consume, which can only be revealed by a nationwide HCE survey. This information can also be used to analyze demand and supply for other farm products.
- It makes it easier to formulate policies that are more effective, such as those regarding fixation of minimum support price and tariffs, or crop diversification.
- A new HCE survey is urgently needed.
- The current consumer price index, which is used to calculate inflation as well as for RBI's interest rates actions, is based upon the 2011-12 HCE survey consumption basket.
- This basket may be outdated and not representative of all the food and non-food items Indian households consume today. It may not be suitable for either agriculture nor monetary policy.

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### **Topic 32. INDIA'S DIGITAL ECOSYSTEM FOR AGRICULTURE**

*Important for subject: Agriculture/Technology*

A task force of experts has been established by the agriculture ministry to consolidate the report 'India Digital Ecosystem of Agriculture' (IDEA).

- The Union Minister for Agriculture announced in 2021 the launch of the "Digital Agriculture Mission 2021-2025".

- This initiative will leverage a variety of technologies, including AI, blockchain and drone technology, to improve the sector's overall performance.
- IDEA is an important component of the initiative that lays the foundation for digital advances in agriculture.

### Concept of IDEA:

- The IDEA concept is focused on the farmer and improving farmers' livelihoods. It proposes to achieve this goal through close integration of agritech innovation and the agricultural industry ecosystem to farming systems and food systems.
- The IDEA principles specifically mention openness of data. This means that it is open to farmers and businesses, indicating integration.
- The IDEA architecture includes value-added innovation services from agritech industries and start ups.

### IDEA's Key Features:

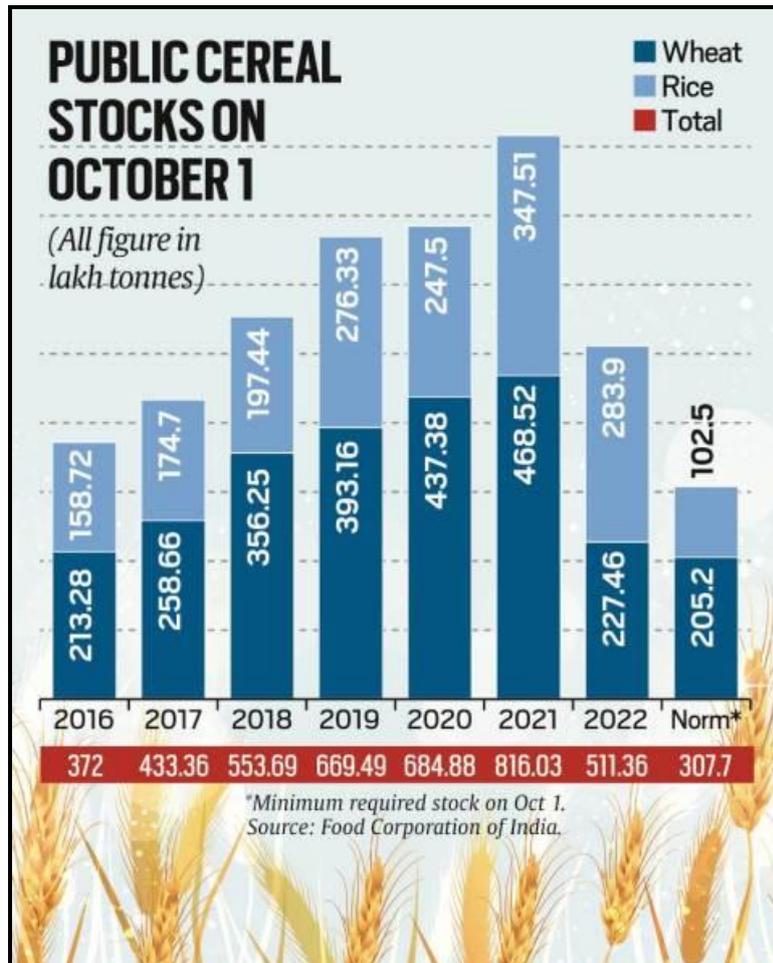
- IDEA provides a framework for "Agristack".
- Every farmer will be issued a unique digital ID that includes personal information, information about their land, and production and financial details.
- Each ID will be linked with the individual's Aadhaar digital national ID.
- This will create a National Farmers Database. It is a kind of super Aadhaar for farmers.
- This database will contain farmers' digitalized land records under the National Land Records Modernisation Programme. It is also cross-linked with Aadhaar to create an unique FID (or a farmer's ID).
- It will also pull data from schemes such as the PM Kisan and soil health cards.
- Microsoft is currently building the Unified Farmer Service Interface under the auspices of the Department for Agriculture & Farmers Welfare (DoAFW).
- Anyone with access to this database can uniquely identify a landholder and determine the extent of his holdings, the soil cropping patterns, average yields, and other relevant information at a granular scale.
- Digital Initiatives from the GOI

## Agri Stack

- The Ministry of Agriculture and Farmers Welfare plans to create 'AgriStack,' which is a collection of technology-based agricultural interventions.
- It will provide a single platform for farmers that provides them with end-to-end services throughout the entire agriculture food value chain.
- Unified Farmer Service Platform, (UFSP).
- UFSP is a combination Core Infrastructure, Data, Applications and Tools which allows seamless interoperability between various public and private IT systems within the agricultural ecosystem. The following roles are envisaged for UFSP:
- Act as a central agent in the agri-ecosystem (like UPI in e Payments). Enables registration of Service Providers (public or private) and Farmer Services.
- Ensures compliance with all rules and validations during service delivery.
- It acts as a repository of all applicable standards, API's (Application Programming Interface), and formats.
- Serves as a medium for data exchange between various services and schemes to facilitate the delivery of comprehensive services to farmers.
- This will be part of the 'AgriStack" that the Govt. This is what the Govt.
- National e-Governance Plan in Agriculture:
- It is a Centrally Sponsored Program, and was launched in seven pilot states in 2010-11. The scheme aims to accelerate development in India by using ICT to provide timely access to information relevant to agriculture to farmers.
- The scheme was extended to all remaining States and 2 United States in 2014-15.
- National Land Records Modernisation Programme (NRLMP):
- Each farmer will be issued a unique digital identification (farmers ID) that includes personal information, information about their land, and production and financial details.
- Each ID will be linked with the individual's Aadhaar digital national ID.
- Other Digital Initiatives: Kisan Suvidha App and Agri Market App. Soil Health Card Portal (SHC).

**Topic 33. GOVT STOCKS DIP TO 5 YEAR LOW AMID HIGH FOOD INFLATION**

*Important for subject: Agriculture*



Stocks of rice and wheat with government agencies have fallen to a five year low, despite retail cereal price inflation rising to a 105-month high last September.

- According to the Food Corporation of India, (FCI) data shows that wheat and rice stocks in public goesdowns totaled 511.4 lakh tonnes (lt), as of October 1. This is compared to 816. It one year ago and the lowest since 2017.
- FCI must maintain a minimum buffer of wheat stocks, which is the three-month operating stock requirement plus a strategic reserve to cover procurement shortfalls.

**What is buffer stock?**

- Buffer stock is a reserve of a commodity used to compensate for price fluctuations or unforeseen emergencies.
- A buffer stock is usually kept for essential commodities and necessities such as food

grains and pulses.

- India's buffer stocking of food grains can be conceptually viewed as a means to deliver food security and strategic food domestic support policies. This allows the government to achieve multiple goals, including providing relief from famine, providing food security for consumers, and offering production incentives to farmers.
- The IVth Five Year Plan (1969-1974) introduced the concept of buffer stock.

### What is the purpose of buffer stock?

- The Government of India (GOI), / Central Government, maintains a buffer stock of food grains within the Central Pool.
- Food Security: Ensure that you have enough buffer stock to ensure food security.
- Welfare Schemes: Monthly food grain supply via Targeted Public Distribution System, TPDS and Other Welfare Schemes (OWS).
- Use emergency resources to meet unexpected crop failures, natural disasters, and other emergencies.
- **Price Stability:** Market intervention or price stabilization to increase supply to moderate open market prices.
- The Cabinet Committee on Economic Affairs sets the minimum buffer norms on a quarterly basis. This means that they are set on the 1st of each financial year, on the 1st of April, 1st June, 1st September, 1st Oct and 1st January.
- The Government of India has established a strategic reserve of 30 million tons of wheat, in addition to buffer norms. 01.07.2008, 20 lakh tons rice w.e.f. 01.01.2009.
- The Government of India uses the term "Food grain stocking norms" at the moment. This refers to the amount of stock in Central Pool that is sufficient for the operation of food grains and other exigencies at any given time.
- This concept was previously known as Strategic Reserve and Buffer Norms.
- Currently, the stocking norms set by Government of India on 22.01.2015 include:
- Operational stocks are those that are kept in order to meet the monthly distributional requirements under TPDS or OWS.
- Food security stocks/reserves are maintained to meet shortfalls in procurement.
- Four months of food grains are required for issue under TPDS or OWS. However, any surplus is considered buffer stock. Physically both buffer and operational stocks can be merged into one.

- The GOI considers excess food stock to be surplus stock. It liquidates it from time to time via open market sales, exports, or allocations to other states. The central governments' stock of food stock is reviewed every five years.
1. State Government Agencies (SGAs)
  2. Participating States in the Decentralized Procurement Scheme
  3. Food Corporation of India (FCI).

### **Consumer Food Price Index:**

- It measures the change in retail prices for food products by a specified population group within a given area, with reference to a baseline year.
- Since May 2014, the Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation (MOSPI), has been releasing Consumer Food Price Indices for all three categories - rural, urban, and combined - on an all-India basis.
- The CFPI, like the Consumer Price Index (CPI), is also calculated monthly and the methodology remains the same.
- 2012 is the current base year. With effect from January 2015's release of indices, the CSO changed the Base Year for the CPI/CFPI from 2010=100 and 2012=100.
- CFPI (Rural/Urban/ Combined) is the average weighted Cereals and Products subgroup of CPI for each category - Rural/urban
- Food and Agriculture releases global food price index

### **Organization of the United Nations:**

- The FAO Food Price Index measures the monthly changes in international prices for a basket food commodities.
- It is comprised of the average price indices of five commodity groups (Cereal).
- Weighted by the average export share of each group for 2002-2004.
- A new WPI Food Index is being created after the revision of Whole Sale Price Index with the new base years 2011-12. It combines the "Food Articles" under "Primary Articles", in WPI, and the "Food Products" under the "Manufactured Products" in WPI.
- This would be combined with the Central Statistics Office's Consumer Food Price Index, which will help to monitor the food price situation better.

### Topic 34. FREEBIES

*Important for subject: Polity*

Freebies debate

- There is currently no law that prohibits political parties from giving away freebies.
- These programmes support the Directive Principles of State Policy in Part IV of the Constitution.
- Article 36 of the Constitution encourages a state to ensure a just social order.
- Art 39 states that the state must make every effort to reduce wealth concentration and promote the common welfare
- Directive Principles of State Policy
- DPSP (Directive Principles of State Policy), enumerated at Part IV of the constitution. It includes Articles 36 through 51.
- This idea was borrowed from the Irish Constitution by the framers.
- Before forming any law or policy for the country, the state must keep all the DPSP in mind.
- DPSPs cannot be justified.
- DPSPs are welfare state.
- DPSPs aim to create economic and social democracy
- All the DPSPs are listed in Article 38 to 51.

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### Topic 35. ARTICLE 340

*Important for subject: Polity*

Mulayam Singh Yadav, three-time chief minister of Uttar Pradesh and Samajwadi Party founder, died on Monday at a private Gurugram Hospital

- Article 340 The President can order the appointment of a Commission made up of such individuals as he deems appropriate to examine the conditions of the socially and educationally backward class within India's territory and the difficulties they face, and make recommendations to the Union and any State regarding the best way to alleviate such difficulties and improve their situation.
- Article 340 of Constitution allowed for egalitarian possibility. This resulted in two Backward Classes Commissions, the Kalelkar Commission (1953-1955), and the

Mandal Commission (78-80).

- The Kalelkar Commission did not yield any results.
- Mobilization campaign to implement the Mandal Commission's recommendations into a "Mandal Movement".
- "Mandal moment" was when it was announced that 27% of the Central Services' central services would be reserved for the Other Backward Classes (OBC).

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### **Topic 36. MENTAL HEALTH IN INDIA**

*Important for subject: Governance*

Monday was observed worldwide as World Mental Health Day.

- Before the pandemic, mental health problems were a significant contributor to India's high level of illness. There was a large gap in treatment because of poor awareness of symptoms, stigmatization, and lack of information about treatment options.
- 1982 National Mental Health Programme (NMHP).
- To ensure that minimum mental healthcare is available and accessible to all people in the future, especially those who are most vulnerable or least fortunate.
- To promote the use of mental health knowledge in general and social healthcare;
- To encourage community participation in the development of mental health services and to encourage efforts towards self-help within the community.

#### **Mental Healthcare Act, 2017:**

- This Act aims to protect the rights of people with mental illnesses to get care and live with dignity.

#### **These are the key elements of the Act:**

- Rights of persons with mental illness: Right to access healthcare, right to live with dignity, right to confidentiality
- A person suffering from a mental illness can make an advance directive stating how they want to be treated and the name of their representative.
- The Act requires the government to establish a Central Mental Health Authority at National-Level and a State Mental Health Authority in Every State.
- An electro-convulsive treatment without the use muscle relaxants or anaesthesia is not

recommended for a mentally ill individual. Electroconvulsive therapy is not permitted to be administered to minors.

### **Topic 37. UNIVERSAL IMMUNIZATION PROGRAMME**

*Important for subject: Government Scheme*

The Union health ministry directed all states and union territories that they focus on the universal vaccination programme (UIP), as it was badly affected by the covid pandemic of 2020 and 2021.

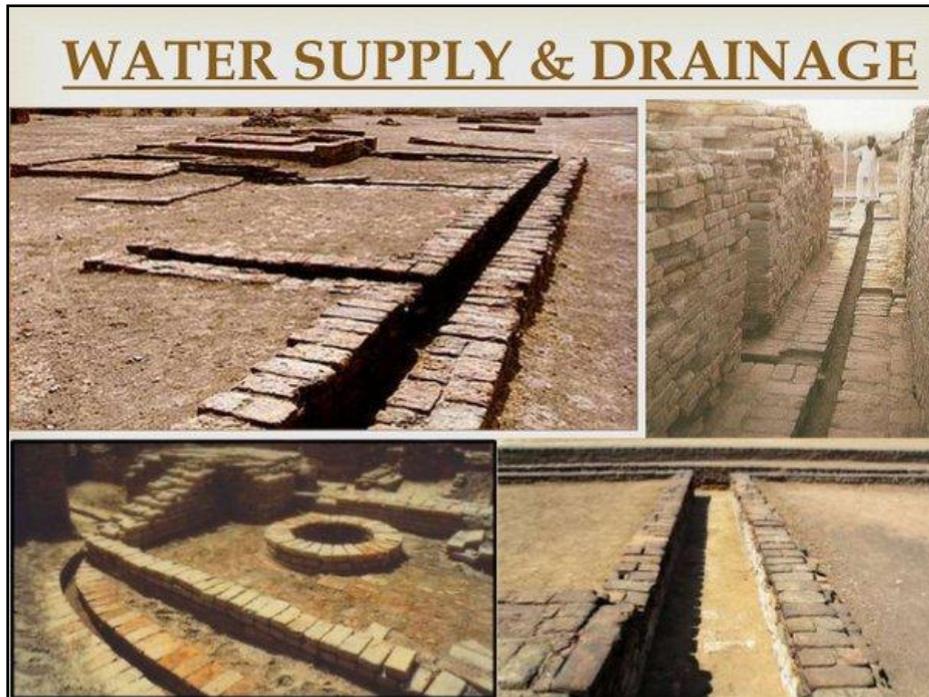
- The universal immunization program/Mission Indradhanush
- The Immunization Programme was established in India in 1978 by the Ministry of Health and Family Welfare as an Expanded Programme of Immunization.
- The Programme was renamed the "Universal Immunization Programme" (UIP) in 1985.
- UIP protects children and pregnant women from 12 vaccine-preventable diseases.
- Mission Indradhanush, which was implemented in 2015 to accelerate coverage, was created to increase immunization coverage by up to 90%.
- The Ministry of Health and Family Welfare (MOHFW), launched it on 25 December 2014.
- It aims to expand immunization coverage for all children in India.
- Mission Indradhansuh also was identified as one the flagship schemes under Gram Swaraj Abhiyan or Extended Gram Swaraj Abhiyan.
- It is one the most important public health programs in the world, focusing on close to 26,000,000 newborns each year and 29 million pregnancies annually.
- If a child receives all required vaccines within the first year of its life, it is considered to have been fully immunized.
- The Universal Immunization Programme offers life-saving vaccines for all children in the country, free of charge. It protects them against 12 preventable diseases.
- Tuberculosis and Pertussis, Diphtheria and Pertussis, Tetanus and Polio, Hepatitis A, Hepatitis C, Hepatitis B and Meningitis caused by Haemophilus Influenzae Type b (Hib), Measles and Rubella, Japanese Encephalitis, (JE) and Rotavirus Diarrhoea. (Rubella and JE, Rotavirus vaccine in selected states and districts.
- Pregnant women receive the tetanus vaccination, ORS packets, and zinc tablets. In the

case of severe diarrhea or dehydration, vitamin A doses are given to increase child immunity.

- Mission Indradhanush is focused on areas with low immunization coverage or tough terrains in which there are high proportions of unvaccinated or partially vaccinated children.
- Intensified Mission Indradhanush was launched in October 2017.
- IMI focuses more on urban areas, which are one of Mission Indradhanush's gaps.
- The focus was on increasing immunization coverage in selected districts and cities, so that full immunization is possible to more than 90% by December 2018, instead of 2020.
- Electronic Vaccine Intelligence Network - eVIN
- This innovative technology solution is designed to strengthen the nation's vaccine supply chains.
- This is an indigenously-developed technology system that digitizes vaccine stock and monitors temperature through a smartphone app.
- eVIN is a tool that supports the Government of India's Universal Vaccination Programme. It provides real-time data on vaccine flows and storage temperatures, as well as information about vaccine stocks and flows across all cold chain points in India.
- It is being implemented by the Ministry of Health and Family Welfare under the National Health Mission.
- It combines IT infrastructure with trained human resources to allow real-time monitoring of stock levels and temperature for vaccines stored in multiple locations throughout the country.
- The integrated solution includes:
  - Technology: Access online real-time information about vaccine stocks and temperature in order to support evidence-based decision making
  - Governance: Organizing records, improving logistics and encouraging best practices to ensure efficient logistics management for vaccines.
  - Human Resources: To strengthen the state cold chain network through the development of the capacities of handlers, managers and other personnel at every stage of vaccine supply.

## Topic 38. CHOLA IRRIGATION AND WATER MANAGEMENT

*Important for subject: Ancient and Medieval History*



Ponniyin Selvan II Cholas of Mani Ratnam took measures to improve the current irrigation system.

- The state was relying on agriculture for most of its income, so the Cholas concentrated their efforts on water management. Vativaykkal is a traditional method of harnessing rainwater in the Kavery delta. It uses a crisscross channel.
- Vati runs in a north-south direction, while vaykkal runs east-west.
- Technically, vati can be described as a drainage channel while vaykkal can be described as a supply channel.
- The water that ran through vaykkal from the field was to be drained to vati or another vaykkal.
- Rainwater would flow from the natural canal's beginning. Many irrigation canals are modified versions of these natural canals.
- The harnessed water was used alternately through vati and here the mechanism was such that water was distributed to the parcelled-out lands in sequel.
- Many canals were named for kings, queens, and gods. Some examples of the names are Uttamacholavaykkal, Panca-vanamadevi-vaykkal and Ganavathyvaykkal.
- The landowners owned Ur-vaykkal jointly.

- The nadu-levelvaykkal was also known as nattu - vaykkal. For the distribution of water, the turn system was used.
- In Chola inscriptions are listed big size irrigation tanks like Cholavaridhi and Kaliyaneri.
- Conscripted labour was used for the maintenance and repair of irrigation systems.
- Rajendra Chola I, Gangaikonda Chozhapuram, irrigated Gangaikonda Chozhapuram with a 16-mile-long embankment made of solid masonry.
- Rajendra described it in his jalamayam jayasthambham meaning "pillar of victory over water".
- Alberuni, an Arab traveller, visited the area 100 years later. He was astonished to see them and stated that "Our people, when seeing them, are amazed at them and are unable even to describe them."
- A unit called Kalam (28kg) was used to collect paddy tax.
- Rajaraja I established a standard for tax collection. 100 kalam was collected from the land of one Veli (about 6.5 acres), with the standard veli varying according to the fertility of the soil or the number of crops that were raised.

## Water Management

### Different types of water rights:

- The water allotment is called nirkkiintavaru (share as allotted). The water was released via kumizh ortalaivay, which is a head-channel. Royal orders warned the people against the violation of water rights and encroachment of water resources gifted to the brahmadeya settlements. Enkalkulam, a common village tank, was also known as our tank.
- Water rights were also included in land transactions, such as donation and endowment.
- It was possible to render free labour for the periodic and seasonal maintenance of the irrigation tanks.
- Vetti and amanji were forms of free labor related to public works at village level.
- Under the Cholas, village assemblies collected a tax called eriyam which was used to repair irrigation tanks.
- Local leaders, such as araiyan, have repaired or renovated irrigation tanks that were

damaged by a storm. In some cases, water was shared between temples and villagers from the same tank.

- The water was released through the head channel. They also sluiced from the rivers and tanks by special groups called talaivayar or talaivaychanrar.
- One group of people was responsible for kulam. Later, temples were given the responsibility of maintaining the irrigation sources.

# PIONEER ACADEMY



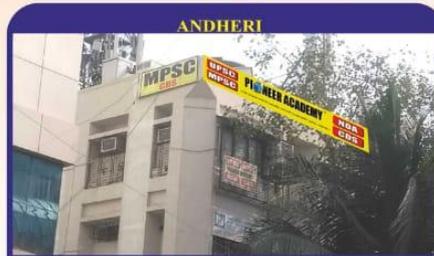
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Mob :91453 39324 / 25



**THANE Address :**  
201/202/203/204, 2nd Flr., Laizer Arcade, Raghoba Shankar Road, Chendani, Thane (W) - 400 601  
Mob :75060 10635



**DADAR Address :**  
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Mob : 93241 69627 / 91375 41508



**ANDHERI Address :**  
3rd Flr., Syndicate Chamber, Above Vaibhav Restaurant, Next to Better Home Hotel, Opp Andheri (E) - 400 601  
Mob : 84518 55673 / 70302 92316



**KALYAN Address:**  
2<sup>nd</sup> Flr., 2. Suyash Plaza, Opp. Railway Station, Near Deepak Hotel, Kalyan (W) - 421 301  
Mob.: 81691 40960



**PIMPRI CHINCHWAD Address:**  
3<sup>rd</sup> Flr., Kunal Plaza, Mumbai Pune Road, Chinchwad Station, Chinchwad, Pune - 411019  
Mob.: 9975459324 / 9503459325



**NERUL ACADEMY**  
16, 20 & 21, 1st Flr., Om Surya complex, Opp. Nerul Railway station, Beside Abhodaya Bank, Sector 15, Nerul (E), Navi Mumbai - 400707  
Mob.: 93212 87241 / 93212 89027



**BORIVALI ACADEMY**  
313/314, 3rd Flr., V Star Plaza, Chandavarkar Rd., Near Saraswat Bank, Sundar Nagar, Borivali (W), Mumbai - 400092  
Mob.: 93212 49713 / 96533 04874

Email : [pioneeracademypace@gmail.com](mailto:pioneeracademypace@gmail.com)  
Website : [www.pioneeracademypace.com](http://www.pioneeracademypace.com) / .in  
Contact : + 91 75060 10635

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