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Success is born of action...

Topic 1.CANADA MARKED FIRST NATIONAL DAY FOR TRUTH AND RECONCILIATION THIS YEAR

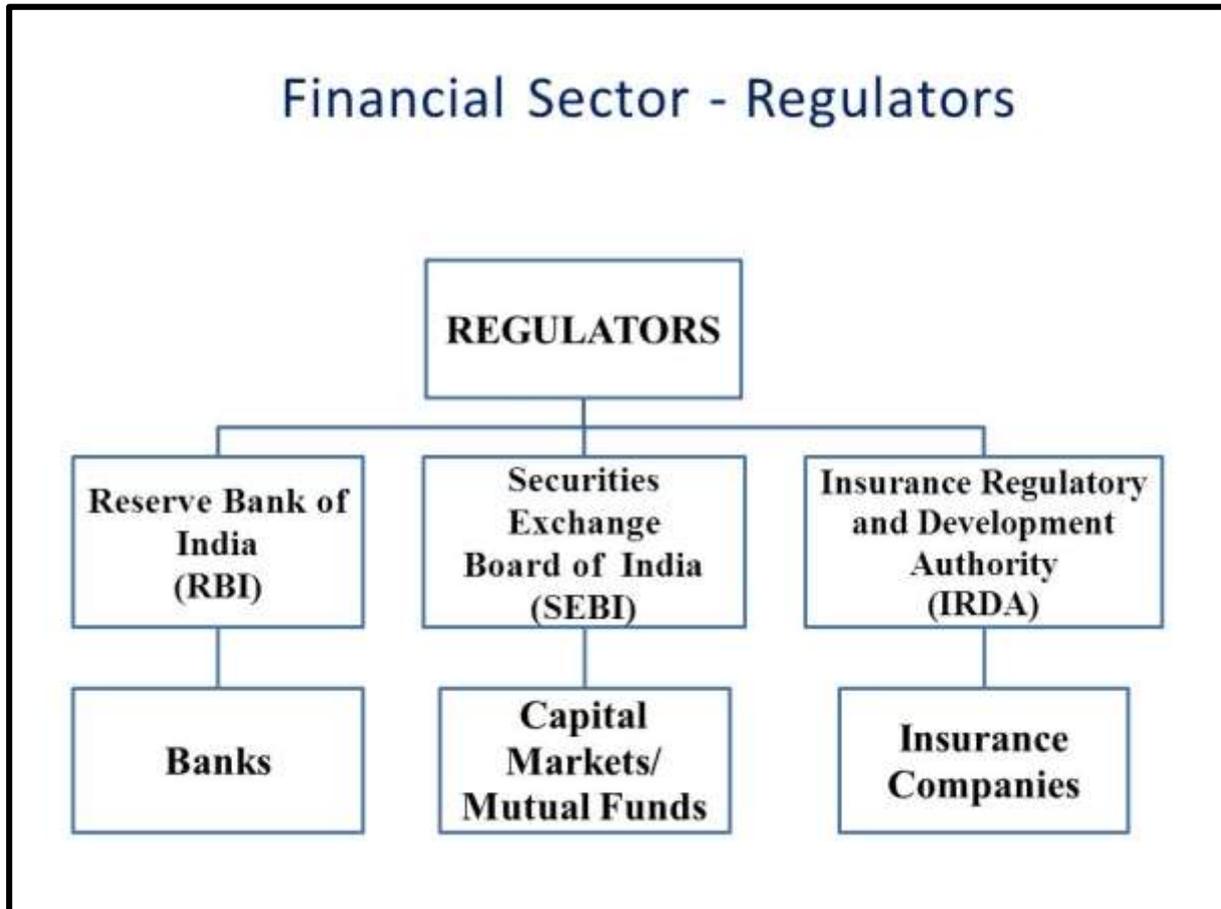
Importance for Prelims: IR

Canada marked its first ever National Day for Truth and Reconciliation on Thursday to honour the lost children and survivors of the country's indigenous residential schools, their families and communities.

- Canada marked its first ever National Day for Truth and Reconciliation on Thursday (30 Sept, 2021) to honour the lost children and survivors of the country's indigenous residential schools, their families and communities.
- The aim of the holiday is to educate and remind the citizens of the history of indigenous children and remember their suffering.
- All citizens were encouraged to wear the colour orange to highlight how indigenous children were robbed of their culture and freedoms.

Topic 2.FINANCIAL SECTOR REGULATORS

Importance for Prelims: Economy



Financial sector regulators should foster competition: CEA

- Financial sector regulators should adopt a “developmental” mindset to extend access and encourage competition within the sectors that they oversee, whether or not it's mutual funds, pensions or insurance, Krishnamurthy Subramanian, Chief Economic authority to Finance Ministry has aforesaid.
- While we've got over 40 investment firm houses within the country, top 4-5 account for 70-80 per cent of the inflows.
- That isn't indicative of a sector that's competitive.
- The world Fintech Fest 2021 was organised by Fintech Convergence Council (FCC) and Payments Council of India (PCI), of internet and Mobile Association of India (IAMAI).

Financial Regulators in India

- **SEBI:** The market regulator in the Indian capital market is the Securities and Exchange Board of India (SEBI).
- **IRDAI:** The Insurance Regulatory and Development Authority (IRDA) does the same for the insurance sector.
- **RBI:** Reserve Bank of India (RBI) conducts the country's monetary policy.
- **PFRDA:** Pension Funds Regulatory and Development Authority (PFRDA) regulates pensions.
- **MCA:** Ministry of Corporate Affairs (MCA) regulates the corporate sector.

Topic 3. ATOMIC ENERGY REGULATORY BOARD

Importance for Prelims: Government Bodies



The atomic energy regulatory Board (AERB) has granted consent for the institution of far from Reactor spent fuel storage for the Kudankulam nuclear power Project's units 3 and 4.

- The atomic energy regulative Board was entrenched on November 15, 1983, by the President of India by exercising the powers presented by the atomic energy Act, 1962 to hold out bound regulative and safety functions under the Act.
- The regulatory agency of AERB comes from the foundations and notifications published under the atomic energy Act and therefore the atmosphere (Protection) Act, 1986.
- The energy regulative Board is that the primary establishment tasked to seem at problems relating to everything associated with nuclear safety.

- The Mission of the AERB is to make sure the utilization of radiation and energy in India doesn't cause undue risk to the health of individuals and therefore the atmosphere.
- AERB's headquarters is in Mumbai. Currently, it consists of regular Chairman, an ex officio Member, 3 part-time Members and Secretary.

Topic 4. NUCLEAR POWER CORPORATION OF INDIA LIMITED

Importance for Prelims: Government Bodies



Spent fuel storage cleared for Kudankulam units 3 & 4. nuclear power Corporation planned it at the site wherever 2 x 1,000-MW units 1 and 2 are operative.

- The atomic energy Corporation of Republic of India restricted (NPCIL) is an Indian public sector endeavor primarily based in Mumbai, Maharashtra. it's all owned by the government of India and is chargeable for the generation of atomic energy for electricity.
- NPCIL is run by the Department of atomic energy (DAE).
- NPCIL was created in September 1987 under the companies Act 1956, “with the target of undertaking the look, construction, operation and maintenance of the nuclear power stations for generation of electricity in

pursuance of the schemes and programmes of the govt of India under the supply of the atomic energy Act 1962.

- All atomic energy plants operated by the corporate are certified for ISO-14001 (Environment Management System)

Topic 5.PRESS COUNCIL OF INDIA (PCI)

Importance for Prelims: Government Bodies



PCI panel to probe 'harassment' of scribes

- The Press Council of India was 1st set up within the year 1966 by the Parliament on the recommendations of the primary Press Commission.
- **Aim:** To preserve the liberty of the press and maintain and improve the standards of the press in India.
- The present Council functions under the Press Council Act, 1978.
- It may be a statutory, quasi-judicial authority functioning as a watchdog of the press, for the press and by the press.
- **Composition:** The PCI consists of a boss and 28 alternative members.

- The Chairman is chosen by the Speaker of the Lok Sabha, the Chairman of the Rajya Sabha and a member elected by the PCI.
- **Powers:** It adjudicates the complaints against and by the press for violation of ethics and for violation of the liberty of the press, severally.
- The Press Council of India is chargeable for enquiring into complaints received.
- It might summon witnesses and take proof under oath, demand copies of public records to be submitted, even issue warnings and admonish the newspaper, news organisation, editor or journalist.
- Decisions of the PCI are final and can't be appealed before a court of law.
-
- Limitations of PCI: they can not punish newspapers, news agencies, editors and journalists for violation of the rules.
- The PCI only overviews the functioning of print media.
- It will enforce standards upon newspapers, journals, magazines and alternative sorts of print media.
- It doesn't have the facility to review the functioning of electronic media like radio, tv and internet media.

Topic 6.SBM-U 2.0 AND AMRUT 2.0

Importance for Prelims: Governance

Urban missions to get massive outlay

- The revamped versions of the Swachh Asian nation Mission Urban (SBM-U) and therefore the Atal Mission for Rejuvenation and concrete Transformation (AMRUT) that Prime Minister Narendra Modi can launch on Friday would come with convergence with the corresponding missions for rural areas and outcome-based funding for cities.
- The SBM-U 2.0 and AMRUT 2.0 aim at “saturation”, whereas the primary five-year iterations of the schemes launched in 2014 and 2015 severally centered on “transformation”.
- While SBM-U focused on construction of toilets and creating cities open defecationfree (ODF), SBM-U 2.0 would aim to create the facilities higher, reclaim all landfills and take process of municipal solid waste to 100% from the current 70th. Similarly, AMRUT 2.0 would aim to supply universal coverage of facility to any or all 4,378 statutory towns, an increase from the goal of covering 500 cities under AMRUT.
- Ministry would collaborate with the Jal shakti Ministry to confirm convergence with phase-II of SBM-Rural and JalJeevan Mission for areas like villages on the outskirts of cities that have each urban and rural options.
- The 2 missions had been designed to create cities “garbage free” and “water secure”, that outlays of ₹1.41 lakh crore for SBM-U 2.0 and ₹2.87 lakh crore for AMRUT 2.0 had been planned.

Topic 7.PADDY PROCUREMENT DELAY

Importance for Prelims: Economy

SPECIFICATION FOR ALL PADDY VARIETIES		
<p>Paddy shall be in sound merchantable condition, dry clean, wholesome of good food value, uniform in colour and size of grains and free from moulds, weevils, obnoxious smell, Argemone mexicana, Lathyrus sativus (Khesari) and admixture of deleterious substances. Paddy will be classified into grade 'A' and 'common' groups</p> 	SPECIAL MARKERS	
	Refractions	Maximum Limit (%)
	Foreign matter	
	a) Inorganic	1.0
	b) Organic	1.0
	Damaged, discoloured, sprouted and weevilled grains	5.0*
	Immature, shrunken and shrivelled grains	3.0
	Admixture of lower class	6.0
Moisture content	17.0	

Punjab, Haryana farmers are upset regarding paddy procurement delay

- Only the paddy crop is procured by the government on minimum support worth, whereas basmati is purchased by private players/basmati exporters in each states.
- Today, farmers take any of many short-duration varieties that provide high yield.
- Farmers mainly in {punjab|Punjab|geographical area|geographic area|geographical region|geographic region} like varieties that mature in 93 to 110 days — excluding a nursery amount of 25-20 days once seeds are grown into young plants so transplanted to the fields from the date fastened (June 10 and June 15).
- The shorter varieties can have started maturing by the tip of September.

- According to Punjab Agriculture University (PAU), Ludhiana, over 70th of the paddy space in Punjab is under short-duration varieties currently, with little or no area under ancient varieties like PUSA-44 that mature in 160 days.
- DSR (direct seeding of rice) doesn't need a puddling method in addition as stagnant water within the field a minimum of for 3 weeks when sowing. Delayed procurement raises issues regarding accumulated stubble burning this year.
- This is as a result of farmers, who get only 20 to 25 days between paddy harvest home and wheat sowing to manage the paddy stubble throughout traditional procurement time, can get solely 9-15 days this.
- Paddy harvest home takes 20 to 25 days and if farmers begin it on October 11, it'll stretch into the start of November.

Topic 8. THE PRADHAN MANTRI SAHAJ BIJLI HAR GHAR YOJANA OR SAUBHAGYA

Importance for Prelims: Government Schemes

Almost 2.82 crore households are electrified until March 31, 2021

- Saubhagya is one among the largest home electrification drives within the world.
- The journey of the theme started with Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), that envisaged the creation of basic electricity infrastructure in villages.
- The focus of the theme was on strengthening and augmentation the prevailing infrastructure and metering of existing feeders/distribution transformers to boost the standard and responsibility of power provided in rural areas.
- In 2017, Saubhagya was launched, with the target of achieving Universal Home Electrification within the country through last-mile property and providing access to electricity to any or all un-electrified households in rural areas and poor households in urban areas.
- While launching the theme, Prime Minister Narendra Modi had pledged to produce access to electricity and work towards equity, potency and property within the New Age India.
- The Pradhan Mantri Sahaj Bijli Har Ghar Yojana or Saubhagya is funded by the government's grant to Discoms/power departments, utility contributions and loans from monetary establishments. States get thirty per cent of the project value as loan.

- The electricity affiliation to households involves drawing a service cable from the closest pole to the household premise, installation of an energy meter, wiring for one lightweight purpose with semiconductor diode bulb, and a mobile charging purpose.
- All States are requested to launch special campaigns to spot unelectrified households and thenceforth give electricity connections to them.
- A dedicated toll-free helpline has conjointly been launched for that purpose. Limitations – although audits do happen, they're principally transactional — concerning physical presence and assets — that doesn't indicate the socio-economic impact.
- Another issue is guaranteeing power convenience to the walk.
- The theme only targets connecting the last mile with basic electrical networks, however it doesn't incentivise distribution utilities to produce dependable power across all beneficiaries.
- A major challenge is lack of knowledge dissemination, because the beneficiaries seldom perceive the incentives created on the market to them and electricity suppliers cannot effectively strategise for economical provide management attributable to lack of field data engagement.

Topic 9.CREDIT RATING IN INDIA

Importance for Prelims: Economy

CREDIT RATINGS

Sortable Table Key	Moody's	Fitch	S&P
Highest grade credit	Aaa	AAA	AAA
Very high grade credit	Aa1, Aa2, Aa3	AA+, AA, AA-	AA+, AA, AA-
High grade credit	A1, A2, A3	A+, A, A-	A+, A, A-
Good credit grade	Baa1, Baa2, Baa3, Baa4	BBB+, BBB, BBB-	BBB+, BBB, BBB-
Speculative grade credit	Ba1, Ba2, Ba3	BB+, BB, BB-	BB+, BB, BB-
Very speculative credit	B1, B2, B3	B+, B, B-	B+, B, B-
Substantial risks - In default	Caa1, Caa2, Caa3, Ca	CCC, CC, C, RD, D	CCC+, CCC, CCC-, CC, C, D

Credit ratio improves in first half of FY22 What is Credit Rating?

- A credit rating is an assessment of the trustiness of a receiver normally terms or with reference to a specific debt or obligation.
- A credit rating may be assigned to any entity that seeks to borrow cash — a personal, corporation, state or provincial authority, or sovereign government. What are Credit Rating Agencies?
- A credit rating agency (CRA) could be a company that assigns credit ratings, that rate a debtor's ability to pay back debt by creating timely principal and interest payments and therefore the probability of default.

- There are six credit rating agencies registered under SEBI particularly, CRISIL, ICRA, CARE, SMERA, mustelid India and masonry Ratings.
- CRAs were got wind of to produce independent proof and research-based opinion on the flexibility and temperament of the establishment to fulfill debt service obligations, quintessentially attaching a chance of default to a selected instrument.
- Evaluating the trustiness of an instrument includes of each qualitative and quantitative assessments, creating credit rating off from an easy mathematical calculation.

Topic 10.RENUNCIATION OF INDIAN CITIZENSHIP

Importance for Prelims: Polity

Renunciation of Indian citizenship currently easier

- The Ministry of Home Affairs (MHA) has simplified the method for Indians who need to renounce their citizenship.
- Provisions are created for candidates to transfer documents on-line, with an higher limit of 60 days for the renunciation method to be completed.
- Acquisition of Citizenship Loss of Citizenship The Citizenship Act, 1955, prescribes 3 ways of losing citizenship whether or not nonheritable under the Act or before it under the Constitution, viz, renunciation, termination and deprivation:

1. By Renunciation – Any citizen of India of full age and capability will build a declaration renouncing his Indian citizenship. Upon the registration of that declaration, that person ceases to be a national of India. However, if such a declaration is created throughout a war within which india is engaged, its registration shall be withheld by the Central Government. Further, once an individual renounces his Indian citizenship, each minor kid of that person also loses Indian citizenship. However, once such a toddler attains the age of eighteen, he might resume Indian citizenship.

2. By Termination – once an Indian national voluntarily (consciously, wittingly and while not force, undue influence or compulsion) acquires the citizenship of another country, his Indian citizenship mechanically terminates. This provision, however, doesn't apply throughout a war within which india is engaged.

3. By Deprivation – it's a required termination of Indian citizenship by the Central government, if:

- (a) the citizen has obtained the citizenship by fraud:
- (b) the citizen has shown infidelity to the Constitution of India:
- (c) the citizen has unlawfully listed or communicated with the enemy throughout a war;
- (d) the citizen has, among 5 years once registration or naturalisation, been unfree in any country for 2 years; and
- (e) the citizen has been commonly resident out of india for seven years continuously.

Topic 11. UNITED NATIONS FOOD SYSTEMS SUMMIT

Importance for Prelims: IR



United Nations Food Systems Summit: need to rework food systems, say experts

- There could be a need to reach the United Nations-mandated property Development Goals (SDG) by 2030 and address climate change visible of food production, leaders and material experts stressed at the United Nations Food System Summit September 23, 2021.
- This transformation will stem from an understanding that we should desperately move from progressive and siloed action towards a systems approach.
- The food system won't prosper till all sectors involved work along, they said. in step with Food and Agriculture Organisation (FAO), food systems encompass the complete vary of actors and their interlinked value-adding activities concerned within the production, aggregation, processing, distribution, consumption and disposal of food product.

- Food systems comprise all food product that originate from crop and livestock production, forestry, fisheries and cultivation, in addition because the broader economic, social group and natural environments during which these various production systems are embedded.
- The world is trying forward to an easier and additional comprehensive food system.
- The novel coronavirus sickness (COVID-19) pandemic has already given the world a ‘OneHealth’ vision, and therefore the world is optimistic of a food system that recognises the associated considerations of non-judicious use of chemicals in addition as unregulated animal intensification.
- Five action areas to assist inform the transitions required to grasp the vision of the 2030 agenda have emerged from the Summit method.
- These include: Nourish all people Boost nature-based solutions Advance evenhanded livelihoods, decent work and sceptered communities Build resilience to vulnerabilities, shocks and stresses Support suggests that of implementation At a worldwide level, United Nations agencies because the United Nations agency, the International Fund for Agricultural Development (IFAD), and therefore the World Food Programme (WFP) can collectively lead a United Nations system-wide coordination hub to continue the work of the Summit.

Topic 12. INCREASING ADOPTION OF CRYPTO ASSETS POSE FINANCIAL STABILITY CHALLENGES: IMF

Importance for Prelims: Economy

The rise of the crypto scheme presents new opportunities; the IMF has aforesaid however also cautioned that the digital currency assets create financial stability challenges.

- The rise of the crypto scheme presents new opportunities; the IMF has aforesaid however also cautioned that the digital currency assets create financial stability challenges.
- Cryptocurrencies are digital or virtual currencies within which encoding techniques are accustomed regulate the generation of their units and verify the transfer of funds, operational severally of a central bank.
- Technological innovation is first appearance a new era that creates payments and different money services cheaper, faster, additional accessible, and permits them to flow across borders fleetly,” said in an exceedingly chapter of its latest report world money Stability Report.
- Crypto plus technologies have the potential as a tool for quicker and cheaper crossborder payments. Bank deposits are often remodeled to stable coins that enable instant access to a massive array of monetary merchandise from digital platforms and permit instant currency conversion.
- Decentralised finance may become a platform for additional innovative, inclusive, and clear financial services.
- Bitcoin could lead on to instability as a result of it's extraordinarily volatile. It's fine as an investment plus right.

- But as a financial combination, it simply doesn't have the correct properties.
- Transaction prices are often fairly pricey and compared to digital cash, as it's the case in India as an example, wherever you have got a period of time gross settlement payment system, it's really slow as a result of it's a distributed ledger, and to understand that the dealings has knowledgeable, it's to be verified on all of those different computers.
- So, it's not that instant, and it are often pricey to interact and it's extremely volatile.
- It doesn't have the properties that you just wish cash to own.
- The United Nations agency in its report aforesaid that challenges display by the crypto scheme embody operational and money integrity risks from crypto plus suppliers, capitalist protection risks for crypto-assets and DeFi, and inadequate reserves and disclosure for a few stable coins.
- **“Crypto-assets supply a brand new world of opportunities:** fast and simple payments. Innovative money services.
- Inclusive access to antecedently “unbanked” components of the world. All are created attainable by the crypto ecosystem”.
- But beside the opportunities come back challenges and risks. International fund United Nations agency is a corporation operating to foster world financial cooperation, secure money stability, facilitate international trade, promote high employment and property economic growth, and scale back economic condition round the world.
- Created in 1945, the IMF is ruled by and responsible to the 189 countries that frame its near-global membership. india Joined on December 27, 1945.
- The IMF's primary purpose is to make sure the steadiness of the international financial system—the system of exchange rates and

international payments that permits countries (and their citizens) to interact with one another.

- The Fund's mandate was updated in 2012 to incorporate all economics and money sector problems that bear on world stability.
- Reports by IMF multilateral police investigation involves observance world and regional economic trends and analyzing spill overs from members' policies onto the world economy.
- As a part of its World Economic and financial Surveys, the IMF publishes flagship reports on multilateral surveillance twice a year:
- World Economic Outlook (WEO), world money Stability Report (GFSR) business enterprise Monitor (FM).
- The WEO provides elaborated analysis of the state of the globe economy, addressing problems with pressing interest like the extended world money turmoil and on-going economic recovery from the world financial crisis.
- The GFSR provides an up-to-date assessment of global financial markets and prospects and highlights imbalances and vulnerabilities that might create risks to financial market stability.
- The FM updates medium-term business enterprise projections and assesses developments publically finances.
- The IMF also publishes Regional Economic Outlook (REO) reports as a part of its World Economic and financial Surveys.

Topic 13.GREEN BONDS

Importance for Prelims: Environment



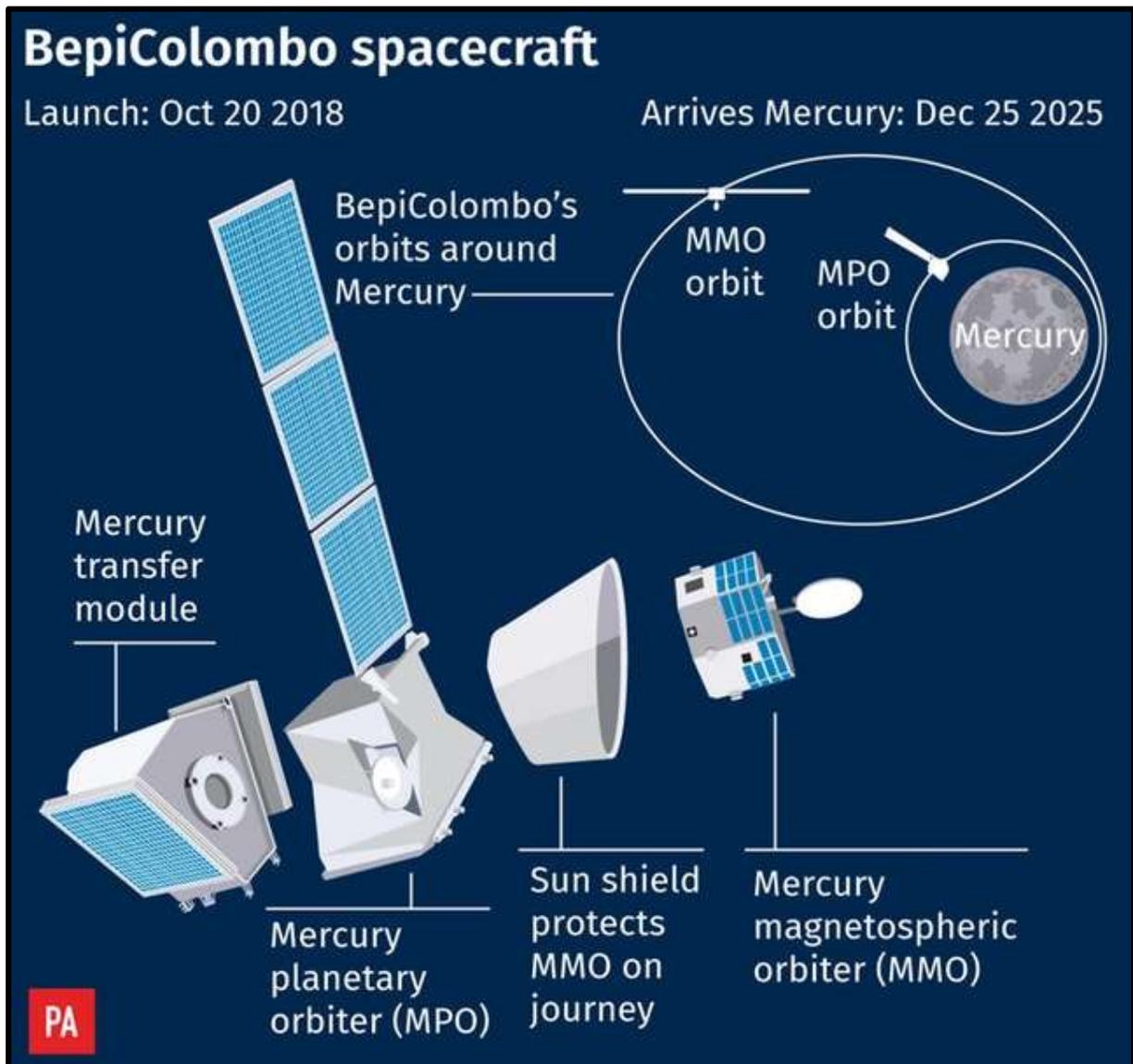
India at the bottom of moral funds with simply 22 funds worth \$2 bn: Report

- India, despite being the sixth largest economy and also the third largest defiler, has the lowest range of ethical/sustainable/green bonds at close to twenty two funds.
- Collectively referred to as the ESG funds (money deployed mutual funds and insurance) globally is over USD 103.4 trillion as of March 2020, whereas an equivalent here is simply USD 7.93 billion through 22 problems in so far 2021.
- However, the report says the country is witnessing an early signs of pick-up in demand for ESG funds — that are funds broadly speaking tagged as ESG or environmental, social and governance/sustainable investments/ethical funds across mutual funds and insurance merchandise as four of the past 5 quarters saw sturdy demand.

- Yet India is well below several countries and markets as there are only 22 moral funds in India compared to Belgium (148), Pakistan (159), China (162), Germany (352), USA (612) and even Cayman Islands (28) and Luxembourg leading at 2,135.
- While the Luxembourg leads the moral fund supply with 2,135, Australia is second with 1,006 such issuances, France comes third (844), Ireland (630), US (612), Britain (562).

Topic 14. BEPI COLOMBO MISSION

Importance for Prelims: Science and Tech



European-Japanese space Mission Gets 1st Glimpse of Mercury

- A joint European-Japanese artificial satellite got its 1st glimpse of Mercury because it swung by the solar system's innermost planet whereas on a mission to deliver 2 probes into orbit in 2025.

- The BepiColombo mission created the first of six flybys of Mercury at 11:34 p.m.
- GMT Friday, mistreatment the planet's gravity to slow the spacecraft down.
- After swooping past Mercury at altitudes of under 200 kilometers (125 miles), the spacecraft took a low-resolution black-and-white photo with one among its watching cameras before zipping off once more.
- The European area Agency aforesaid the captured image shows the hemisphere and Mercury's characteristic pock-marked options, among them the 166-kilometer-wide (103-mile-wide) writer crater.
- It is that the 1st mission by the european and Japanese area agency to Mercury.
- The joint mission by the european agency and therefore the Japan region Exploration Agency was launched in 2018, flying once past Earth and doubly past Venus on its journey to the star system's smallest planet.
- It is additionally the primary mission to send 2 artificial satellite to form complementary measurements of the earth and its atmosphere at a similar time. • The spacecraft are ESA's Mercury Planetary equipment (MPO) and JAXA's Mercury MagnetosphericOrbiter (MMO, or 'Mio').
- The ESA-built Mercury Transfer Module (MTM) can carry the orbiters to Mercury employing a combination of star electrical propulsion and gravity motor-assisted flybys.
- The mission is called once Italian person Giuseppe "Bepi" national capital, who is attributable with serving to develop the gravity assist maneuver that NASA's Jack-tar ten 1st used once it flew to Mercury in 1974.
- The 2 orbiters also will collect knowledge at Venus.
- The challenges to the mission include: Sun's gravity makes it troublesome to position a spacecraft into a stable orbit round the mercury.

- The spacecraft even have to face extreme temperatures and solar radiations.
- With this mission researchers hope to be told concerning the formation of planets and therefore the system.
- **Past Missions to Mercury:** mariner 10 – NASA Flyby Mission (Flyby could be a path artificial satellite follows past a planet or alternative body in space) to Venus and Mercury (1973) messenger – NASA equipment to Mercury (2004)

Topic 15. IMMORTAL BEINGS

Importance for Prelims: Science and Tech

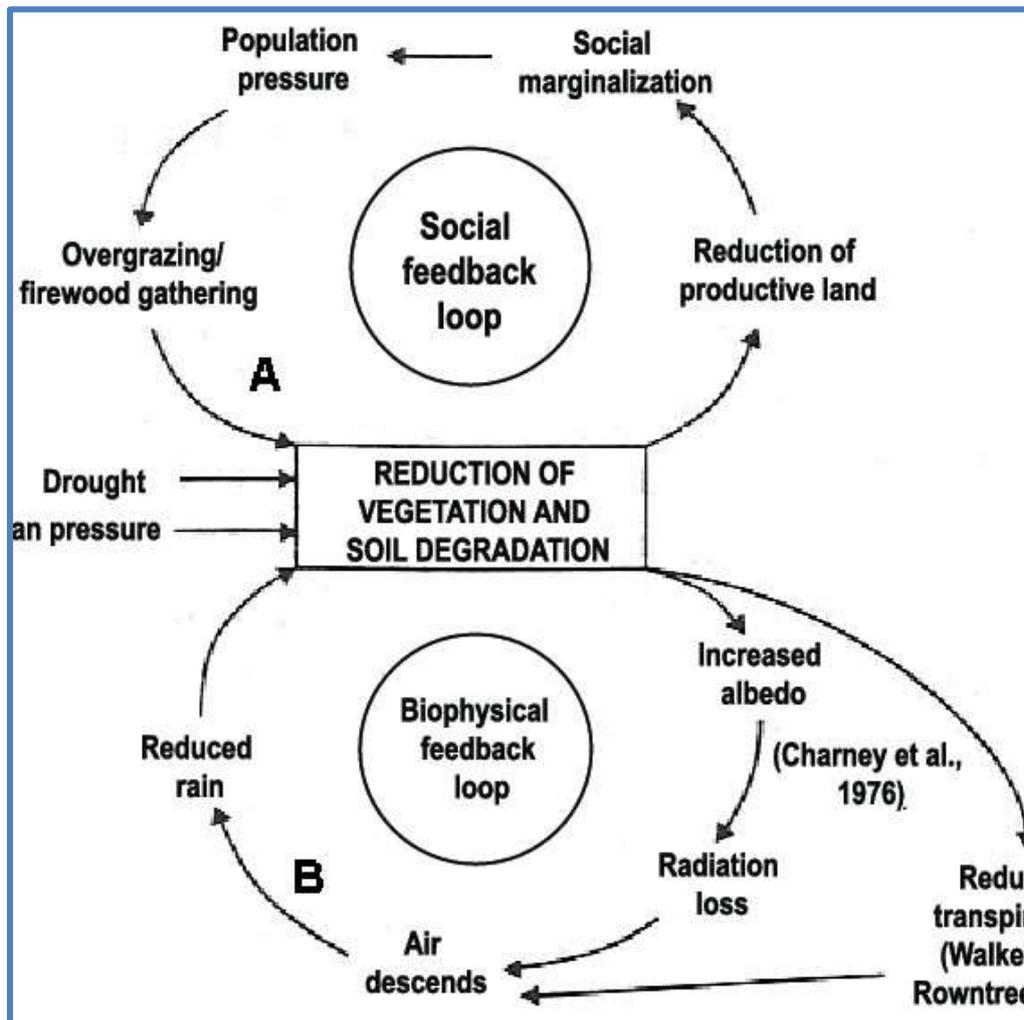
Hydra are small, jellyfish-like invertebrates with a motivating approach to aging.

- They are mostly created of stem cells that perpetually divide to create new cells, as their older cells are discarded.
- The constant influx of latest cells permits hydra to rejuvenate themselves and keep forever young
- Hydra show that animals don't need to grow old, however that doesn't mean humans might replicate their rejuvenating habits.
- At 0.4 inches (10 millimeters) long, hydra are small and don't have organs.
- Humans have stem cells that may repair and even get components of the body, like within the liver, however the figure isn't created virtually entirely of those cells, like hydra are.
- That's as a result of humans want cells to try to to things apart from simply divide and create new cells.
- For example, our red blood cells transport oxygen round the body.
- In a 2021 study revealed within the journal Nature Communications, researchers according that humans could also be ready to live up to a most of between 120 and 150 years, when that, the researchers anticipate a whole loss of resilience — the body's ability to pass though things like sickness or injury.
- To live on the far side this limit, humans would wish to prevent cells from aging and stop disease.
- Humans could also be ready to live on the far side their biological limits with future technological advancements involving technology.

- This is that the manipulation of materials on a nanoscale, but 100 nanometers (one-billionth of a meter or 400-billionths of an inch).
- As technology advances, futurists anticipate 2 process milestones.
- The 1st is that the singularity, within which we'll style artificial intelligence (A.I.) sensible enough to revamp itself, and it'll get increasingly smarter till it's immensely superior to our own intelligence, Live Science previously according.
- The second milestone is virtual immortality, wherever we'll be ready to scan our brains and transfer ourselves to a non-biological medium, sort of a computer.
- Researchers have already mapped the neural connections of a roundworm (Caenorhabditiselegans).
- As a part of the supposed Open Worm project, they then simulated the roundworm's brain in software replicating the neural connections, and programmed that software to direct a robot mechanism, in step with Smithsonian Magazine.
- The mechanism then seemed to begin behaving sort of a roundworm.

Topic 16. POSITIVE FEEDBACK LOOP AND DESERTIFICATION

Importance for Prelims: Environment



Positive feedback loop may be a process wherever dynamic one quantity changes the other, and also the modification within the second quantity, in turn, changes the primary.

- Scientists concern a feedback loop could spiral the climate crisis out of management.
- Desertification is an example of a feedback loop, even as the melting of the Arctic ice cap, thawing of the Siberian permafrost, and also the large-scale unharness of methane from methane hydrate lying on the sea and ocean floors.

- The climate crisis is inflicting desertification and, in turn, desertification is aggravating the crisis.
- The cycle continues. Soil is one in every of the most important repositories of carbon on our planet.
- In fact, there's 3 times a lot of carbon within the soil than within the atmosphere.
- Carbon loss from soil has been happening since the start of settled agriculture, however this can be currently being exacerbated by desertification.
- The emission of soil carbon to the atmosphere is tributary to global warming.
- Latest information indicates that land degradation is liable for annual international emissions of 3.6- 4.4 billion tonnes of carbon dioxide (CO₂) or ten to 12 per cent of the whole emissions.
- Just to contextualise, carbonic acid gas emissions from land degradation is regarding 50 per cent on top of the whole carbon dioxide emissions of India, the third-largest electrode within the world.
- So, land degradation may be a vital contributor to the climate crisis.
- The climate crisis, on the opposite hand, is additional dashing up desertification by increasing the frequency and intensity of droughts, floods and forest fires, and also by the dynamic the patterns of temperature, solar radiations and wind.
- Climate crisis and desertification, thus, ar reinforcing one another.
- The Intergovernmental Panel on Climate Change's (ipcc) Special Report on global warming of 1.5°C makes it clear that we tend to cannot meet the target of one.5°C while not large-scale "carbon removal" from the atmosphere.

- The best thanks to take away carbon is by sequestering it in its natural sinks—forests, grasslands and soil. Meeting the one.5°C target, therefore, needs speedy improvement within the capability of natural carbon sinks to suck atmospheric carbon.
- This is additionally needed to combat desertification.
- To curb geologic process, we want to revive degraded soil via forestry, up vegetative cowl, enhancing water use potency, reducing wearing away and adopting higher farming systems.
- of these can facilitate enhance biomass production and organic carbon content within the soil.
- Combating desertification and climate change, thus, have identical solutions—enhance natural sinks.
- In 2007, redd+ (Reducing Emissions from Deforestation and Forest Degradation) was formalised to incentivise forest conservation in tropical developing countries by providing them funds and permitting them to sell carbon credits to the developed countries.
- So far, quite 300 redd+ initiatives have started across the planet.
- A decade later, however, there's no convincing proof to ascertain its contribution to halting or reversing deforestation trends.
- The developed countries' funding commitments for redd+ have also been a lot of under expected

What can be done?

- Studies show that native individuals and native communities are capable of achieving glorious forest conservation outcomes by finance only a fraction of the whole money spent on conservation by all agencies.
- The Sink Mechanism can work if ample forest dwellers and farmers work to reverse land and forest degradation, and enhance carbon stock in forests and lands. Second, it's to be a carbon sequestration and approach.

- In different words, improved property forest and farm management practices have to be the premise of this mechanism.
- Third, land and forest-based mechanisms can not be sustained on carbon credits.
- These can not be left to the mercy of the markets, and a non-market approach is required to finance them.
- We, therefore, ought to style a nonmarket mechanism wherever funds are mobilised to create the capability of communities and native governments.
- Lastly, any global mechanism cannot rely entirely on international funding. redd+ expertise shows that after foreign funding ceases, comes become unsustainable. So, funds for the Sink Mechanism ought to be a mixture of domestic and international resources to create domestic ownership.

Topic 17. JAL JEEVAN MISSION

Importance for Prelims: Governance



‘5 cr. houses given water connections’

- The Prime Minister launched the JalJeevan Mission app for improving awareness among stakeholders and for greater transparency and accountability of schemes under the mission.
- He also launched the RashtriyaJalJeevanKosh, where any individual, institution or philanthropist, be it in India or abroad, could contribute to help provide tap water connections.

Topic 18.ETHANOL

Importance for Prelims: Science and Tech

Urgent need to stop licences for new sugar factories: Gadkari

- Ethanol is largely alcohol of 99%-plus purity, which might be used for mixing with petrol.
- Produced principally from molasses, a byproduct of sugar manufacture. ethanol could be a bio-fuel obtained primarily from sugarcane, broken food grains like wheat and broken rice.
- It features a higher octane number than gasoline and therefore, it improves the petrol octane rating.

Mixing it with hydrocarbon eases the pressure on India, that is that the world's third-biggest oil importer, and conjointly helps farmers because it provides them with an alternate supply of income?

- It is additionally environment-friendly as agriculture waste is a smaller amount polluting. Since ethanol is made from plants that harness the ability of the sun, ethanol is additionally thought of as renewable fuel.

Ethanol mixing programme in India: The Centre had “launched pilot comes in 2001 whereby 5 % ethyl alcohol homogenized hydrocarbon was equipped to retail outlets”.

- The aim is to push the employment of different and environmental friendly fuels.
- Implemented by the Ministry or Oil marketing companies (OMCs).
- Success of field trials eventually sealed the means for the launching of the ethyl alcohol homogenized hydrocarbon (EBP) Programme in January, 2003 purchasable of 5 % ethanol blended petrol in 9 States and 4 UTs.
- Currently, five per cent of ethanol is mixed with hydrocarbon in India.

- The government of India has advanced the target for 20 per cent ethanol mixing in petrol (also known as E20) to 2025 from 2030.
- E20 are extended from April 2023.
- The central government has conjointly discharged an skilled committee report on the Roadmap for ethyl alcohol mixing in India by 2025.
- The roadmap proposes a gradual rollout of ethanol-blended fuel to attain E10 fuel provide by April 2022 and phased rollout of E20 from April 2023 to April 2025.

Topic 19.IAO HANLE

Importance for Prelims: Science and Tech

IAO Hanle: A promising astronomical observatory

- The Indian Astronomical Observatory (IAO) placed at Hanle close to Leh in Ladakh is turning into one among the globally promising observatory sites, in line with a recent study.
- This is because of its advantages of a lot of clear nights, bottom light-weight pollution, background aerosol concentration, very dry climate and uninterrupted monsoon.
- They analysed datasets for the Indian Astronomical Observatory (IAO) in Hanle and Merak (Ladakh), and Devasthal (Nainital) in India, Ali Observatory within the Thibet Autonomous Region in China, South Africa }n massive Telescope in South Africa, University of Edo Atacama Observatory and Paranal in Chile, and also the National Astronomical Observatory in Mexico.
- They found Paranal, in Chile, to be the most effective site in terms of clear skies with around 87 of clear nights during a year.
- IAO Hanle, and Ali observatories, that are placed around 80 km from one another, are just like one another in terms of clear night skies.
- They found that Devasthal contains a slightly larger variety of clear nights compared to the opposite sites within the landmass however are littered with monsoons for regarding 3 months during a year.
- However, night observations at IAO Hanle from 2m-Himalayan Chandra Telescope (HCT) are potential throughout the year without any interruption because of monsoon.

Topic 20.CAPITAL EXPENDITURES AND REVENUE EXPENDITURES

Importance for Prelims: Economy

Most States increase their capex but fail to rein in revenue expenses.

- With growth being severely impacted by the pandemic and personal cost showing no signs of abating, the Centre had resolved to extend its capital expenditure considerably for FY22 and had additionally nudged States to try to do likewise.
- It's additionally been incentivising States to increase their capex outlay through increased ceilings for borrowings and interest-free loans. Cost, by its nature, includes a high multiplier factor result with a capability to crowd-in non-public investments that successively enhances the assembly capability resulting in higher economic growth and employment generation. It's for this reason that the Centre has been perpetually nudging States to increase their capital outlay, particularly to regain growth within the aftermath of the worldwide pandemic.
- Moreover, the States' cost has higher growth multiplier factor potential than the Centre because it is said nearer to the area people.
- In April 2021, the Centre proclaimed that it'll give an extra quantity of up to ₹15,000 crore to States as interest free 50-year loan for outlay on capital comes together with including,000 crore if States undertake plus monetization and withdrawal of their public sector enterprises.
- The theme was in continuation to last year's 50-year ₹12,000-crore interest free capex loan provided to States to be spent on new or current capital comes under the 'AtmaNirbhar India package'.
- Speaking at a webinar recently, India's Chief Economic consultant, Arvind Subramanian criticised the State governments for outlay taxpayers' cash on revenue expenditure within the style of freebies and advocate schemes.

- He asked the them to instead concentrate on ushering provide facet reforms and increase capital expenditure to draw in non-public investment and spur growth. Citing a study by the National Institute of Public Finance and Policy (NIPFP), Subramanian highlighted that for each rupee endowed in revenue expenditure, the multiplier factor for the economy is between 92-98 paise whereas just in case of capital expenditure, for each rupee place in, the addition to the economy is ₹2.25 rupees among identical year and ₹4.80 over the course of the whole capital expenditure.
- Capex in social sector each revenue and capital expenditures of States are classified underneath general, social and economic sectors. Not amazingly, a bulk of the State's capex outlay went into the social sector which incorporates outlay on building attention infrastructure and education. many nations have ramped up hospitals and emergency facilities to manage the Covid crisis.
- The economic sector expenses cover infrastructure spending on roads, railways, ports and alternative growth-fuelling economic activities whereas the final sector captures all alternative expenses.
- Revenue expenditures ar the expenditures incurred for the idea aside from the creation of physical or monetary assets of the central government.
- These are related to the expenses incurred for the traditional operations of the government divisions and varied services, interest payments on debt sustained by the government, and grants given to state governments and alternative parties (even although a number of the endowments could be meant for the creation of assets).

Topic 21.LEGAL GUARANTEE OF MSP

Importance for Prelims: Agriculture

central govt. will get around MSP demand and end stalemate with farmers

- The major purpose of competition between farmer leaders and also the government's emissaries looks to be the problem of assurance of MSP for all 23 crops — together with seven forms of cereal, seven oilseeds, 5 pulses, and 4 alternative business crops.
- Sources same that the farmers have told the govt that the Commission for Agricultural prices and prices (CACAP) releases MSP for all Kharif and Rabi crops every year.
- The government ought to thence assure the implementation of identical de jure in sensible type also.
- Most of those twenty three crops are purchased by personal players and there's high fluctuation within the costs. typically these crops are sold-out abundant below the MSP and typically they fetch a bit quite the MSP.
- The farmers, therefore, desire a legal guarantee that crops will be sold-out only at MSP or on top of it.
- But the government isn't able to offer legal guarantees at the instant, except reiterated verbally many times that it'll continue its current MSP regime, that largely covers wheat and Paddy in geographic area, Haryana, MP and components of UP.
- The farmers, however, have refused to budge. Some states, within the meantime, have already stepped in and have started compensating farmers for crops that they sell below the MSP rates beneath their own state-level policies.

Can state-level policies assure that the farmers get MSP for his or her crops?

- In the past years, some states like Madhya Pradesh (MP), Haryana, Kerala have launched schemes like BhavantarBhugtanYojna (price distinction payment scheme), floor costs, and BhavantarBharpayiYojna, severally,

under that the state governments pay the distinction to the farmers once the sell their crop below MSP within the market.

- While the MP government has coated some cereals, pulses, seed and gardening crops under its theme, Haryana and Kerala have coated solely gardening crops.
- Haryana has recently added millet to its theme.
- Under these schemes, the state value or floor value square measure fastened by the authorities and if the coated crops are sold-out below that value then the state government pays the distinction to the registered farmers on their individual portals.
- But specialists same that state governments cannot sustain such schemes for long and also they can't cover all the crops.
- Madhya Pradesh, Haryana and Kerala haven't been ready to cover most of the agriculture crops thereunder.
- Experts also same that there are mixed results of those schemes everywhere.
- **Solution – specialists have advised some solutions:** at the side of this MSP regime, companies, like Cotton Corporation of India (CCI), ought to be shaped by the centre government for cereals, a number of that aren't coated under centres' current MSP regime. CCI enters the market once the value of 'Kapas' (unginned raw cotton) goes below the MSP fastened by CACP.
- The CCI then purchases Kapas at MSP, as witnessed many times within the past in Punjab.
- This successively forces the personal players conjointly to supply costs at par with the MSP or very little quite the MSP thus on stop the CCI from buying all the cotton from the market.

- In the case of Basmati last year, for instance, rates were at AN uncomparable high within the international market however farmers got abundant less as a result of their dependence on the personal players.
- That is wherever a company like CCI may step in and play the role of a deterrent to prevent farmers from being exploited.
- Just like wheat and paddy MSP, that the government purchases through Food Corporation of Bharat (FCI) by taking money credit limit (CCL) from run batted in, such companies can also follow identical policy as a result of there's an enormous market of oilseeds and pulses in our country and this fashion each the government and farmers won't be at loss.
- Some farmer leaders advised that even a state-Centre joint “Bhavantar scheme” will be launched to compensate farmers just in case their crop value goes below the fastened rate or government will regulate purchase by personal players through some policy to prevent farmers’ loot.

Topic 22.OPTIMUM WATER IN RESERVOIRS

Importance for Prelims: Geography

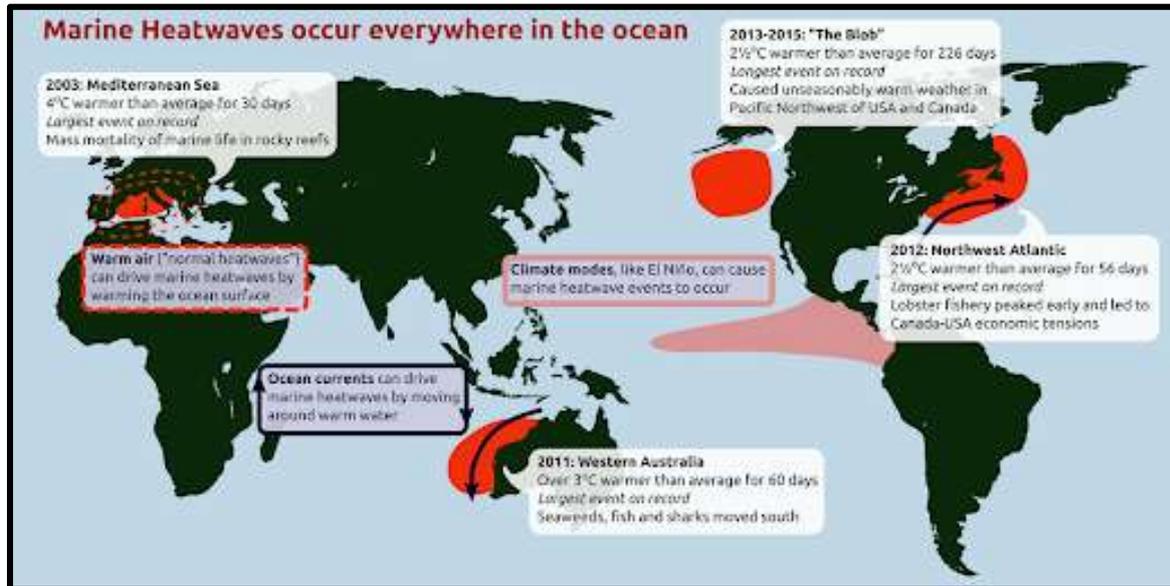
After one in every of the driest Augusts ever, a rainy September has left the country's 130 major reservoirs with additional water than what's traditional at this point.

- Bountiful rain in September has ensured that the water levels in India's main reservoirs are back to their optimum levels.
- As on September 30, the 130 major reservoirs of the country along had water quite what's thought of traditional at this point of the year.
- Water from these reservoirs is crucial for the requirements of irrigation, potable and hydro-electricity through the winter months, once most of the country receives little downfall. Incidentally, the wide fluctuations within the downfall throughout this monsoon season had solely marginal impact on the reservoir levels.
- According to the newest figures discharged by the Central Water Commission (CWC), the 130 major reservoirs are presently holding concerning 138 billion cubelike metres of water, that is concerning 80th of their combined capability.
- At this point of the year, these reservoirs are expected to carry concerning 132 billion cubelike metres.
- Regional variations – The water levels within the reservoirs vary from region to region.
- The reservoirs within the northern and japanese states are at less than traditional, whereas those in southern and western states have hold on on top of traditional.
- The central region, which has Uttar Pradesh, Uttarakhand, Madhya Pradesh and Chhattisgarh, are showing traditional levels in their reservoirs.

- The biggest deficiency is being seen in punjab, wherever the Thein dam, the only one from the state within the list of 130, is, as of now, storing 400th but traditional.

Topic 23. MARINE HEATWAVES DURING WINTER

Importance for Prelims: Environment



Marine heatwaves during winter might have dire impacts on New Zealand fisheries and herald a lot of summer storms.

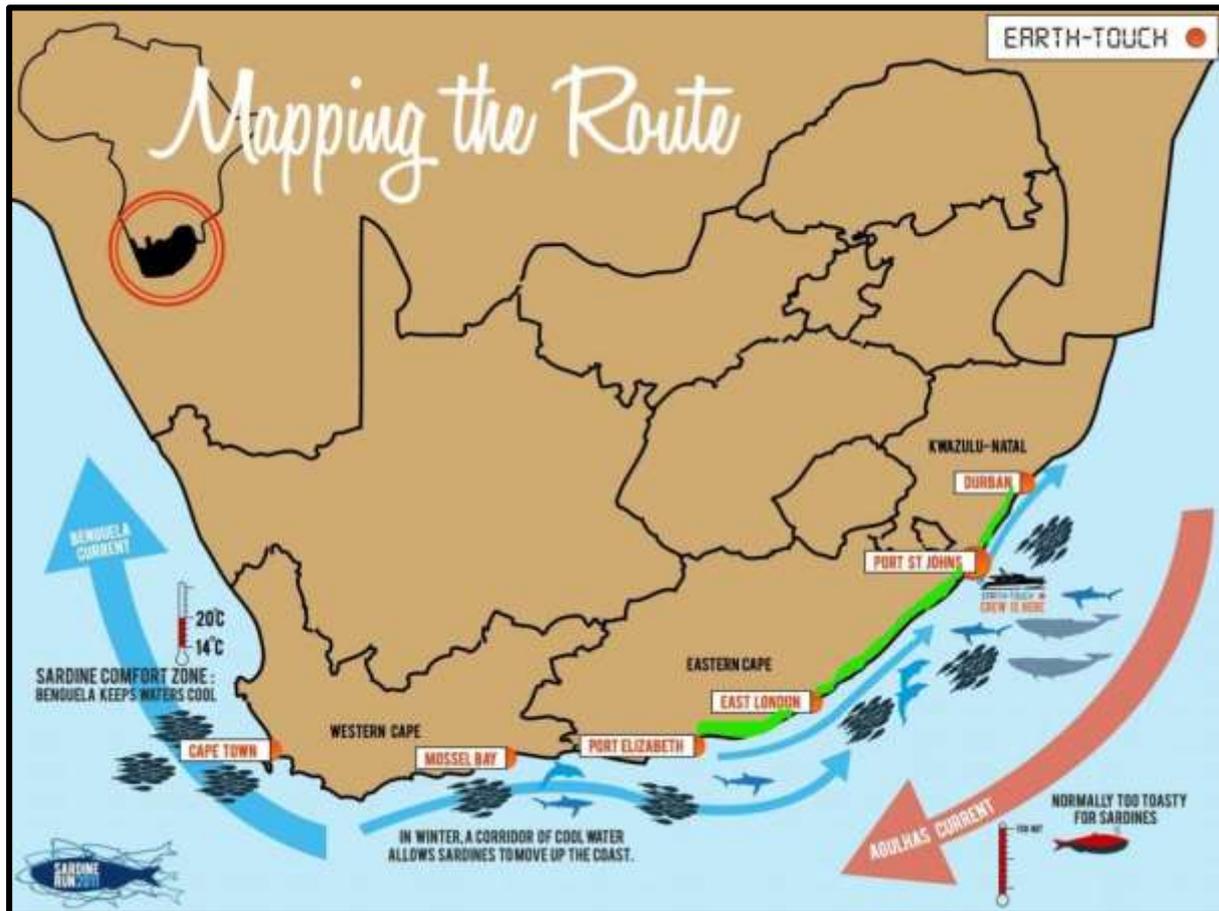
- The ocean around New Zealand is obtaining hotter, and extreme warming events became a lot of frequent over the past years.
- These marine heatwaves will have devastating impacts on ocean ecosystems. after they happen in summer, they typically receive loads of attention.
- But those happening throughout winter, once the ocean is cooler, are typically unnoticed.
- Yet, these winter events will have an effect on the spawning and accomplishment of fish and alternative ocean animals, and successively have vital impacts on cultivation and fisheries.
- Marine heatwaves area unit outlined as periods of 5 days or a lot of of ocean temperatures within the high 100% of native average values for the time of year.
- During winter 2021, surface waters were on the average 0.3°C (±0.75) warmer than usual, with peaks sometimes reaching +4.2°C.

- Changes across the southwest Pacific have an effect on New Zealand we all know ocean temperatures are warming quicker throughout winter than summer around New Zealand and across the broader subtropical southwest Pacific ocean.
- The warming has become notably evident since 2010 and has manifested within the emergence of the “Southern Blob”.
- This ocean hotspot is centred northeast of latest Zealand and has been coupled to drought in each South America and New Zealand.
- The current rate of warming within the Southern Blob exceeds natural variability, implying a contribution from human-induced climate change.
- Along with changes within the regional atmosphere, this large-scale method will increase the chance of winter marine heat waves around New Sjaelland.
- Our analysis shows the deepest and longest-lasting marine heat waves within the Tasman Sea are generally driven by ocean currents — in distinction to shallower summer marine heat waves, that area unit driven by the atmosphere.
- The warmer-than-normal winter ocean temperatures within the tasman and coastal seas around New Zealand send warning signals concerning what the summer could bring.
- On high of impacts on coastal ecosystems, marine heat waves conjointly have an effect on extreme weather and create floods and tropical storms over New Zealand a lot of doubtless throughout the approaching summer. Moana Project The Moana Project may be a 5-year \$11.5 million MBIE Endeavour ocean analysis initiative.
- It aims to enhance understanding of coastal ocean circulation, property and marine heat waves to supply info that supports New Zealand’s industry trade.

- The project includes outstanding analysis organisations in New Zealand and overseas, and partners with Whakatōheaiwi to support their rohemoana interests within the Bay of masses.

Topic 24.SARDINE RUN

Importance for Prelims: Environment



South Africa’s huge ‘sardine run’ leads fish into an ecological lure • One of the world’s most spectacular marine migrations is that the KwaZulu-Natal sardine run.

- The so-called “greatest shoal on Earth” takes place throughout the southern hemisphere’s winter.
- It involves the movement of tens to many many sardines from the warmtemperate waters of South Africa’s south coast to the semitropic waters of the east coast, over a thousand kilometres away.
- This annual mass migration, initial reportable in 1853, is triggered by cold water upwelling on South Africa’s south-east coast.
- In this method, cold, nutrient-rich water rises up from the deep, making a extremely productive food web.

- The migration attracts huge numbers of predators: the sardine faculties area unit followed northerly by seabirds, sharks, seals, dolphins and even massive baleen whales.
- These devour as several of the helpless sardines as they will, that is formed easier by the actual fact that their prey is sandwiched between dry land and therefore the hot, tropical waters of the southward-flowing Agulhas Current, that exceed the sardines' physiological tolerances.
- The journey is therefore strenuous that the sardines that eventually arrive on the east coast are pinched.
- This goes against what scientists perceive regarding animal migrations – such large-scale population movements normally offer some “selective advantage” by permitting animals to form best use of environmental resources.
- One well-liked explanation for why the sardine run happens is that the migration can be a relic of spawning behaviour qualitative analysis back to the last period, about 10,000 years past.
- What is currently semitropic Indian Ocean environment might are a vital nursery space with cooler waters.
- When the period over, the sardines would have physiologically tailored to tolerate the subtropical conditions during this region, and evolved into a definite east coast population that continues to spawn there to the present day.
- These sardines combine with south coast sardines throughout summer, then separate from them in winter as they migrate up the east coast.
- The presence of sardine eggs within the plankton confirms that spawning will occur during this region.

Topic 25.PANDORA PAPERS

Importance for Prelims: IR

“Most Expansive Expose of financial Secrecy” To Be revealed these days

- Pandora Papers are 11.9 million leaked files from 14 international company services companies that started concerning 29,000 off-the-shelf corporations and personal trusts in not simply obscure tax jurisdictions however additionally countries like Singapore, New Zealand, and therefore the united states, for shoppers across the world.
- These documents relate to the last word possession of assets ‘settled’ (or placed) in camera offshore trusts and therefore the investments together with money, holding, and realty properties, control by the offshore entities.
- There are a minimum of 380 persons of Indian status within the Pandora Papers.
- The mythical being Papers reveal however the made, the noted and therefore the disreputable, several of whom were already on the radar of inquiring agencies, started advanced multilayered trust structures for estate designing, in jurisdictions that are loosely regulated for tax functions, however defined by air-tight secrecy laws.
- A scrutiny of the papers additionally shows however the target of the many is two-fold:
 - i) to hide their real identities and distance themselves from the offshore entities in order that it becomes close to not possible for the tax authorities to succeed in them and,
 - ii) to safeguard investments — money, shareholdings, realty, art, aircraft, and yachts — from creditors and law enforcers.

How is mythical being completely different from the Panama Papers and Paradise Papers?

- The Panama and Paradise Papers dealt mostly with offshore entities started by people and corporates severally.
- The Pandora Papers investigation shows however businesses have created a brand new traditional once countries are forced to tighten the screws on such offshore entities with rising concerns of money laundering, coercion funding, and evasion.
- The mythical being Papers pierce the company veil and reveal however trusts are prolifically used as a vehicle in conjunction with offshore corporations started for the only purpose of holding investments and different assets by business families and ultra-rich people.
- The trusts will be started in best-known tax havens such Samoa, Belize, Panama, and therefore the British island, or in Singapore or New Zealand which supply relative tax blessings, or maybe South Dakota within the United States, the largest economy.

What is a trust?

- A trust will be represented as a fiduciary arrangement wherever a third party, cited because the trustee, holds assets on behalf of people or organisations that are to learn from it.
- It is mostly used for estate designing functions and succession designing. It helps large business families to consolidate their assets — monetary investments, shareholding, and realty property.
- A trust contains 3 key parties: ‘Settlor’ — one United Nations agency sets up, creates, or authors a trust; ‘trustee’ — one who holds the assets for the advantage of a collection of individuals named by the ‘settlor’; and ‘beneficiaries’ — to whom the advantages of the assets are bequeathed.
- A trust isn't a separate legal entity, however its legal nature comes from the ‘trustee’.

- At times, the ‘settlor’ appoints a ‘protector’, who has the powers to supervise the trustee, and even take away the trustee and appoint a brand new one.

Is setting up a trust in India, or one offshore/ outside the country, illegal?

- The Indian Trusts Act, 1882, provides legal basis to the thought of trusts.
- While Indian laws don't see trusts as a legal person/ entity, they are doing recognise the trust as an obligation of the trustee to manage and use the assets settled within the trust for the advantage of ‘beneficiaries’.
- India also recognises offshore trusts i.e., trusts got wind of in alternative tax jurisdictions.

If it's legal, what's the investigation about?

- Trusts are employed by some as secret vehicles to park ill-gotten money, hide incomes to evade taxes, protect wealth from law enforcers, insulate it from creditors to whom large moneys are due, and sometimes to use it for criminal activities.

Why are trusts set up?

Overseas trusts supply outstanding secrecy attributable to rigorous privacy laws within the jurisdiction they operate in. From the investigation, some key implicit reasons why people set up trusts are:

1. Maintain a degree of separation: Businesspersons got wind of personal offshore trusts to project a degree of separation from their personal assets. A ‘settlor’ (one who sets up/ creates/ authors) of a trust not owns the assets he places or ‘settles’ within the trust. This way, he insulates these assets from creditors.
2. hunt for enhanced secrecy: Offshore trusts supply increased secrecy to businesspersons, given their advanced structures. The Income-Tax Department in India will get to the final word helpful house owners solely by requesting info with the monetary investigation agency or international tax authority in offshore jurisdictions. The exchange of data will take months.

3. Avoid tax within the guise of planning: Businesspersons avoid their NRI kids being taxed on financial gain from their assets by transferring all the assets to a trust. The possession of the assets rests with the trust, and therefore the son/ girl being solely a 'beneficiary' isn't liable to any tax on financial gain from the trust.

4. inure estate duty eventuality: there's pervasive concern that estate duty, that was abolished back in 1985 once Rajiv Gandhi was Prime Minister, can possibly be re-introduced presently. putting in trusts prior to, business families are suggested, can shield ensuing generation from paying the death/ estate tax, that was as high as 85 per cent within the quite 3 decades when its enactment (The Estate Duty Act, 1953). though Asian country doesn't have a wealth tax currently, most developed countries as well as the US, UK, France, Canada, and Japan have such an inheritance tax.

5. Flexibility during a capital-controlled economy: india may be a capital-controlled economy. people will invest solely \$250,000 a year under the Federal Reserve Bank of India's Liberalised remittance scheme (LRS). to induce over this, businesspersons have turned NRIs, and under FEMA, NRIs will remit \$1 million a year additionally to their current annual financial gain, outside Asian country. Further, the tax rates in overseas jurisdictions square measure a lot of under the 30 minutes personal I-T rate in Asian country and surcharges, as well as those on the super-rich (those with annual financial gain over Rs one crore).

6. The NRI angle: Offshore trusts, as noted earlier, square measure recognised under Indian laws, however wrongfully, it's the trustees — not the 'settlor' or the 'beneficiaries' — who square measure the house owners of the properties and financial gain of the trust. An NRI trustee or offshore trustee taking directions from another overseas 'protector' ensures they're taxed in India only on their total financial gain from India. will offshore Trusts be seen as resident Indian for tax purposes? when The Black cash (Undisclosed Foreign financial gain and Assets) and Imposition of Tax Act, 2015, came into existence, resident Indians — if

they're 'settlers', 'trustees', or 'beneficiaries' — ought to report their foreign financial interests and assets. NRIs don't seem to be needed to try and do therefore — albeit, as mentioned on top of, the I-T Department has been causation notices to NRIs in sure cases. The I-T Department might contemplate an offshore trust to be a resident of India for taxation functions if the trustee is an Indian resident. In cases wherever the trustee is an offshore entity or an NRI, if the tax department establishes the trustee is taking directions from a resident Indian, then too the trust is also thought-about a resident of India for taxation functions. Shell corporations the businesses Act, 2013 has not outlined what a 'shell company' is and on what reasonably activities would cause an organization being termed a 'shell'. Shell corporations square measure generally company entities that don't have any active business operations or vital assets in their possession. the govt views them with suspicion as a number of them can be used for concealment, nonpayment and alternative outlawed activities. In India, there's no specific law with reference to "shell corporations." However, some laws facilitate, to Associate in Nursinging extent, in curb outlawed activities like concealment and may indirectly be accustomed target shell corporations — Benami transaction (Prohibition) change Act 2016; The bar of cash washing Act 2002 and therefore the companies Act, 2013.

- **Tax Havens** – A country is usually an offshore country that offers foreign people and businesses very little or no liabilities during a politically and economically static surroundings.
- Tax havens also share restricted or no monetary info with foreign tax authorities.
- Tax havens don't generally need residency or business presence for people and businesses to learn from their tax policies.
- Tax avoidance and tax evasion.

Topic 26.LANDSLIP WARNING SYSTEM

Importance for Prelims: Disaster Management

NGRI proposes landslip warning system

- The Council Of Scientific And Industrial analysis -National geophysical research Institute (CSIR-NGRI) has launched an ‘Environmental Seismology’ cluster to develop a ‘Landslide and Flood Early Warning System’ for the range of mountains region supported period of time watching with dense seismological networks, coupled with satellite information, numerical modelling and geomorphic analysis.
- This would enable an important warning many hours previous, which will save human lives and property.
- The would like for such an early warning system was necessitated following February’s landslide flood disaster in Chamoli (Uttarakhand), wherever a steep ice mass on the Nandadevi peak in Garhwal Himalaya got detached, inflicting a significant avalanche and inducing flash floods within the Rishi Ganga and Alaknanda rivers.
- It killed many persons downstream and caused severe injury to 2 power plants.
- Scientists at the NGRI together with German scientists at GFZ, Potsdam, used pic analysis techniques to spot and filter out numerous phases, together with that of the rockslides, rubble flow and flooding of the event.
- The broadband seismic network enabled a whole spatiotemporal tracking of the whole disaster sequence seismic polarisation and back-tracing approaches.

Topic 27. NS2

Importance for Prelims: IR



Nord Stream 2 (NS2) running from Russia to Germany across the Baltic Sea has been complete.

- The NS2 pipeline runs on the already completed Nord Stream 1 system, and also the 2 along can provide an combination of 110 billion cube-shaped metres of gas to Germany each year.
- NS2's manufacture began in 2016 and construction in 2018. The 1,224 km, \$11-billion underwater link is that the shortest, most economical and environment-friendly route to double Russia's gas export to Germany.
- The pipeline falls in German and Danish territory.
- This would take the Russian gas to Europe via Germany, under the Baltic Sea.
- The pipeline offers stability to the strategically vital energy trade as a result of Russia's dependence on the european Union and vice-versa are raised and this could promote realism.

Topioc28.BRAHMAPUTRA HERITAGE CENTRE

Importance for Prelims: Art and Culture

British- era bungalow is home to Brahmaputra heritage centre

- A British-era house on a hillock that went to be the 17th century military workplace of the Ahom rulers has been reborn into a heritage centre depicting life on the Brahmaputra.
- Vice-President M. Venkaiah Naidu on Sunday inaugurated the Mahabahu Brahmaputra River Heritage Centre on Guwahati's BarphukanarTila, that means Barphukan's knoll.
- A Scottishtype picket house standing since 1850 was restored and reborn into the heritage centre.
- Barpukhan was a post adore governor general created by Ahom king PratapSimha or Susengpha (1603–1641).
- The knoll by the Brahmaputra, mentioned in ancient scriptures as Mandrachal, was from wherever Ahom General LachitBarpukhan launched the Battle of Saraighat in March 1671 to bring down the most crushing defeat on the Mughals.
- Saraighat is considered the “greatest battle ever fought during a stream. Captain Archibald Bogle, denote because the Assistant Commissioner and Collector of Kamrup district within the decennary, had the bungalow built.
- Post-Independence, it continued to be the Deputy Commissioner's bungalow till 2011.

Topic 29. RIGHT TO PROTEST

Importance for Prelims: Polity

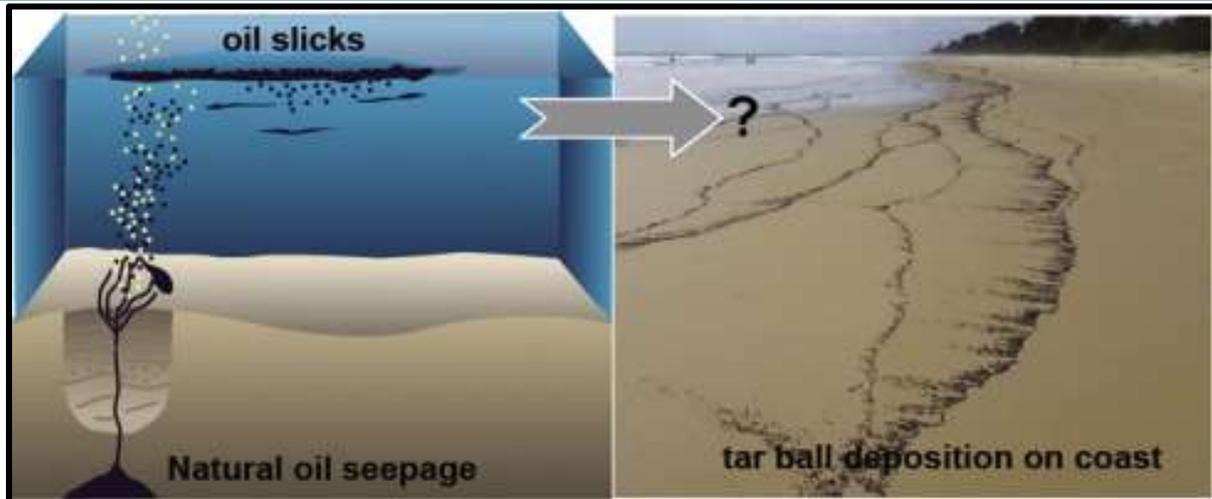
Why the protests once farm laws ar on hold, Apex Court ask

- The right to protest could be a elementary political right of the folks that flows directly from a democratic reading of various provisions of Article 19.
- Right to Protest is protected under Article 19 (1) (a), Article 19(1) (b) and Article 19(1) (c) of the Indian Constitution.
- Article 19(1) (a) guarantees the liberty of speech and expression; Article 19(1) (b) assures voters the correct to assemble pacifically and while not arms. Article 19(1) (c) assures right to create associations or trade unions cheap restrictions:
- However, like alternative elementary rights, right to protest additionally is additionally } not absolute and also subject to cheap restrictions mentioned under Article 19(2) and 19(3) on the subsequent grounds; within the interests of the sovereignty & integrity of India, the safety of the State, Friendly relations with foreign States, Violation of Public order, Decency or morality or in relevancy Contempt of court, defamation or incitement of an offence Subjudice rule Res subjudice could be a legal term that, in easy language, implies that if a matter is before a court, a similar matter can not be brought before another court by a similar parties.
- This rule is contained in section 10 of the civil procedure code.
- The purpose of the rule is to forestall contradictory orders on a similar issue being issued by 2 totally different courts.
- The subjudice rule has found a place within the rules of the homes of Parliament and also the state legislatures.
- This rule prohibits the admission of motions, resolutions and queries for discussion within the House on the bottom that the matter is before the court.

- But it's not applicable to bills or a difficulty of privilege. the purpose is that the rule doesn't have universal application to any or all forms of business of the legislature.

Topic 30.TARBALLS ON INDIA’S WEST COAST

Importance for Prelims: Environment



Tarballs hit the news headlines recently when they started showing on wellknown beaches of Mumbai and Goa.

- These aquatic pollutants, fashioned from weathering of crude oil floating on the ocean surface, have flooded Anjuna, Morjim, Colva and Mandrem beaches in Goa also as Juhu, Versova, Dadar and Cuff Parade shorelines in Bombay.
- Tarballs are dark-coloured substances born off to shores by waves and sea currents.
- They accumulate in many sizes starting from little globules to those as massive as a basketball.
- The latter, that weigh 6-7 kilograms, are washing up additional usually recently.
- The presence of tarballs will indicate oil spills.
- additionally to the massive spills close to Bombay, the sea experiences oil spills habitually because it is additionally a crowded oil transportation waterway, with western coast firms like city High, PannaMukta oil field, Tapti gas fields and Essar Oil.
- Discharge from municipal waste, oil-well blowouts, deliberate and accidental unleash of bilge and ballast water from ships ar among the most factors driving the formation of those pollutants.

- Tarballs may be hazardous to human life because of the presence of true bacteria *vulnificus*, a bacterium whose entry through wounds may well be fatal, in line with scientific studies.
- These crude oil blobs conjointly have an effect on marine multifariousness in many ways in which, like heavy turtle habitats.
- This successively, augments the impact on humans who consume marine fish.
- The National green tribunal (NGT) and also the Apex Court, in many cases, have control the polluters to blame for oil spills and alternative actions that have gratingly compact the marine atmosphere. • In the Samir Mehta vs Union of India and Ors, the NGT bench of Justice Swatanter Kumar upheld the “precautionary principle” and also the “polluter pays” principle, beside the fundamental right to life and private liberty under Article 21.
- Legal provisions The united nations Conference on the Human atmosphere control in 1972 in Stockholm powerfully compact the atmospherical laws of assorted countries and provided a solid foundation for the protection of the environment. India’s participation within the conference resulted within the atmosphere (Protection Act), 1986 that was enforced to forestall and management hazards of the atmosphere and human life. half IV of the Indian constitution (Article 48A – one among the Directive Principles of the state policy), has conjointly authorized the state to form laws and policies to protect and improve the atmosphere and safeguard forests and life.
- The Water (Prevention and management of Pollution) Act, 1974, was one such instance. Sections 16 and 17 of the Water (Prevention and management of Pollution) Act, 1974, bestowed many functions upon the central and state pollution management boards.

- Among them is that the role of making plans and advising governments on the management of pollution.
- The atmosphere and forests ministry had also issued coastal regulation zone notification in 2011 for the following: ensure bread and butter security to the fishing communities and alternative native communities of coastal areas protective and preserving coastal stretches Promoting growth sustainably supported scientific principle and taking into account the perils of natural hazards within the coastal areas and lowland rise caused by global warming.

Topic 31.WHALE SHARK

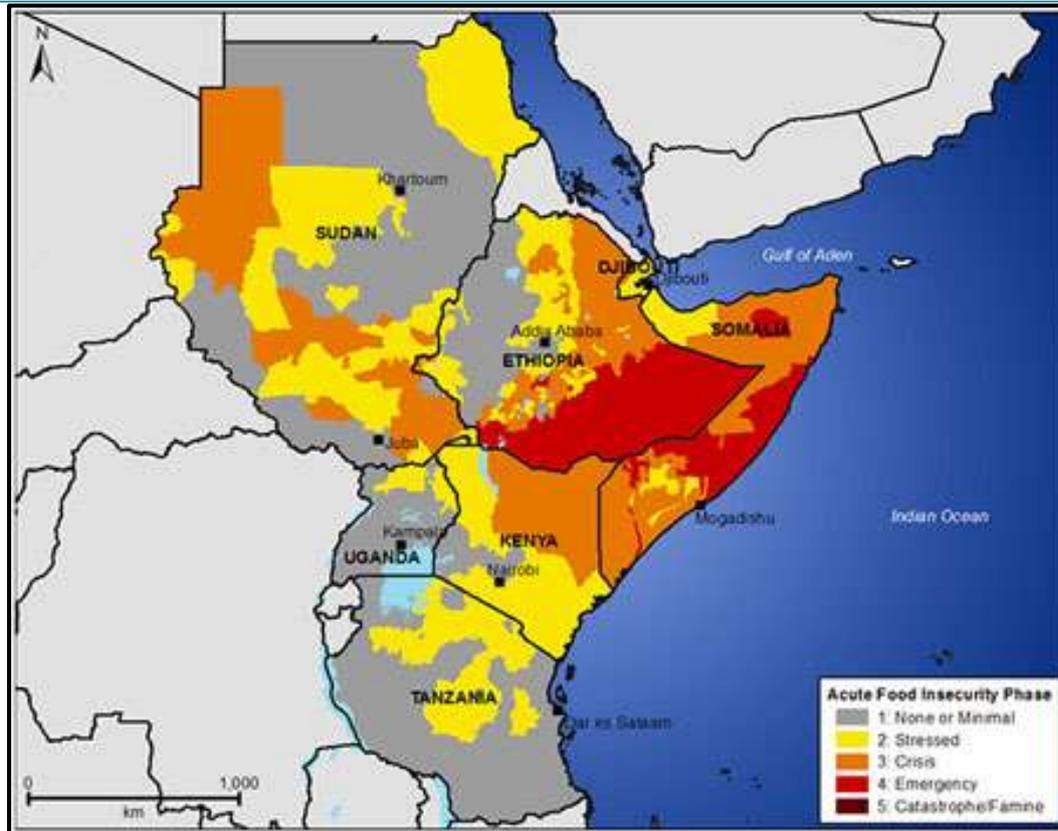
Importance for Prelims: Environment

Carcass of fourth dead whale shark in 11 months found on Odisha beach

- Whale sharks are a protected species under the Wild Life (Protection) Act, 1972.
- They are enclosed within the International Union for Conservation of Nature's Red List.
- The whale shark could be a slow, filter-feeding carpet shark and therefore the largest-known existing fish species.
- The largest confirmed individual had a length of eighteen.8 metres.
- The shark is additionally notably the most important living non-mammalian vertebrate.
- These sharks often get entangled in fishing nets thanks to their feeding habits.
- The largest shark aggregation is in Gujarat and therefore the only shark aggregation on the east coast is in Andhra Pradesh.
- Whale sharks had no industrial importance.
- However, fishers illegally extracted their fins and livers.

Topic 32.DROUGHT IN EAST AFRICA

Importance for Prelims: Geography



Scientists sound the alarm over drought in East Africa

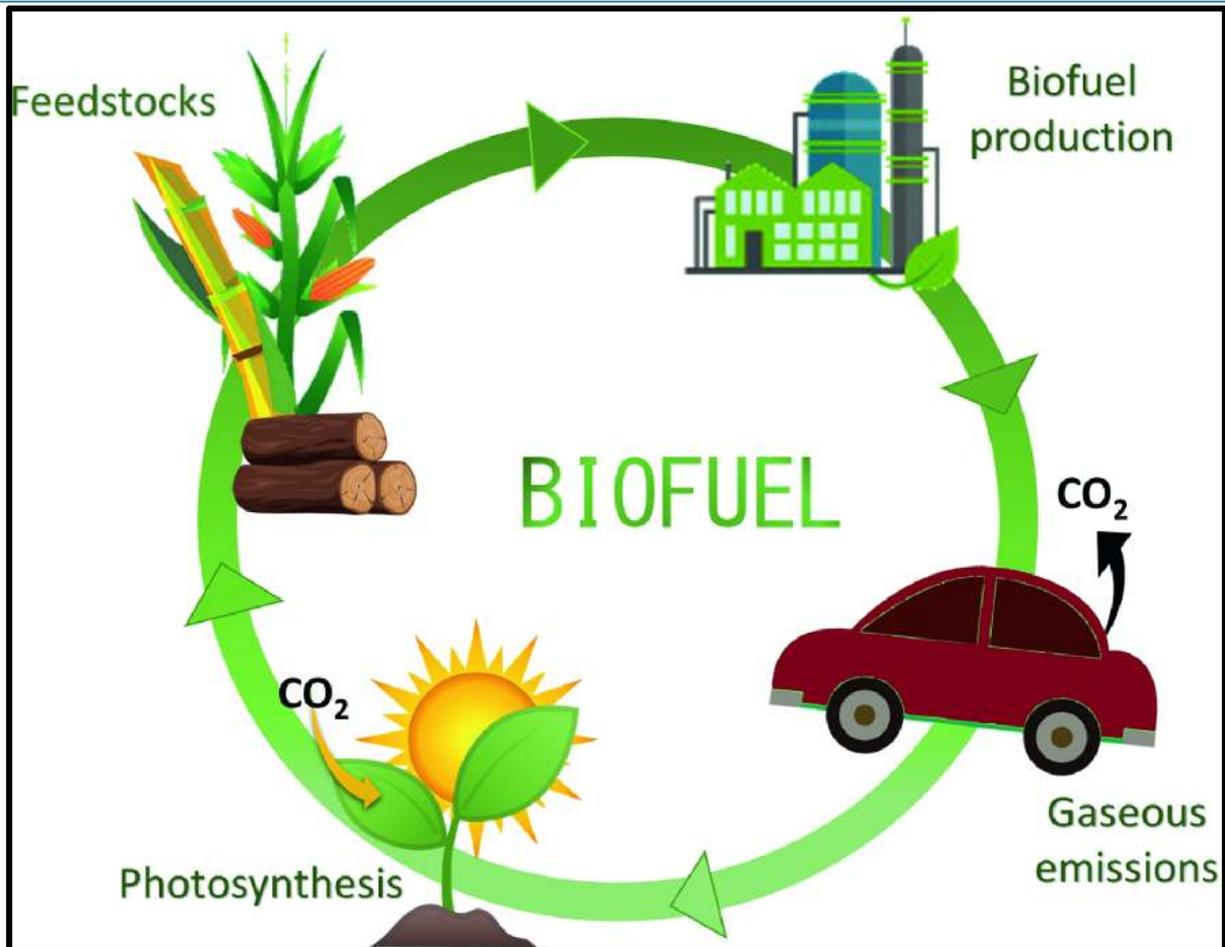
Every few years, it is devastating to watch the same tragedy: A weather cycle that brings debilitating drought and hunger to East Africa, threatening the lives and livelihoods of immeasurable folks in Ethiopia, Somalia, and Kenya.

- The weather cycle answerable for these episodes could be a climate-change-enhanced “La Niña”.
- La nina is driven by the cooling of ocean temperatures within the eastern Pacific sea, inflicting dry spells in eastern Africa.
- Human-induced warming within the western Pacific Ocean is creating things worse.
- Global emissions have resulted within the fast warming of the west Pacific, leading to a lot of rain around Indonesia and regarding however certain rain deficits in arid, food-insecure Kenya, Somalia and Ethiopia.
- Typically East Africa receives 2 rainy seasons each year, Gregorian calendar month to December and March to may.

- Now, with climate change, we have a tendency to square measure seeing a lot of frequent and very dangerous consecutive failures of those rains.
- Fortunately, we will currently usually predict these droughts victimization climate models and Earth observations.
- As a part of the Famine Early Warning Systems Network, the Climate Hazards Center produces maps of rain estimates that facilitate guide billions of bucks in humanitarian help for tens of immeasurable people.
- Generally, climate models will predict wherever exceptionally heat waters are going to be.
- And we will use these forecasts to diagnose droughts, usually before they happen.
- For instance, once the East Pacific is hotter it amplifies the intensity of droughts in northern Ethiopia and Southern Africa.
- If this further heat is within the western Pacific and eastern Indian Oceans, it contributes to serial droughts in kenya, Somalia and southern Ethiopia.
- Drought risk management rests upon 3 pillars; drought observation and forecast, vulnerability and risk assessment and drought readiness, and mitigation and response.

Topic 33.BIOFUELS

Importance for Prelims: Environment



The biofuels route to carbon neutrality

- The continued use of fossil fuels for addressing the world's energy desires is resulting in speedy depletion of natural resources and a simultaneous increase in environmental pollution.
- Biofuels are viewed collectively of the solutions to the current twin downside.
- The better part is that biofuels may be manufactured from what's usually considered as agricultural "waste".
- Using biotechnology and bio solutions, it's doable to boost agricultural turn out also because the conversion of agro-residue to biofuels.
- The March 2021 Report of the world Biogas Association estimates that around 105 billion tonnes of organic waste is generated every year, which

may be wont to turn out biofuels, therefore driving progress towards a low-carbon energy transition.

- Sugarcane ethanol has one amongst the smallest carbon footprints among biofuels.
- It is clean and reasonable and, once mixed with gasoline, will reduce GHG emissions by up to 90 per cent.
- Ethanol mixing additionally considerably reduces emissions of particulate pollutants and deadly gases.
- India launched the ethanol blended petrol (EBP) theme in 2003. With united efforts by the government over the past seven years, the assembly of fuel-grade ethanol touched 3 billion litres in ethanol provide Year 2020-21.
- The targets for ethanol mixing have currently been set at ten per cent for twenty22 and 20 per cent for 2025.
- To guide efforts during this direction, the NITI Aayog and therefore the Ministry of crude oil and fossil fuel discharged the “Roadmap for ethanol mixing in India, 2020-25” in June 2021.
- It is anticipated that a successful E20 (20 per cent ethanol blend) programme might save \$4 billion every year for India.

What are Biofuels?

- A biofuel is any liquid fuel derived from biological material like trees, agricultural wastes, crops, or grass.
- Biofuel may be made from any carbon supply that may be replenished rapidly, like plants. Biofuels are used globally and biofuel industries area unit greatly increasing in Europe, Asia, and North and South America.
- They contain no sulphur and carbon monoxide low carbon monoxide and toxic emissions. Biofuels are substitutes for typical fossil fuels, like petroleum, propane, coal, and natural gas.

- Biofuels are made of plant or animal products. Some area unit made by the extracting of sugar or starch from crops then fermenting it to create alcohol.
- Other biofuels are created by the decaying of organic matter and therefore the capturing of the resultant gases.

Topic 34.EDAYUR CHILLI KUTTIATTOOR MANGO RECEIVE GI TAG

Importance for Prelims:Agriculture

Edayur chilli, Kuttiaattoor mango receive GI tag

- About Edayur chilli – Edayur chilli (Edayurmulaku in Malayalam) may be a local cultivar of Kerala being cultivated for a minimum of the last 150 years.
- From Edayur, massive quantities of this chilli were sold to near markets and districts for creating Kondattom (sun-dried-curd-chillies).
- Edayur chilli has very low pungency.
- The distinctiveness are often attributed to its genetic make-up, the precise environmental and soil conditions and therefore the ancient ways of cultivation.
- About Kuttiaattoor Mango Kuttiaattoor mango (Kuttiaattoor manga in Malayalam) may be a common and attractive traditional mango cultivar of Kuttiaattoor and therefore the near gram panchayats in Kannur district of North Kerala.
- Trees with large number of mangoes on them are a visible treat for anyone visiting Kuttiaattoor throughout the months of March, April and will.
- It is known for its appealing orange-yellow colored fruits still because the wonderful style and flavour.
- Another speciality is that ripened fruits don't show speckles or patches on the skin, creating it a lot of appealing in market.
- The distinctiveness of Kuttiaattoor mango is assisted by the mixture of specific environmental conditions of the area of its cultivation and varietal characters.

Topic 35.ORGANIC FARMING

Importance for Prelims: Agriculture



Organic farmers face double whammy

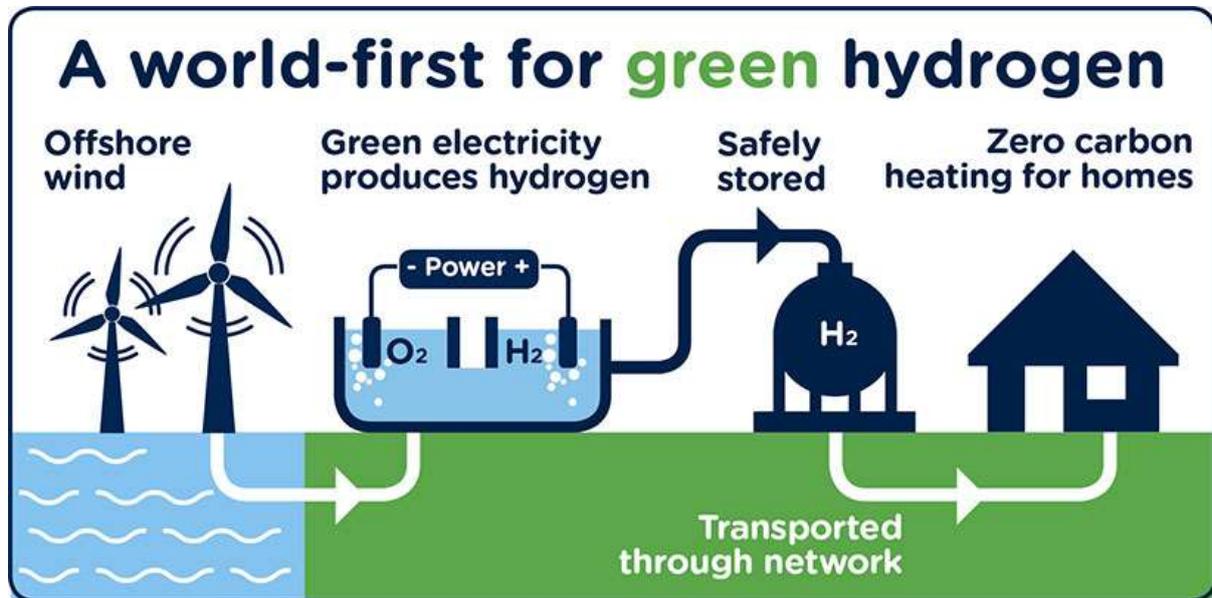
- Indian exporters of organic turn out are full of a double whammy of “variations” in tests for ethylene oxide (ETO) and want for separate certifications to export to the U.S., European Union, and Canada. Presence of over zero.1 mg/kg olefin compound even in standard merchandise isn't accepted by the eu Union, because the chemical is taken into account carcinogenic.
- Separate certifications for organic merchandise square measure needed since the U.S. terminated a unilateral agreement with APEDA.

What is organic farming?

- According to FSSAI, 'organic farming' could be a system of farm design and management to make an system of agriculture production while not the employment of artificial external inputs like chemical fertilisers, pesticides and artificial hormones or genetically changed organisms.
- Organic farm turn out means that the turn out obtained from organic agriculture, whereas organic food means that food products that are made in accordance with nominal standards for organic production.
- Organic Farming in India. India ranks 1st in number of organic farmers and 9th in terms of area under organic farming.
- Sikkim became the primary State within the world to become fully organic in 2016.
- North East India has traditionally been organic and therefore the consumption of chemicals is much but the remainder of the country.
- Similarly the social group and island territories are traditionally practicing organic farming.
- The major organic exports from India are flax seeds, sesame, soybean, tea, healthful plants, rice and pulses.

Topic 36. GREEN HYDROGEN PUSH FOR REFINING FERTILISER SECTORS

Importance for Prelims: Environment

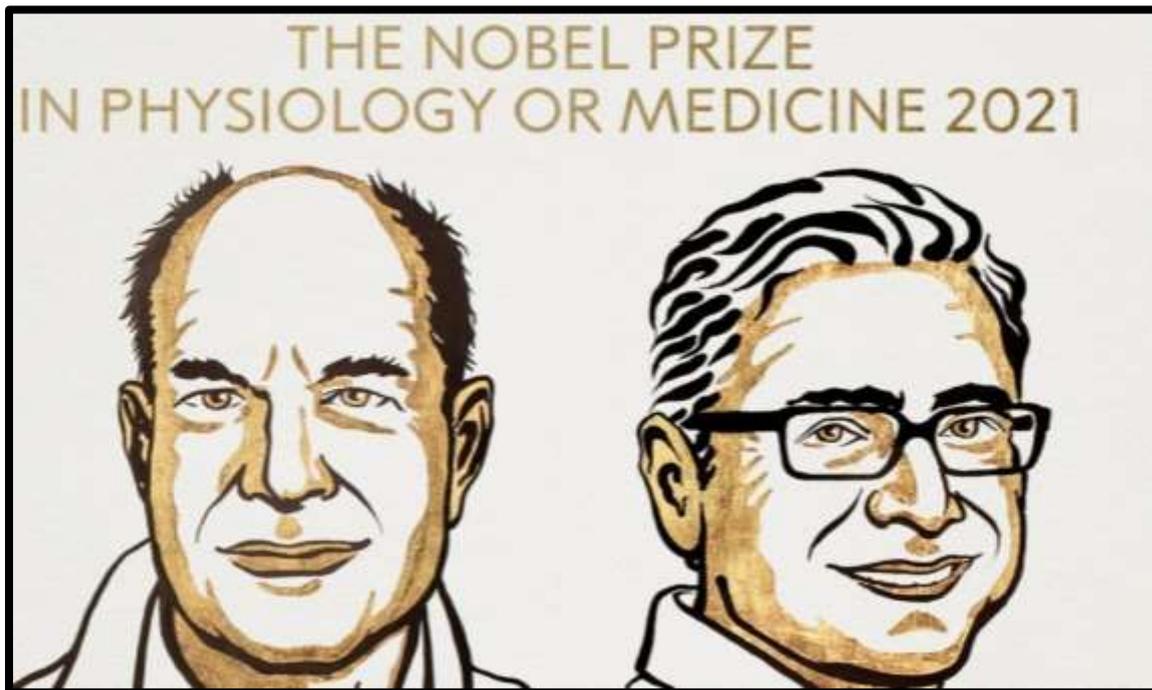


R K Singh: ‘Green hydrogen push for purification, fertilizer sectors; PLI for electrolysers within the works’

- The government is functioning on plans to spice up the use of inexperienced H within the oil refining and fertiliser production sectors, as well as a probable announcement on a Production linked Incentive (PLI) theme for electrolyser producing to relinquish an impetus to the domestic H worth chain.
- Now, gray hydrogen and gray ammonia (both generated from gas or paraffin, through a method known as steam reforming) are going to be step by step replaced by the green hydrogen and green ammonia (generated using renewables).
- Grey hydrogen is employed in course refining.

Topic 37. NOBLE PRIZE FOR MEDICINE

Importance for Prelims: Science and Tech



Nobel for deciphering the science of touch

- David Julius and Ardem Patapoutian, operating independently within the United States, created a series of discoveries within the late 1990s and early 2000s to work out the temperature and touch detectors in our body and also the mechanism through which they impart with the nervous system to spot and answer a selected touch. For his or her ground-breaking research, that continues to be continued, 66-year-old Julius and 54-year-old Patapoutian were declared joint winners of the 2021 laurels in Physiology.
- Julius and Patapoutian are awarded the prize “for their discoveries of receptors for temperature and touch”.
- Simply put, they found the molecular sensors within the frame that are sensitive to heat, and to mechanical pressure, and create the US “feel” of hot or cold, or the bit of a pointy object on our skin.
- Artificial sensors are common in today’s world.

- A measuring device could be a quite common temperature detector. Similarly, within the frame, all the molecules don't sense heat after they are exposed thereto.
- Only very specific proteins do, and it's their job to relay this signal to the nervous system, that then triggers an applicable response.
- Scientists knew that such sensors should exist, however weren't able to establish them till Julius discovered the primary heat receptor.
- The human ability to sense heat, or cold, and pressure isn't terribly totally different from the operating of the various detectors that we are accustomed to.
- A smoke detector, as an example, sends off an alarm once it senses smoke on the far side a certain threshold.
- Similarly, once one thing hot, or cold, touches the body, the warmth receptors modify the passage of some specific chemicals, like calcium ions, through the membrane of nerve cells.
- It's sort of a gate that exposes on a awfully specific request.
- The entry of the chemical within the cell causes a tiny low modification in electrical voltage, that is picked up by the nervous system.
- These receptors were sensitive not simply to external bit, however might slight temperature or pressure changes within the body as well.
- Julius discovered TRPV1, a heat-sensing receptor, whereas Patapoutian discovered 2 mechanosensitive ion channels called the Piezo channels.

Topic 38.CHANGES TO FOREST CONSERVATION ACT

Importance for Prelims: Environment

The Union Government has proposed changes to Forest Conservation Act.

- It has proposed absolving agencies concerned in national security comes and border infrastructure comes from getting previous forest clearance from the Centre.
- The FCA, that 1st came in 1980 and was amended in 1988, needs such permission.
- The burdensome requirements obligatory by the FCA have within the past delayed essential border infrastructure comes. Earlier, MoEFCC had accorded general approval for diversion of forest land for construction and widening of border roads within the areas falling inside 100 km from the line of Actual control (LAC) with China.
- The projected amendment might take away one among the largest hurdles within the timely completion of border infrastructure comes.
- There is additionally a concept within the document to exempt land noninheritable before 1980 by public sector bodies like the Railways.
- Currently there's a powerful rancour among many Ministries on however the Act was being understood over the proper of manner of railways, highways.
- At present, a landholding agency (Rail, NHAI, PWD, etc.) is needed to require approval underneath the Act and pay stipulated compensatory levies like net present value (NPV), counteractive afforestation (CA), etc. to be used of such land that was originally been noninheritable for non-forest functions.
- The surroundings Ministry has projected adding a clause create offences under the changed Act punishable with straightforward imprisonment for

a amount which can reach one year and make it cognoscible and non-bailable.

- Provisions are projected for penal compensation to form sensible for the injury already done.
- It proposes removing zoos, safaris, Forest coaching infrastructures from the definition of “non-forestry” activities.
- The current definition restricts the manner cash collected as a part of compensatory cess may be spent towards forest conservation functions.
The Forest (Conservation) Act, 1980
- It is that the principal legislation that regulates deforestation within the country.
- It prohibits the felling of forests for any “non-forestry” use while not previous clearance by the central government.
- The clearance method includes seeking consent from native forest rights-holders and from life authorities.
- The Centre is sceptered to reject such requests or permit it with de jure binding conditions.
- In a landmark call in 1996, the Supreme Court had swollen the coverage of FCA to any or all areas that glad the definition of a forest; earlier, solely lands specifically notified as forests were protected by the social control of the FCA.
- The FCA may be a transient legislation with only 5 sections.
- Section one defines the extent of coverage of the law, Section a pair of restrictions of activities in forest areas, and therefore the rest deals with the creation of consultatory committees, powers of rule-making and penalties.

Topic 39.COAL SHORTAGE CHOKING THERMAL POWER PLANTS

Importance for Prelims: Geography



India's thermal power plants are facing a severe coal shortage, with coal stocks having come back right down to a mean of four days of fuel across an increasing range of thermal stations.

- The average level of coal stocks at an increasing range of India's thermal power plants have come back right down to four days price of stock

compared to the government recommendations that thermal power plants hold 14 days price of coal stock.

- The shortage of coal is a lot of acute in non-pithead plants or plants that are not located close to coal mines with such plants accounting for 98 of the 108 plants seen to own important levels of stock i.e.under eight days.
- India's coal fired thermal power plants account for 208.8 GW or 54 per cent of India's 388 GW installed generation capability.
- **Reason behind India's coal shortage** – a pointy dealing in power demand because the economy recovers from the Covid-19 pandemic let alone provide problems have diode to the present coal shortage.
- Other key reasons for the supply crunch embrace not up to normal stock accumulation by thermal power plants within the April-June amount and continuous precipitation in coal bearing areas in August and September that diode to lower production and fewer despatches of coal from coal mines.
- A consistent move to lower imports let alone high international costs of coal have also led to plants cutting imports.
- Amendment to the Mineral Concession Rules, 1960 during a move expected to assist address the continued coal shortage at the country's thermal power plants, the govt notified rules permitting the sale of up to 50 per cent of the annual coal and lignite output of captive mines.
- The move to amend the Mineral Concession Rules, 1960 is predicted to learn operators of 100 coal and lignite blocks, with an annual production capability of five hundred tonnes.
- Captive mines are operated by end-users of coal, as well as steel and power sector corporations.
- The amended rules paved the means for releasing of additional coal within the market by bigger activity of mining capacities of captive coal

and coal blocks, that were being only partially utilized, thanks to restricted production of coal for meeting their captive wants.

- Lessees of such captive mines are going to be needed to pay extra premiums to state governments on top of those paid for coal that they sell when meeting their own requirements.
- The move is predicted to inspire lessees of captive mines to spice up production on the far side their own requirements.

Topic 40. MONSOON SET TO TRAVEL WITH THE SUN TO THE SOUTHERN HEMISPHERE

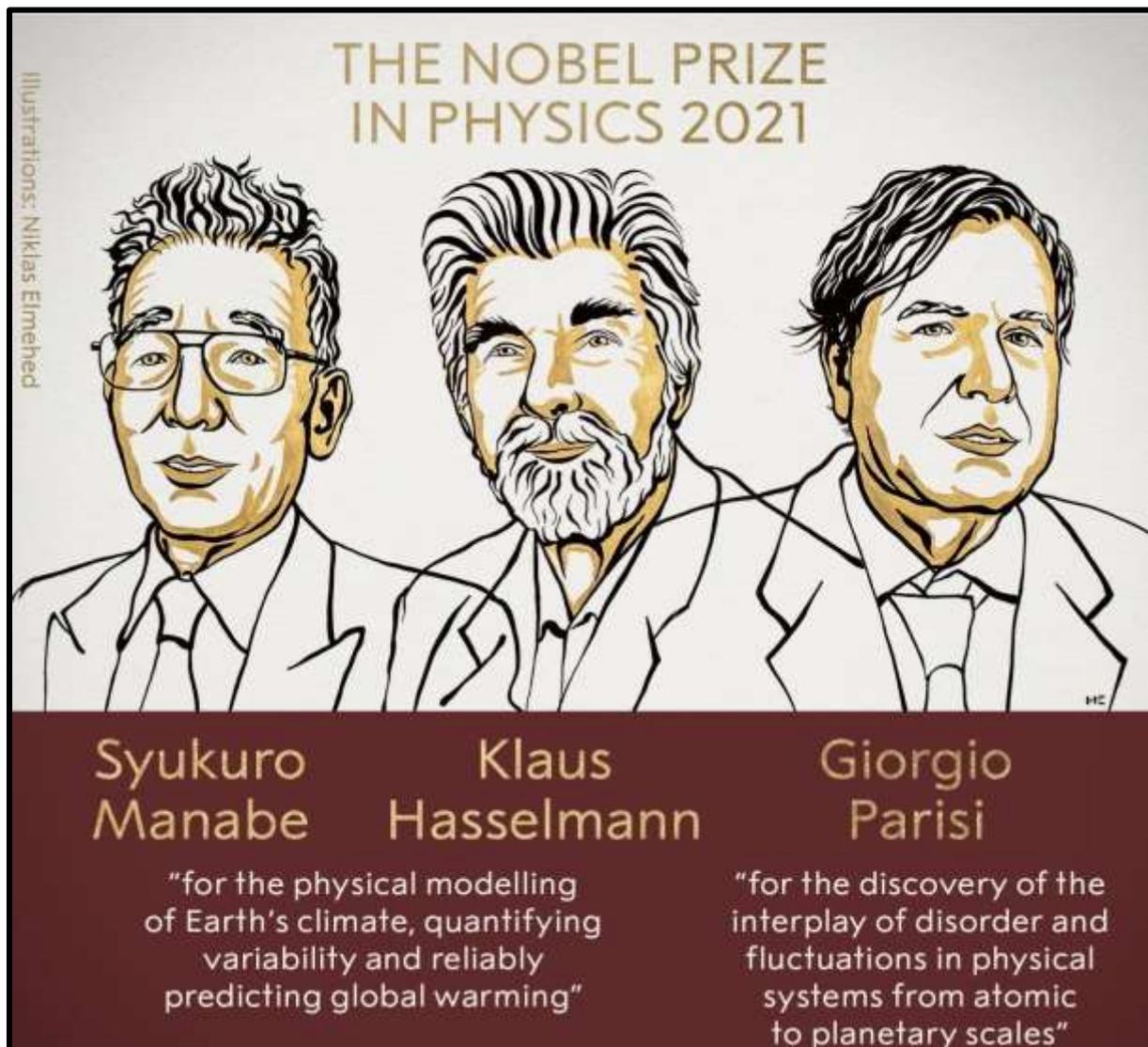
Importance for Prelims: Geography

Monsoon set to travel with the sun to the southern hemisphere

- The monsoon travels with the sun and can currently follow its seasonal trek to the southern hemisphere, putting the Bay of Bengal into another churn to line up the monsoon in reverse (North-East monsoon) and before moving to Australia for its next biggest play within the East and far East.
- Changes in broad scale wind patterns across the tropical oceans within the region are a proof that the main focus of tropical weather is setting out to transition to the southern hemisphere.
- Southward movement India's monsoon trough had recently moved South over water thanks to the southward movement of the withdrawal method.
- Previously, it had lain over the landmass of the landmass and then wasn't contributing to forming tropical lows and cyclones over either the Bay or the Arabian Sea.
- Tropical cyclone 'Gulab' fashioned within the Bay before crossing the coast on September 26.
- It had then tracked westward across the breadth of Central India before taking off within the Arabian Sea and being renamed as 'Shaheen' that went on to become a severe cyclone and crossed the Oman coast.

Topic 41. NOBEL PRIZE IN PHYSICS 2021

Importance for Prelims: Science and Tech



First Nobel for climate science

- The Nobel prize Committee said the Physics Prize this year was given for “groundbreaking contributions to our understanding of complex systems”.
- Syukuro Manabe shared one half of the prize with Klaus Hasselmann, another climate scientist, whereas the opposite 0.5 visited Giorgio Parisi for his contributions in advancing the understanding of complicated systems.
- These are systems with a awfully high degree of randomness; weather and climate phenomena are samples of complicated systems.
- This is that the 1st time climate scientists are awarded the Physics Nobel.

- The IPCC had won the Peace Nobel in 2007, an acknowledgement of its efforts in making awareness for the fight against climate change, whereas a Chemistry Nobel to Paul Crutzen in 1995, for his work on the ozone layer, is taken into account the only different time somebody from atmospheric sciences has won this honour.
- The recognition of Manabe and Hasselmann, therefore, is being seen as an acknowledgment of the importance that climate science holds in today's world. The 1967 paper by Manabe was seminal work.
- It was the first description of the processes of world warming. Manabe and Wetherland additionally created a climate model for the first time.
- The subtle models that we tend to run these days, that are so crucial to climate science, trace their ancestry thereto model created by Manabe.
- He was a pioneer in such a lot of ways, and also the father of climate modelling. Manabe was additionally instrumental in developing the primary coupled model, within which ocean and region interactions are modelled along, within the 1970s.
- Manabe demonstrated however inflated levels of dioxide within the atmosphere could lead on to inflated temperatures at the surface of the planet.
- In the 1960s, he led the event of physical models of the climate. Hasselmann, a German, United Nations agency too is currently ninety, is an oceanographer who ventured into climate science.
- He is best acknowledged for his work on distinguishing specific signatures, or "fingerprints" because the Nobel committee known as them, within the climate phenomena that enabled scientists to determine whether or not these were caused by natural processes or human activities.
- He created a pc model that joined along weather and climate.

- His work answered the question of why climate models are often reliable despite weather being changeable and chaotic.
- Manabe and Hasselmann too are authors of previous IPCC reports.
- Both of them contributed to the primary and third assessment reports, while Hasselmann was an author within the second assessment report further. Research by Manabe and Hasselmann led to computer models of the Earth's climate which will predict the impact of world warming. Parisi, who is 73, found that hidden rules influence the apparently random behaviour of solid materials – and discovered how to explain them mathematically.

Previous winners of the Nobel prize in Physics 2020 – Sir Roger Penrose, Reinhard Genzel and Andrea Ghez received the prize for his or her work on the character of black holes.

2019 – James Peebles, Michel Mayor and Didier Queloz shared the prize for ground-breaking discoveries concerning the Universe.

2018 – Donna Strickland, Arthur Ashkin and Gerard Mourou were awarded the prize for his or her discoveries within the field of optical device physics.

2017 – Rainer Weiss, Kip Thorne and Barry Barish attained the award for the detection of gravitational waves.

2016 – David Thouless, Duncan Haldane and Duncan Kosterlitz shared the award for their work on rare phases of matter.

2015 – Takaaki Kajita and Arthur McDonald were awarded the prize for the invention that neutrinos switch between different “flavours”.

Topic 42. MOODY'S UPGRADED INDIA'S SOVEREIGN RATING

OUTLOOK

Importance for Prelims: Economy

Moody's gives 'stable' rating to India

- Asserting that India's downside risks from negative feedback between real economy and financial set-up are receding, ratings agency Moody's modified India's sovereign rating outlook from 'negative' to 'stable', whereas affirming the country's foreign-currency and local-currency long-term issuer ratings at Baa3.
- Last year, Moody's downgraded India's sovereign rating from 'Baa2' to 'Baa3', the bottom investment grade, speech communication there'll be challenges in implementation of policies to mitigate risks of a sustained amount of low growth and deteriorating fiscal position.
- The outlook on the rating was kept negative.

What led to an upgrade within the rating agency's outlook?

- With higher capital cushions and greater liquidity, banks and non-bank monetary institutions cause much lesser risk to the sovereign than Moody's previously anticipated.
- And whereas risks stemming from a high debt burden and weak debt affordability stay, Moody's expects that the economic setting can give a gradual reduction of the final government fiscal deficit over consecutive few years, preventing more deterioration of the sovereign credit profile. additionally, banks have reinforced their capital positions, inform to a stronger outlook for credit growth to support the economy

What steps are taken to strengthen the banking system?

- In the last six financial years, banks have recovered Rs 5.01 lakh crore of dangerous loans, enabling them lakh their monetary metrics.
- The government has infused Rs 3.06 5 crore in state-owned banks in 5 years between 2017-18 and 2021-22, and brought a series of reforms to strengthen banks, improve debt resolution and recovery.
- Last month, the government approved extending a guarantee of Rs thirty,600 crore to the National asset Reconstruction Company Ltd

(NARCL) to assist clear the banking sector's stressed assets of around Rs 2 lakh crore in a very time-bound manner. Moody's rating Scale.

Topic 43. AYUSHMAN BHARAT PM- JAY

Importance for Prelims: Governance



NHA revises rates of health-benefit packages

- The National Health Authority (NHA) has revised the rates of some health packages under the Ayushman bharat PradhanMantri January ArogyaYojana (AB PM-JAY).
- In the revised version of the Health benefit Package (HBP 2.2), that is probably going to be extended from November, the rates of some health packages are increased by 20 per cent to 400 per cent under the theme.
- As per the release, rates of concerning 400 procedures are revised, and one new further medical management package related to black plant life has also been else.
- The revised version of Health benefit Packages (HBP 2.2) can strengthen the empanelled hospitals to supply better attention services to the beneficiaries under Ayushman India PM-JAY.
- The revised packages for oncology can enhance cancer look after the beneficiaries within the country.

- At present, Ayushman Bharat PM-JAY has 1,669 treatment procedures, of which, 1,080 are surgical, 588 medical and one any old package.
- About Ayushman Bharat PM-JAY under the vision of Prime Minister Narendra Modi, Ayushman Bharat PM-JAY aims to realize the target of universal health coverage and supply access to free and affordable attention services to the voters residing within the remotest areas of the country.
- Ayushman India PM-JAY was launched in 2018, with the Health Profit Package (HBP 1.0) comprising 1,393 packages.
- The theme aims to supply free and cashless attention services up to ₹5 lakh per family per year to over 10.74 crore poor and vulnerable families (over 53 crore beneficiaries) as per Socio-Economic Caste Census (SECC) 2011 database.

Topic 44.MICROFINANCE INSTITUTIONS

Importance for Prelims: Economy



MFIs seek additional further,500 cr. under credit guarantee theme

- These are organizations that provide monetary services to low-income populations.
- They offer services like micro loans(all loans that are below Rs.1 lakh), micro-savings, and microinsurance.
- Microfinance institutions offer small loans to people who don't have any access to banking facilities.
- Their area of operation includes rural areas and among lowincome individuals in urban areas.
- The Non-Banking financial Company -Micro Finance establishments (Reserve Bank) Directions, 2011of the reserve bank of India (RBI) is regulation all the Non - Banking finance company (NBFC)-MFIs in India.
- Salient provisions of rbi document on Regulation of Microfinance sector
The urged framework within the Document is meant to be created

applicable to the microfinance loans provided by all entities regulated by the Federal Reserve Bank.

- After the consultation, the rbi can unleash the general pointers for the regulation of the Microfinance Sector.
- A common definition of microfinance loans: there's no common definition for microfinance loans out there from varied microfinance entities in India.
- The document aims to supply one common definition for all regulated microfinance sector entities.
- Capping the outflow on account of compensation of loan obligations of a home to a share of the home income.
- Further, borrowers will verify the amount of repayments as per their needs.
- A Board approved policy for home income assessment.
- There ought to be no pre-payment penalty; no collateral demand, and greater compensation frequency for all microfinance loans.
- Alignment of valuation pointers for NBFC-MFIs with pointers for NBFCs.
- Introduction of a standard simplified reality sheet on the valuation of microfinance loans. Further, MFIs have to be compelled to show minimum, most and average interest rates charged on microfinance loans on their websites for bigger transparency.
- Aligning valuation pointers for NBFC-MFIs with pointers applicable to NBFCs. Major Business Models:
 1. Joint Liability Group: this is often usually an informal cluster that consists of 4-10 people who look for loans against mutual guarantee. The loans are typically taken for agricultural functions or associated activities.
 2. Self facilitate Group: it's a bunch of people with similar socio-economic backgrounds. These tiny entrepreneurs close for a brief period and build a common fund for his or her business desires. These teams are classified as

noncommercial organisations. The national bank for Agriculture and Rural Development (NABARD) SHG linkage programme is noteworthy during this regard, as several Self facilitate teams are ready to borrow money from banks if they're ready to gift a track record of diligent repayments.

3. Grameen Model Bank: it was the production of laureate prof. Muhammad Yunus in Bangladesh within the 1970s. it's impressed the creation of Regional Rural Banks (RRBs) in India. the first motive of this method is that the end-to-end development of the agricultural economy. 4. Rural Cooperatives: They were established in India at the time of Indian independence. However, this method had complicated monitoring structures and was helpful only to the responsible borrowers in rural India. Hence, this method failed to notice the success that it initially at first.

Topic 45.AZADI KA AMRIT MAHOTSAV SERIES

Importance for Prelims:History



Women Unsung Heroes Oruganti Mahalakshamma (Andhra Pradesh) Her first steps into the history of freedom struggle began once she actively started leading campaigns against the high revenue collections by the colonial authorities.

- Her efforts led to a serious drop by the revenue collection, thereby, posing the authorities a severe challenge.
- Her husband and family, notable for his or her patriotic zeal and charitable activities, were support pillars to her.
- This resulted in her active involvement within the Salt passive resistance and Swaraj Movement.
- Her works weren't limited to the edge of political struggle however were also social struggles and sceptred the vulnerable section of society. She smartly publicised the reason behind self-rule and was instrumental in commencement the Congress Women's Wingin Nellore (1921).
- Tileswari Barua (Assam) September 20 is ascertained within the Dhekiajuli town in Sonitpur district of province as Martyrs' Day,

because it is that the same day during which TileswariBarua, who was shot at the age of twelve by British, throughout the Quit India Movement, once she and a few freedom fighters tried to unroll the flag atop a police office.

- Tileswari slid with amrityuvahini — a sort of suicide squad — because it marched towards the police office in Dhekiajuli. Fifteen people were killed within the shooting that day.
- ChandraprabhaSaikiani (Assam) ChandraprabhaSaikiani established the All province PradeshikMahilaSamiti within the year 1926.
- She was a zealous supporter of women's and girls' education.
- In 1918, throughout the province session of the Asom/AxomChhatra (Assam Students) Sanmilan, she ardently spoke concerning the sick effects of narcotic consumption and demanded for its ban.
- She was against caste discrimination and attacked it with the help of the teachings of SrimantaSankardev (a 15th-16th century social revolutionary).
- ChandraprabhaSaikiani additionally demanded for the entry of women at non secular places and rituals. She became a district of the Non-Cooperation Movement and took part with enthusiasm within the Indian freedom struggle. within the state of province, she was the second lady novelist. She shed light on the position of women in Assamese society by describing her own life in her novel Pririvitha.
- For seven years, she was the editor of Abhijaytri (mouthpiece of All province PradeshikMahilaSamiti).
- town ranee Srivastava (Bihar) Tara rani Srivastava was a crusader and part of sage Gandhi's Quit India Movement.
- On twelfth August 1942, referred to as upon by Mohandas Karamchand Gandhi, she and her husband PhulenduBabu organized a

march to lift the Indian flag ahead of the siwan police office, an act that will be seen as “a major defiance.

- Despite her husband obtaining shot, she hoisted the flag.
- Royal Indian Navy Mutiny, 1946 The ratings of the RIN warship HMIS “Talwar”, docked at Mumbai, went on strike on 18 February 1946 over the problems of unhealthy food and adverse living conditions.
- The ratings went all-out to urge the folks of city to rise in support of their revolt – the best within the armed service history – spreading to seventy eight ships and twenty two units right along the Indian lineation.
- In response to their decision, many processions were taken move into Mumbai, Karachi, Calcutta and alternative places within the ulterior days.
- Hundreds of Indian citizens were killed and thousands were wounded within the British military and police firing on the demonstrators. • Sardar Patel managed to form the ratings surrender on 24 February 1946.
- However, they declared if their demands are not conceded they'll prolong strike once more.

Topic 46.MUDUMALAI TIGER RESERVE

Importance for Prelims: Environment



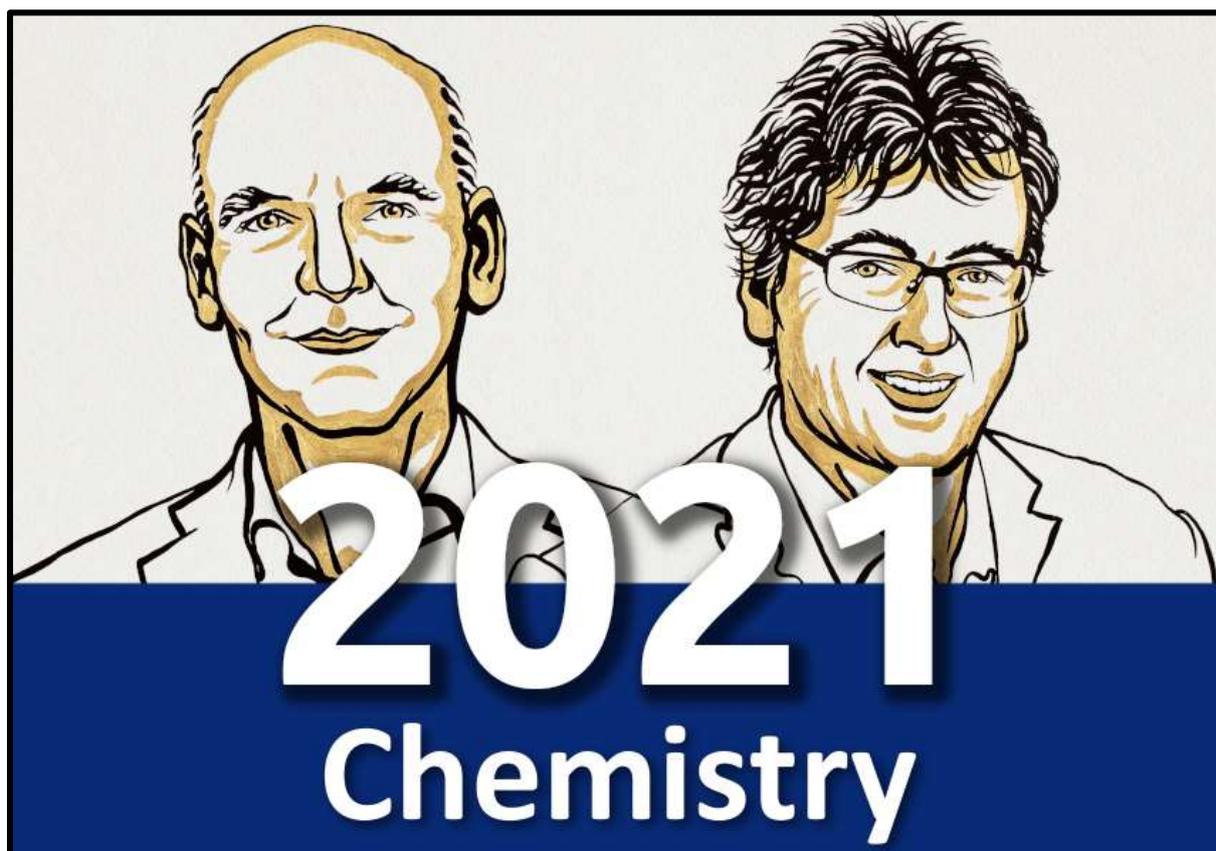
Using scientific techniques, local experience to track T23'

- Mudumalai national park could be a park within the Nilgiri Mountains in state, south India, covering 321 km² (124 sq mi). it's situated within the Nilgiri District and shares boundaries with the states of Karnataka and Kerala.
- It is a component of the Nilgiri part Reserve and was a declared tiger reserve in 2007.
- It could be a part of Nilgiri biosphere Reserve (1st part Reserve in India) beside Wayanad life Sanctuary (Kerala) within the West, Bandipur national park (Karnataka) within the North, Mukurthi park and Silent valley within the South.
- The protected area harbours many vulnerable and vulnerable species as well as Bengal tiger,

- Indian elephant, gaur and Indian leopard. Mudumalai park harbours 266 bird species, as well as Indian white-rumped vulture and long-billed vulture.
 - It is bordered within the north by Bandipur national park, within the east by Sigur Reserve Forest and within the west by Wayanad life Sanctuary.
 - In the south, it's featheredged by Singara Reserve Forest.
 - The Moyar river and its tributaries drain this area, and several other artificial waterholes offer potable for life throughout dry seasons.
 - The river Moyar, that flows on the Tamil Nadu-Karnataka border, divides the 2 states.
 - The Park is bisected by the Mysore-Ooty main road, that follows the direction of the Moyar river, that divides Mudumalai and Bandipur.
- Flagship Species: Tiger and Asian Elephant.
- The Reserve has tall grasses, commonly said as 'Elephant Grass'.
 - Tropical Evergreen Forest, moist Mixed Deciduous Forest, moist Teak Forest, Dry Teak Forest, Secondary Grasslands, Shrubs, and Swamps are among the habitats found here.

Topic 47.NOBLE PRIZE IN CHEMISTRY 2021

Importance for Prelims: Science and Tech



“Simple ideas are typically the most tough to imagine,” the Nobel prize committee said whereas honouring Benjamin List and David MacMillan with this year’s Chemistry Nobel.

- The simple concept List and MacMillan came up with, operating severally, was to appear for new catalysts, the substances wont to accelerate chemical reactions, once most believed they were cursed an existing, somewhat inefficient, set.
- The new catalysts, derived from naturally-occurring chemicals, were greener and cheaper, and ensured that the top product of the method was of a particular selection — and failed to need to go through a purification process to yield the specified form of compound.

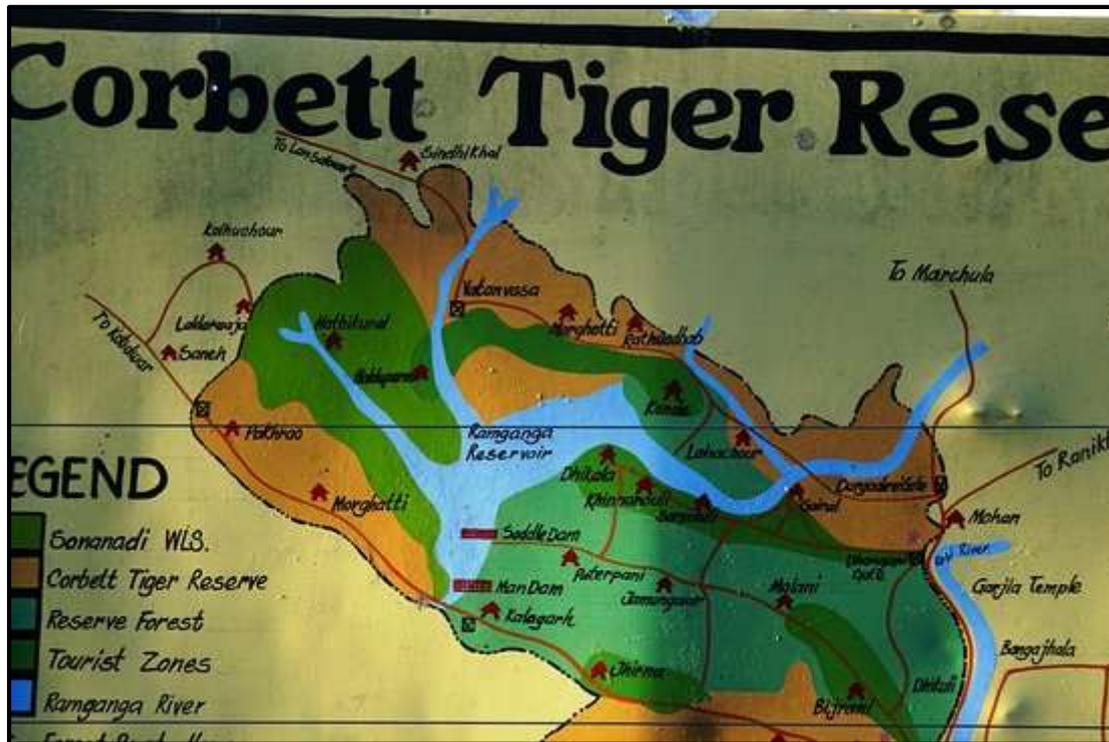
- Catalysts once 2 or a lot of compounds react to make new compounds, the method is usually assisted by alternative chemicals that don't change themselves, however facilitate speed up the reaction.
- These catalysts are proverbial a minimum of since the center of the nineteenth century, and area unit employed in nearly each natural process currently.
- Till around 2000, solely 2 forms of chemicals were proverbial to act as effective catalysts: metals, primarily heavier metals; enzymes, naturally-occurring serious molecules that facilitate all life-supporting biochemical processes.
- Both these sets of catalysts had limitations.
- Heavier metals are expensive, tough to mine, and toxic to humans and also the surroundings.
- Despite the simplest processes, traces remained within the finish product; this posed issues in situations wherever compounds of terribly high purity were needed, like within the manufacture of medicines.
- Also, metals needed an surroundings freed from water and oxygen, that was tough to make sure on an industrial scale.
- Enzymes on the opposite hand, work best once water is employed as a medium for the chemical change.
- But that's not an surroundings appropriate for every kind of chemical reactions.
- Organo-catalysis List and MacMillan, both 53, started experimenting with straightforward organic compounds.
- Organic compounds are principally naturally-occurring substances, engineered around a framework of carbon atoms and frequently containing hydrogen, oxygen, nitrogen, sulphur, or phosphorus.

- Life-supporting chemicals like proteins, that are long chains of amino acids (carbon compounds containing nitrogen and oxygen) are organic. Enzymes also are proteins, and so, organic compounds.
- List and MacMillan were conscious of earlier analysis from the Nineteen Seventies, during which nitrogen organic compound referred to as amino acid was used as a catalyst in some specific reactions.
- But its role wasn't totally explored.
- They started operating with individual amino acids in enzymes — and struck gold.
- Asymmetric catalysis The individual amino acids had another advantage: they ensured just one form of the top product was yielded within the reaction.
- Substances will have precisely the same chemical composition and molecular formula; nonetheless disagree wide in their properties. they're called isomers.
- One form of isomers area unit those who differ within the manner individual atoms area unit homeward in three-dimensional area.
- Two molecules might be precisely the same, except that they're mirror pictures of every alternative, like our hands.
- For simplicity, scientists typically talk to these molecules as left-handed or righthanded.
- This simple distinction will typically have monumental consequences, as a result of it permits the molecules to bind in numerous locations once they act with alternative molecules.
- The consequence during a chemical reaction is typically a mix of left-handed and righthanded molecules.
- The traditional chemical reactions disbursed in laboratories are not selective in this regard.

- But nature is. as a result of the mirror pictures will have terribly totally different properties, natural processes are extremely selective, and precise.
- They turn out either a lefthanded or a right-handed molecule.
- List associate deegreed MacMillan discovered that by employing a natural compound like an amino acid as a catalyst, they were getting just one specific reflexion of the end-product.
- This was later named uneven catalysis.

Topic 48. CORBETT NATIONAL PARK

Importance for Prelims: Environment



Union Minister of State for environment, Forest and climate change Ashwini Kumar Choubey proposing to vary the name of corbett national park to Ramganga national park

- Jim Corbett's name has season itself to India's oldest and most celebrated national parks and to the manufacture that has grown up around it. however the Park wasn't continually known as corbett.
- Set up in 1936 as India's — and Asia's — 1st national park, it was known as Hailey national park once Sir Macolm Hailey, the governor of the United Province.
- It was renamed Ramganga park, named once the stream that flows through it, shortly once Independence and was rechristened over again as corbett national park in 1956.

- Located within the Himalayan foothills close to the tourist hill station of Nainital Corbett National park is meet 520 sq km and is an element of the Corbett Tiger Reserve that is over 1,288 sq km.
- The national park along with the neighboring 301-sq km-Sonanadi life Sanctuary along create the important tiger surround of the corbett Tiger Reserve.
- The place from wherever Project Tiger was launched in 1973, with its tiger population at 163, it boasts of a single largest tiger population during a tiger reserve and one of the best tiger densities within the country.

Topic 49.100% FDI IN TELECOM

Importance for Prelims: Economy



Centre permits 100% FDI in telecom via automatic route

- The government notified its call to allow one hundred per cent foreign direct investment (FDI) below the automatic route within the telecom services sector subject to bound conditions.
- Till now, only 49 per cent of FDI was allowed through the automatic route and something on the far side that had to return via the government route. Telcos, together with infrastructure suppliers, are coated below the new FDI regime.
- The 100 per cent FDI was a part of the telecom reforms package approved by the cupboard on september fifteen.
- Other reliefs enclosed a four-year moratorium on AGR (Average Gross Revenue) dues, and an possibility for the govt. to convert dues into equity post the moratorium amount.

- The Department for Promotion of business and Internal Trade (DPIIT), during a statement, said foreign investment in telecom services are subject to the condition of Press Note 3 of 2020
- According to Press Note 3 of 2020, an entity of a rustic, that shares a land border with India or wherever the useful owner of an investment into India is located in or may be a subject of any such country, will invest only below the government route.

Topic 50. FOREIGN EXCHANGE MANAGEMENT (NON-DEBT INSTRUMENTS) RULES 2019

Importance for Prelims: Economy

BPCL sale: Centre allows 100% foreign investment

- The Finance Ministry has another a new provision to the interchange Management (Non-debt Instruments) Rules, 2019 to facilitate strategic disinvestment of Bharat petroleum Corporation limited (BPCL).
- Foreign investment up to 100 per cent under the automated route is allowed in case an ‘in-principle’ approval for strategic withdrawal of a PSU has been granted by the government
- This new provision is additionally to the present one that prescribes FDI up to 49 per cent in petroleum purification PSUs, with none withdrawal or dilution of domestic equity.
- The FDI cap of forty nine per cent in oil refineries was proving to be a hitch within the government’s tries to sell its close to 53 per cent stake in BPCL, that is that the country’s second-largest refiner.
- The planned stake-sale is an element of the government’s effort to raise ₹1.75-lakh crore from disinvestment of public sector firms and monetary institutions in 2021-22.