

A Very Precise Coverage of Current Affairs of August 2019 in Tabular Form. It covers all important concepts and events in the most comprehensive manner as part of IASbaba's Prelims Current Affairs Classes-Prelims Exclusive Programme (PEP)-2020



PRELIMS EXCLUSIVE PROGRAMME 2020 (PEP)-AUGUST 2019 CURRENT AFFAIRS

PEP 2020


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Current Events of National & International Importance

| TOPICS | KEY ASPECTS | Value Addition |
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| United Nations Industrial Development Organization (UNIDO) | <ul style="list-style-type: none"> • UNIDO and National Institute of Solar Energy (NISE) initiate a skill development programme in the solar thermal energy sector. • Objective of UNIDO—promotion of industrial development, particularly for developing countries, for poverty reduction, inclusive globalization and environmental sustainability. • It is a member of the United Nations Development Group. • As of 1 April 2019, 170 States are Members of UNIDO (including India). | <ul style="list-style-type: none"> • Solar thermal technologies capture the heat energy from the sun and use it for heating and/or the production of electricity. • This is different from photovoltaic solar panels, which directly convert the sun's radiation to electricity • NISE is an Autonomous Institute of Ministry of New and Renewable Energy, located in Gurugram, Haryana. |
| State of Food Security and Nutrition in the World, 2019 Report | <ul style="list-style-type: none"> • Report jointly prepared by FAO, IFAD, UNICEF, WFP and WHO • Report shows a rise in world hunger for a third year in a row • There were 821 million chronically undernourished people in the world in 2018, up from 811 million in 2017 • One in nine people in the world now faces hunger. • However, one in five people were hungry in Africa – region with highest prevalence of hunger • India - Undernourishment declined from 22.2% in 2004-06 to 14.5% between 2016 and 2018. | <ul style="list-style-type: none"> • Conflict and the climate crisis constitute the greatest drivers of hunger. • IFAD-International Fund for Agricultural Development is an international financial institution and a specialised agency of the United Nations that works to address poverty and hunger in rural areas of developing countries. • SDG Goal 2 -End hunger, achieve food security and improved nutrition and promote sustainable agriculture • Undernutrition will reduce GDP by up to 11 % in Africa and Asia |
| Mekong Ganga Cooperation 10 th Ministerial meeting held in Bangkok, Thailand | <ul style="list-style-type: none"> • MGC, is a sub-regional cooperation organisation comprising India and five ASEAN countries, namely, Cambodia, Laos, Myanmar, Thailand and Vietnam. • Launched in 2000 at Laos capital Vientiane. • MGC takes its name from the Ganga and the Mekong, the two civilisational rivers in Southeast Asia. • Mandate: The MGC aims at facilitating closer contacts among the people inhabiting these two major river basins and enhancing cooperation in tourism, culture, |  |

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| | education, transport and communications. | |
| G7 Indian PM attended G-7 at the invitation of French President | <ul style="list-style-type: none"> • 45th Summit held at Biarritz, France • Theme: Fighting Inequality • G7 is a forum of the world's seven largest developed economies whose government leaders meet annually to discuss international economic and monetary issues. • G-7 has its roots in an informal meeting of the finance ministers of France, West Germany, the U.S, Great Britain, and Japan (the Group of Five) in the wake of the 1973 oil crisis. • With addition of Canada & Italy, first G7 was held in 1976 • In 1998, Russia was added to form G8. However, in 2014, Russia was suspended from the group after the annexation of Crimea and tensions in Ukraine. • Since then, meetings have continued within the G7 process. | <p>Although no joint communique was issued, some of the prominent outcomes of 45th Summit are:</p> <ul style="list-style-type: none"> • G7 countries pledged \$20 million help to fight fires in the Amazon rainforests. • The need for a dedicated multilateral Green Bank was demanded. It would solely finance the projects supporting renewable energies and mitigating environmental challenges. • There was a call for reinstating Russia back into the group. But, the consensus for the same was not achieved. <p>The G20 was formed in 1999, so as to bring more countries on board to address global economic concerns. India is a member and is slated to host G20 summit in 2022.</p> |
| International Civil Aviation Organization (ICAO) | <ul style="list-style-type: none"> • Denial of use of Pakistan's airspace to India, taken up by India at ICAO • The Convention on International Civil Aviation was signed on 7th December 1944 in Chicago which gave rise to ICAO • ICAO is a United Nations (UN) specialized agency, established in 1944, which laid the foundation for the standards and procedures for peaceful global air navigation. • HQ: Montreal, Canada. | <ul style="list-style-type: none"> • The Chicago Convention exempts air fuels in transit from (double) taxation. • India is among its 193 members. • Senior bureaucrat Shefali Juneja was appointed on June 2019 as representative of India in council of ICAO. |

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| <p>ASEAN Regional Forum (ARF) 26th Meeting held in Bangkok, Thailand</p> <p>ASEAN was established in 1967 through Bangkok declaration with Secretariat at Jakarta, Indonesia and motto as “One Vision, One Identity, One Community”.</p> | <ul style="list-style-type: none"> • ARF set up in 1994 is an important platform for security dialogue in the Indo-Pacific • ARF consists of 27 member states. It includes 10 ASEAN member states, 10 ASEAN dialogue partners and 7 other members • ARF working involves minimum institutionalization and decision-making is by consensus. • It makes use of both “first track” and “second track” diplomacy • First-track diplomatic meetings consist of gatherings of leading officials to discuss security measures, • Second-track meetings consist of scholars, government individuals not acting in their official capacity, private think tanks, and other individuals & organizations (NGOs). | <ul style="list-style-type: none"> • ASEAN members-Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam • 10 ASEAN dialogue partners - Australia, Canada, China, the European Union, India, Japan, New Zealand, the Republic of Korea, Russia and the United States • Other members: Bangladesh, the Democratic People's Republic of Korea, Mongolia, Pakistan, Sri Lanka, and Timor-Leste; one ASEAN observer (Papua New Guinea). • India is a member of ARF since 1996 |
| <p>Vienna Convention on Consular Relations of 1963</p> <p>Adopted in 1963, and in force since 1967, the treaty has been ratified by 180 states</p> | <ul style="list-style-type: none"> • The Convention is an international treaty that defines a framework for consular relations between independent states. • The Convention defines and articulates the functions, rights, and immunities accorded to consular officers and their offices, as well as the rights and duties of "receiving States" (where the consul is based) and "sending States" (the state the consul represents). | <ul style="list-style-type: none"> • India had demanded in International Court of Justice the consular access to Kulbhushan Jadhav (Indian Naval officer arrested in Pakistan on charges of espionage) under the rules of the Vienna Convention. • Article 36 of Convention states that, if any foreign national is detained or arrested on criminal or immigration charges, he/she is entitled to be notified about the right to notify the detainee country's consulate of his/her arrest |
| <p>International Maritime Security Mission in the Gulf</p> | <ul style="list-style-type: none"> • It is a US led initiative to protect merchant vessels travelling through the Strait of Hormuz • UK and Australia too joined this initiative • The mission has been started by USA in the wake of increased US-Iran tensions in the region due to withdrawal of US from Iran Nuclear deal and re-imposition of sanctions on Iran | <ul style="list-style-type: none"> • Iran had seized a British tanker, Stena Impero, near the Strait of Hormuz for alleged marine violations in July 2019 which led UK to join the mission • The Strait of Hormuz is a strait between the Persian Gulf and the Gulf of Oman. 20% of the world's oil passing through it every year. |

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| <p>Astana Consensus</p> <p>India reiterating the need to stick to Astana Consensus in the wake of China's statements on Kashmir (Abrogation of Article 370)</p> | <ul style="list-style-type: none"> • In June 2017, on the side-lines of the Shanghai Cooperation Organisation (SCO) Summit, India & China interacted in Astana. • The two countries agreed upon the fact that their differences should not be allowed to become disputes, & if these disputes were handled carefully, they may even turn into opportunities. • The Consensus also viewed that India-China relations were significant not only bilaterally but for the region and the whole world and were a factor of stability. • Astana is the capital city of Kazakhstan • However, Astana was renamed as Nur-Sultan in March 2019 | <p>About SCO</p> <ul style="list-style-type: none"> • SCO a Eurasian political, economic and military organisation created in 2001 aiming to maintain peace, security and stability in the region (Eurasia & Central Asia) • Genesis: Shanghai Five (1996) which emerged from a series of border demarcation and demilitarization talks which the four former Soviet republics held with China to ensure stability along the borders. • Presently it consists of eight member-states—India, China, Kazakhstan, Kyrgyzstan, Russia, Pakistan, Tajikistan, and Uzbekistan |
| <p>Special Data Dissemination Standard (SDSS)</p> | <ul style="list-style-type: none"> • In its 2018 report it states that India failed to comply with multiple requirements prescribed in the SDSS • SDSS launched by IMF in 1996 • Objective: To guide members to enhance data transparency and help financial market participants with adequate information to assess the economic situations of countries. • There are over 20 data categories which IMF considers for this report to capture a nation's economic health including national accounts (GDP, GNI), production indices, employment, and central government operations. | <ul style="list-style-type: none"> • India voluntarily subscribed to the SDSS in December 27, 1996. • India held that its non-compliance with IMF standards in 2018 is one-off event due to technical glitches in the National Summary Data Page (NSDP) web page. • NSDP provides quick access to a single comprehensive source of economic and financial data. |
| <p>UN Special Purpose Trust Fund (SPTF) for the Resident Coordinator System.</p> <p>India has contributed \$1 million to the fund</p> | <ul style="list-style-type: none"> • SPTF is a specific fund housed within the UN Secretariat. • It has been established to receive, consolidate, manage and account for all contributions and financial transactions of the new Resident Coordinator (RC) system, in a transparent and effective way. <p>Funding sources include:</p> <ul style="list-style-type: none"> • Voluntary contributions from Member States. • The doubling of cost-sharing amounts from UN entities who are members of the United Nations development system. | <ul style="list-style-type: none"> • UN Resident Coordinator (RC) system encompasses all organizations of the UN system dealing with operational activities for development, regardless of their formal presence in the country • RC system aim: To bring together the different UN agencies to improve the efficiency and effectiveness of operational activities at the country level. • UN Resident Coordinators lead UN country teams in 129 countries and are the designated |

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| | <ul style="list-style-type: none"> • A 1% levy applied to contributions for UN development-related activities earmarked to a single agency, single programme or project. | representatives of the Secretary-General for development operations. |
| Chief of Defence Staff (CDS) PM announces creation of CDS in his Independence Day Speech | <ul style="list-style-type: none"> • Rank of a four-star General who oversees and coordinates the working of the three Services • He will act as the Principal Military Adviser to Defence Minister on all tri-Services matters. • CDS will head the Department of Military Affairs (DMA), to be created within the Ministry of Defence and function as its Secretary. • CDS will also be the Permanent Chairman of the Chiefs of Staff Committee (CoSC). • The tri-service agencies, organisations and commands relating to cyber and space will be under the command of the CDS. • The CDS will also function as the Military Adviser to the Nuclear Command Authority | <ul style="list-style-type: none"> • CDS will not exercise any military command, including over the three Service Chiefs, so as to be able to provide impartial advice to the political leadership. • So far, the chairmanship of the CoSC has not been permanent and is held in rotation by the senior-most service chief, which has caused problems of inadequate attention and short tenures as Chairman, CoSC. • Post retirement CDS will not be eligible to hold any government post. Also not be allowed to take up any private employment, without prior approval, for a period of five years after demitting the office |
| Shillong Declaration on e-Governance | <ul style="list-style-type: none"> • 22nd National Conference on e-Governance 2019 held in Shillong led to this declaration. • Theme of Conference: Digital India: Success to Excellence <p>Key highlights of Shillong declaration</p> <ul style="list-style-type: none"> • Promote timely implementation of India Enterprise Architecture (IndEA). • Consolidate the plethora of successful State level e-Governance projects with a focus to replicate them as a common application software. • Take steps to further improve connectivity in North Eastern States • Explore the possibility for opening an electronics skill center in Shillong. | <ul style="list-style-type: none"> • Carved from the erstwhile State of Assam, Meghalaya became a full-fledged state (capital as Shillong) on Jan 21 1972. |
| UN Convention on International Settlement Agreements (UNISA) resulting from Mediation | <ul style="list-style-type: none"> • Union Cabinet has approved the signing of UNISA by India • It establishes a harmonized legal framework for the right to invoke settlement agreements as well as | <ul style="list-style-type: none"> • The Convention was adopted by UN General Assembly in Dec 2018 and open for signature (7th August 2019) by States and regional economic integration |

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| also known as the “Singapore Convention on Mediation” | <p>for their enforcement.</p> <ul style="list-style-type: none"> • The Convention is an instrument for the facilitation of international trade and the promotion of mediation as an alternative and effective method of resolving trade disputes • The Convention ensures that a settlement reached by parties becomes binding and enforceable in accordance with a simplified and streamlined procedure. | <p>organizations</p> <ul style="list-style-type: none"> • Signing of the convention will boost the confidence of the investors and shall provide a positive signal to foreign investors about India's commitment to adhere to international practice on Alternative Dispute Resolution (ADR). |
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Culture, History of India and Indian National Movement

| TOPICS | KEY ASPECTS | Value Addition |
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| Kolams Women in Tamil Nadu are making Kolam inspired maps to identify lucrative locations to set up businesses. | <ul style="list-style-type: none"> • Kolam is a form of drawing that is drawn by using rice flour, chalk, chalk powder or rock powder, often using naturally or synthetically colored powders, in southern Indian states. • A Kolam is a geometrical line drawing composed of curved loops, drawn around a grid pattern of dots • It is widely practised by female Hindu family members in front of their houses as these are thought to bring prosperity to homes | <ul style="list-style-type: none"> • Kolam is all about symmetry, precision, and complexity.  |
| Palani Panchamirtham Awarded GI Tag | <ul style="list-style-type: none"> • Palani Panchamirtham, an abishega Prasadam of Arulmigu Dhandayuthapaniswamy Temple, situated in palani Hills in Dindigul District of Tamil Nadu. • It is a combination of five natural substances, namely, banana, jaggery sugar, cow ghee, honey and cardamom in a definite proportion. • This is the first time a temple 'prasadam' from Tamil Nadu has been bestowed with the GI tag | <p>Other Products to be awarded the GI Tag in August 2019 are:</p> <ol style="list-style-type: none"> 1. Tawlhlohpuan, a medium to heavy, compactly woven, good quality fabric from Mizoram is known for warp yarns, warping, weaving & intricate designs that are made by hand. 2. Mizo Puanchei, a colourful shawl/textile, from Mizoram, considered as the most colourful among the Mizo textiles 3. Tirur betel vine from Kerala, which is valued both for its mild stimulant action and medicinal properties. |
| Niraputhari Festival | <ul style="list-style-type: none"> • The annual fertility ritual held in Sabrimala which devotees believe will bring prosperity and good luck. • The ritual involves offering of fresh | <ul style="list-style-type: none"> • Sabrimala is a Hindu pilgrimage center located at Periyar Tiger Reserve in Western Ghats in Kerala. |

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| | paddy spikes by devotees | |
| Kopeshwar Temple This 11 th Century temple survives flood fury | <ul style="list-style-type: none"> • Temple is in Kolhapur district, Maharashtra. • On the banks of Krishna River • Dedicated to Lord Shiva • Built by Shilahara Dynasty, that established itself in northern and southern Konkan, present-day Mumbai and southern Maharashtra during the Rashtrakuta period. Unique things about this temple: <ul style="list-style-type: none"> • Lord Vishnu is in the temple in the form of a ling along with Shivling • No Nandi at the entrance- which is the norm for all Shiva temples | The temple is divided into four parts <ul style="list-style-type: none"> • Swargamandapa – with a circular open ceiling supported by 48 pillars • Sabhamandapa • Antaral kaksha • Garbha gruha or Sanctum |
| Wanchuwa festival | <ul style="list-style-type: none"> • Wanchuwa festival is celebrated by Tiwa tribesmen of Karbi Anglong district in Assam. • Tiwas pray for a bountiful harvest and protection from agrarian pests during this festival. • Tiwa also known as Lalung is indigenous community inhabiting the states of Assam and Meghalaya and also found in some parts of Arunachal Pradesh and Manipur. | <ul style="list-style-type: none"> • Tiwas practice Jhum or shifting cultivation, where the land is first cleared of any vegetation that is later set on fire (slash-and-burn). • The main festivals of the Tiwa tribes are: Three Pisu (Bihu), Borot utsav, Sogra puja, Wanchuwa, Jonbeel Mela, Kabla, Langkhon Puja and Yangli Puja. • Pig is a staple part of their diet and their culture. |
| Kondapalli Toys Awarded GI Tag | <ul style="list-style-type: none"> • Kondapalli Toys have been granted the Geographical Indications (GI) tag. • They are cultural icons of Andhra Pradesh. • They are made from soft wood known as Tella Poniki which are found in nearby Kondapalli Hills. • The artisans who make the toys are referred as Aryakhastriyas (also known as Nakarshalu), | <ul style="list-style-type: none"> • The artisans mainly work on producing figures of mythology, animals, birds, bullock carts, rural life etc., and the most notable one is Dasavataram, dancing dolls etc.  |
| Saharia Tribe UIDAI has recorded January 1 as default date of birth on the Aadhaar card for Saharia Tribes in Kakra village in MP | <ul style="list-style-type: none"> • Saharia tribe comes under the special backward tribes of Madhya Pradesh. • Saharias are mainly found in many districts of Madhya Pradesh and Baran district of Rajasthan • They trace their origin from Shabri of the Ramayan. • They are also known as the younger brothers of Bhil's (Bhils or Bheels are | <ul style="list-style-type: none"> • The Saharia people of Madhya Pradesh and Rajasthan are the largest among the Particularly Vulnerable Tribal Groups (PVTGs) with population more than 4 lakhs. • In 1973, the Dhebar Commission created Primitive Tribal Groups (PTGs) as a separate category, who |

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| | <p>primarily an ethnic group of people in West India).</p> <ul style="list-style-type: none"> • Their habitats are located in the forest area, barren and stony land and they are still a primitive society. | <p>are less developed among the tribal groups. In 2006, the Government of India renamed the PTGs as PVTGs.</p> <ul style="list-style-type: none"> • Among the 75 listed PVTG's the highest number are found in Odisha (13), followed by Andhra Pradesh (12). |
| <p>Dindigul Lock:</p> <p>Awarded GI Tag</p> | <ul style="list-style-type: none"> • Awarded GI Tag • Dindigul is a city in Tamil Nadu known as "Lock City" • The Dindigul locks are known throughout the world for their superior quality and durability. | <ul style="list-style-type: none"> • More than 3,125 lock manufacturing units are limited to an area of 5 km in and around Dindigul. • The abundance of iron in this region is the reason for the growth of the industry. |
| <p>Kandangi saree:</p> <p>Awarded GI Tag</p> | <ul style="list-style-type: none"> • Awarded GI Tag • Manufactured in the entire Karaikudi taluk in Sivaganga district of Tamil Nadu • These cotton sarees are characterised by large contrast borders. • It is manually made using a winding machine, loom, shuttle and bobbin. | <ul style="list-style-type: none"> • A GI Tag indicates that the product originates from a definite territory in India and has unique characteristics or qualities • Geographical Indications Registry (hq: Chennai, TN) gives the GI tags in India. This registry is directly under the Controller General of Patents, Designs and Trademarks (CGPDTM) of India • Darjeeling Tea was the first to get GI tag in 2004. |
| <p>Menhirs</p> | <ul style="list-style-type: none"> • A menhir is a large upright standing stone. (Megalithic monument) • Three menhirs found in Erode district of Tamil Nadu dating to 1,500BC-500BC • Menhirs are prehistoric stones commonly found near the ancient burial sites or chambers | <ul style="list-style-type: none"> • Menhirs may be found singly as monoliths, or as part of a group of similar stones. • Their size can vary considerably; but their shape is generally uneven and squared, often tapering towards the top |


Indian Polity, Schemes and Governance

| TOPICS | KEY ASPECTS | Value Addition |
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| National Water Development Agency (NWDA) | <ul style="list-style-type: none"> NWDA is an autonomous organization which was established under Societies Registration Act (Act XXI of 1860) in 1972. <p>Functions of NWDA</p> <ul style="list-style-type: none"> To carry out the water balance and other studies on a scientific and realistic basis for optimum utilization of water resources in country To undertake implementation of Inter Linking of Rivers projects Completion of water resources projects under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) To act as a repository of borrowed fund or loan from Banks / other institutions for the execution of projects. | <p>About PMKSY</p> <ul style="list-style-type: none"> Centrally Sponsored Scheme (Core Scheme) launched in 2015. Centre- States will be 75:25 per cent. In the case of the north-eastern region and hilly states, it will be 90:10. Objectives include convergence of investments in irrigation, Har khet ko Pani, improve on-farm water use efficiency, enhance recharge of aquifers and introduce sustainable water conservation practices. |
| Adarsh Smarak Scheme | <ul style="list-style-type: none"> Launched in 2014 by Ministry of Culture. A total of 100 Monuments protected by the Archaeological Survey of India (ASI) are being developed and maintained as Adarsh Monuments under the scheme | <ul style="list-style-type: none"> The objective of scheme is to provide improved visitor amenities like washrooms, drinking water, signages, cafeteria, interpretation and audio-video centers, Wi-fi facilities and disabled friendly infrastructures The scheme also aims to streamline wastewater and garbage disposal and a rainwater harvesting system. |
| Khadi and Village Industry Commission (KVIC) | <ul style="list-style-type: none"> KVIC distributed as many as 50 leather kits and 350 Bee-Boxes with live bee colonies in tribal-dominated village in Rajasthan KVIC is a statutory body established in 1956 It functions under the Ministry of Micro, Small and Medium Enterprises. | <ul style="list-style-type: none"> Observed on August 9 every year, World Tribal Day or the International Day of the World's Indigenous People is aimed at protecting the rights of the world's tribal population. |
| National Technical Research Organisation (NTRO) | <ul style="list-style-type: none"> It is a technical intelligence Agency under the National Security Advisor (NSA) in the Prime Minister's Office Set up in 2004 The agency develops technology capabilities in aviation and remote sensing, data gathering and | <ul style="list-style-type: none"> The impetus for setting up NTRO came after the Kargil war in 1999 when the Subrahmanyam committee report pointed out weaknesses in intelligence gathering in the national security set up |

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| | <p>processing, cyber security, cryptology systems, strategic hardware and software development and strategic monitoring.</p> <ul style="list-style-type: none"> It has the right to lawfully intercept and monitor communications externally | <ul style="list-style-type: none"> In 2017 NTRO was brought under The Intelligence Organisations (Restriction of Rights) Act, 1985 similar to R&W and IB. |
| <p>Composite Water Management Index 2.0</p> <p>Released in August 2019</p> | <ul style="list-style-type: none"> By NITI Aayog in association with Ministry of JAL Shakti and Ministry of Rural Development CWMI 2.0 ranks various states for the reference year 2017-18 as against the base year 2016-17. Gujarat continues to hold on to its rank one, followed by Andhra Pradesh, Madhya Pradesh, Goa, Karnataka and Tamil Nadu. 80% of the states have shown improvement in their water management scores over the last three years. | <ul style="list-style-type: none"> NITI Aayog first launched and conceptualized the CWMI in 2018 as a tool to instil a sense of cooperative and competitive federalism among the states. It provided actionable guidance to States on where they were doing well absolutely and relatively and what they needed to focus on to secure their water |
| <p>National Resource Efficiency Authority (NREA)</p> | <ul style="list-style-type: none"> NREA is one of the key features of National Resource Efficiency Policy 2019 proposed by Ministry of Environment, Forests and Climate Change <p>Functions of NREA:</p> <ul style="list-style-type: none"> Develop and implement resource efficient strategies for material recycling, reuse and land-filling targets for various sectors. Set standards for reuse of secondary raw materials to ensure quality. Maintain a database of material use and waste generated, recycled and land filled, across various sectors and different regions and monitor the implementation. | <ul style="list-style-type: none"> National Resource Efficiency Policy, 2019 aims to streamline the efficient use of the resources with minimum negative impact on environment Resource efficiency very simply put is making more with fewer materials. It involves 6R which stands for reduce, reuse, recycle, redesign, re-manufacture and refurbish NREA would be supported by an Inter-Ministerial National Resource Efficiency Board to guide on the aspects critical to its implementation. |
| <p>Deendayal Antyodaya Yojana- National Urban Livelihoods Mission (DAY- NULM)</p> <p>Also, Rashtriya Shahri Aajeevika Mission</p> <p>DAY-NULM has been conferred the prestigious SKOCH Governance Gold Award for its Portal for</p> | <ul style="list-style-type: none"> DAY-NULM was launched in 2014 and is being implemented by the Urban Ministry of Housing & Poverty Alleviation. It is a Centrally Sponsored Scheme Funding will be shared between the Centre and the States in the ratio of 75:25. For North Eastern and Special Category – the ratio will be 90:10. <p>Features of NULM</p> <ul style="list-style-type: none"> Organizing urban poor in their strong grassroots level institutions (Self Help Groups) | <ul style="list-style-type: none"> Aim of DAY-NULM: To uplift urban poor by enhancing sustainable livelihood opportunities through skill development. <p>About PAiSA portal</p> <ul style="list-style-type: none"> Launched in November 2018, it is a centralized IT platform which simplifies and streamlines release of interest subvention under the Mission. It offers end to end online solution for processing, payment, |

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| <p>Affordable Credit and Interest Subvention Access (PAiSA)</p> | <ul style="list-style-type: none"> • Skill development leading to market-based employment and • Easy access to credit through interest subvention scheme to help urban poor set up self-employment venture • Providing shelter equipped with essential services to the urban homeless in a phased manner. • Address livelihood concerns of the urban street vendors by facilitating with suitable space, institutional credit, and social security and skills to the urban street vendor | <p>monitoring and tracking of interest subvention claims from banks on a monthly basis.</p> <p>It is designed and developed by Allahabad Bank (Nodal bank).</p> <p>About SKOCH</p> <ul style="list-style-type: none"> • The Skoch Group is a think tank since 1997 that deals with socio-economic issues in the country while focusing on inclusive growth. |
| <p>Kisan Urja Suraksha Evam Utthaan Mahabhiyan (KUSUM) Scheme</p> <p>Kusum Scheme aims to promote use of solar energy among farmers.</p> | <ul style="list-style-type: none"> • Launched by The Ministry of New and Renewable Energy in 2019 <p>Scheme Consists of 3 components</p> <ul style="list-style-type: none"> • 10,000 MW of Decentralized Ground Mounted Grid Connected Renewable Power Plant each of 500KW to 2 MW in the rural area; • Installation of 17.50 lakh standalone off-grid Solar Powered Agriculture Pumps to fulfil irrigation needs of farmers not connected to grid • Solarization of existing grid-connected agriculture pumps to make farmers independent of grid supply and also sell surplus solar power generated to Discom and get extra income | <ul style="list-style-type: none"> • All three components combined; the scheme aims to add a solar capacity of 25,750 MW by 2022 • It will result in saving of about 27 million tonnes of CO₂ emission per annum. • Component-B of the Scheme on standalone solar pumps may result in saving of 1.2 billion liters of diesel per annum • KUSUM scheme can potentially convert one-third to one-fourth of all irrigation pumps into solar-powered pumps in a short period of 3 years. |
| <p>Biometric Identity Document (BSID)</p> <p>Seafarer Document</p>  | <ul style="list-style-type: none"> • India has become the first country in the world to issue BSID, capturing the facial bio-metric data of seafarers • It will have a biometric chip embedded in it. • The card has two optical security features: <ul style="list-style-type: none"> ○ Micro prints/micro texts ○ Unique Guilloche pattern. • A software has been developed for capturing the facial biometrics and its authentication through the public key infrastructure. • A record of each Seafarer Identity Document (SID) issued will be maintained in a national database and its related information will be internationally accessible. • In India the BSID project has been taken up by Ministry of Shipping in collaboration with Centre for Development of Advanced | <ul style="list-style-type: none"> • The new facial biometric technology is a marked improvement over the two finger or iris-based bio-metric data, with modern security features. • The new card is in confirmation of the Convention No. 185 of the International Labour Organisation on BSID. India ratified the Convention in October 2015. <p>Merits of BSID</p> <ul style="list-style-type: none"> • foolproof identification to Indian seafarers • facilitate seafarer's movement • provide ease of getting jobs • Helps in identifying them from any location in the world. |

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| | Computing (CDAC), Mumbai. | |
| National Essential Diagnostics List (NEDL) | <ul style="list-style-type: none"> Indian Council of Medical Research (ICMR) has finalised the first NEDL making India the first country to compile such list NEDL aims to bridge the current regulatory system's gap that do not cover all the medical devices and in-vitro diagnostic device NEDL has been developed for all levels of health care – village level, primary, secondary & tertiary care. NEDL also recommends list of human resources such as ASHA workers, lab technicians' pathologists for different levels of health care as per the proposed list of diagnostics. | <ul style="list-style-type: none"> WHO had released the first edition of EDL in May 2018, however, India's diagnostics list has been customised and prepared as per landscape of India's health care priorities. ICMR, is the apex body in the country for the formulation, coordination and promotion of biomedical research. Set up in 1911 by the Government as Indian Research Fund Association (IRFA), it was redesigned as ICMR in 1949 ICMR is funded by the Government of India through the Ministry of Health & Family Welfare. |
| San Sadhan Hackathon | <ul style="list-style-type: none"> It is the latest initiative under the Swachh Bharat Mission It is an initiative to ease lives of Persons with Disabilities (Divyangjan) by making toilets smarter, more accessible, and easier to use. Organized jointly by the Ministry of Jal Shakti and the Ministry of Social Justice & Empowerment, in collaboration with Atal Innovation Mission, NITI Aayog, Bill & Melinda Gates Foundation, and 91springboard. Atal Innovation Mission (AIM) including Self-Employment and Talent Utilization (SETU) is a flagship initiative by NITI Aayog to promote a culture of innovation and entrepreneurship in the country. | <ul style="list-style-type: none"> Since the launch of the SBM, India's rural sanitation coverage has increased from 39% in 2014 to over 99% as of August 2019 The international day of persons with disabilities is observed every year on 3rd December. In March 2019, Ministry of Social Justice and Empowerment entered into Guinness Book of World Records for implanting 'Modern Artificial Limbs (Legs)' on 260 Divyangjans within eight hours. |
| National Time Release Study (TRS) | <ul style="list-style-type: none"> India's first national TRS is conducted by the Ministry of Finance as part of its strategic commitment to improve global trade. TRS is an internationally recognized tool advocated by World Customs Organization to measure the efficiency and effectiveness of international trade flows The aim is to identify and address bottlenecks in the trade flow process and take the corresponding policy | <ul style="list-style-type: none"> This initiative will help India maintain the upward trajectory on Ease of Doing Business, particularly on the Trading Across Borders indicator. Last year India's ranking on the indicator improved from 146 to 80. This exercise will be conducted every year across 15 ports including sea, air, land and dry ports. |

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| | and operational measures. | |
| SANKALP Project- Skills Acquisition and Knowledge Awareness for Livelihood Promotion | <ul style="list-style-type: none"> • SANKALP is a Centrally sponsored scheme of Ministry of Skill Development & Entrepreneurship • Collaboration with World Bank • Objective: To enhance institutional mechanisms for skills development and increase access to quality and market-relevant training for the work force. <p>Four Key areas of SANKALP are:</p> <ol style="list-style-type: none"> 1. Convergence and Institutional strengthening of skill programs at National & State level 2. Quality Assurance of skill development programs through building a pool of quality trainers, developing model curriculum, content & assessment standards. 3. Inclusiveness: Providing access to skill training opportunities to the disadvantaged sections 4. Establishing a robust monitoring and evaluation system for skill training programs. | <ul style="list-style-type: none"> • SANKALP aims to implement the mandate of the National Skill Development Mission (NSDM) <p>Related Scheme:</p> <ul style="list-style-type: none"> • Skills Strengthening for Industrial Value Enhancement (STRIVE) Scheme is a World Bank Assisted-Government of India project with the objective of improving the relevance and efficiency of skills training provided through Industrial Training Institutes (ITIs) and apprenticeships. |
| National Digital Library (NDL) of India | <ul style="list-style-type: none"> • Launched in August 2019 by Ministry of Human Resource Development under the aegis of National Mission on Education through Information and Communication Technology (NMEICT). • It is developed by IIT Kharagpur. • NDL is the Single Window Platform that collects and collates metadata from premier learning institutions in India and abroad, as well as other relevant sources. • It is a digital repository containing textbooks, articles, videos, audio books, lectures, simulations, fiction and all other kinds of learning media • NDL has 1.7 Crore content from more than 160 sources, in over 200 languages. | <p>Other Initiatives under NMEICT</p> <ul style="list-style-type: none"> • SWAYAM- integrated platform for offering online courses, covering school (9th to 12th) to Postgraduate Level. • SWAYAM Prabha: It is an initiative to provide 32 High Quality Educational Channels through DTH (Direct to Home) on a 24X7 basis. • Free and Open Source Software for Education (FOSSEE) • E-Yantra: It is a project for enabling effective education across engineering colleges in India on embedded systems and robotics. |

Economic and Social Development

| TOPICS | KEY ASPECTS | Value Addition |
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| Limited Liability Partnerships (LLP) | <ul style="list-style-type: none"> Under “traditional partnership firm”, every partner is liable, jointly with all the other partners and also for all acts of the firm done while he is a partner. Under LLP structure, liability of the partner is limited to his agreed contribution. The internal governance structure of a company is regulated by statute (i.e. Companies Act, 1956) whereas for an LLP it would be by a contractual agreement between partners. LLP is governed under the Limited liability partnership act of 2008. The Corporate Affairs Ministry implements the Act. | <ul style="list-style-type: none"> LLP gives the benefits of limited liability of a company and the flexibility of a partnership; hence it is called a hybrid between a company and a partnership. The management-ownership divide inherent in a company is not there in a limited liability partnership. LLP will have more flexibility and lesser compliance requirements as compared to a company. |
| Consumer Protection Act, 2019 The act replaces the Consumer Protection Act, 1986. | <p>Key features of the act are:</p> <p>Definition of a Consumer</p> <ul style="list-style-type: none"> A consumer is defined as a person who buys any good or avails a service for a consideration. It does not include a person who obtains a good for resale or a good or service for commercial purpose. It covers transactions through all modes including offline, and online through electronic means, teleshopping, multi-level marketing or direct selling. <p>Rights of Consumers</p> <ul style="list-style-type: none"> Right to be protected against marketing of goods & services that are hazardous to life & property. Right to be informed of quality, quantity, potency, purity, standard & price of goods or services. Right to be assured of access to a variety of goods or services at competitive prices. Right to Seek redressal against unfair or restrictive trade practices. <p>Also, Central Consumer Protection Authority (CCPA) will be set up to promote, protect and enforce the rights of consumers.</p> | <ul style="list-style-type: none"> The act seeks to enhance the protection of consumers’ interests and timely settlement of their grievances CCPA will have an investigation wing, headed by a Director-General, which may conduct an inquiry or investigation into related violations. CCPA may impose a penalty of up to Rs 10 lakh and imprisonment for up to 2 years for misleading advertisement. The act also says Consumer Disputes Redressal Commissions (CDRCs) will be set up to deal with grievance redressal at the levels of <ul style="list-style-type: none"> District– Complaints of value upto Rs 1 crore State – Rs 1 crore - Rs 10 crore National - Exceeds Rs 10 crore |
| Securities Transaction Tax (STT) | <ul style="list-style-type: none"> Union govt. clarified that settlements in derivatives will attract same STT as | <ul style="list-style-type: none"> STT was introduced in the Union Budget 2004-05, to stop tax |

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| | <p>that levied in the equity cash segment.</p> <ul style="list-style-type: none"> • STT is levied on every purchase or sale of securities that are listed on the Indian stock exchanges. • Securities are tradable investment instruments such as shares, bonds, debentures, equity-oriented mutual funds (MFs) etc. and are issued either by companies or by the Indian government. | <p>avoidance of capital gains tax.</p> <ul style="list-style-type: none"> • The rate of STT is determined by the central government • STT rate differs based on the type of security traded and whether the transaction is a purchase or a sale. • It is a direct tax. |
| Common Service Centres (CSCs) | <ul style="list-style-type: none"> • CSC are a strategic cornerstone of the Digital India programme. • They are multiple-services-single-point model for providing facilities for multiple transactions at a single geographical location. • They are the access points for delivery of essential public utility services, social welfare schemes, healthcare, financial, education and agriculture services, apart from host of B2C services to citizens in rural and remote areas of the country. | <ul style="list-style-type: none"> • The CSC project forms a strategic component of the National eGovernance Plan was approved by the Government in May 2006 • Government launched the CSC 2.0 scheme in 2015 to expand the outreach of CSCs to all Gram Panchayats across the country. • Under CSC 2.0 scheme, at least one CSC will be set up in each of the 2.5 lakh GPs across the country by 2019. |
| Dinesh Sharma Committee | <ul style="list-style-type: none"> • It was set up in April 2017 by Finance Ministry to look into cryptocurrency legitimacy. • It was inter-disciplinary committee headed by Dinesh Sharma Special Secretary, Department of Economic Affairs (DEA) with members from CBDT, Ministry of Home Affairs, MeitY (Ministry of Electronics and Information Technology), RBI, NITI Aayog and SBI • The committee recommended a total ban on cryptocurrency in India • Second inter-disciplinary committee under Subhash Chandra Garg was formed in Nov 2017 to draft regulations for cryptocurrencies • Examples of virtual currencies are Bitcoin, Litecoin, Darkcoin, Peercoin, Dogecoin, Primecoin etc | <ul style="list-style-type: none"> • Crypto Currencies are type of unregulated digital money. • They are neither issued by central bank/public authority, nor is necessarily attached to fiat currency, but is used and accepted among the members of a specific virtual community • They are mainly decentralised peer-to-peer system, and transacted between users directly, without an intermediary. • These transactions are verified by network nodes and recorded in public distributed ledger called blockchain. • They are being transferred, stored or traded electronically. |
| Goldilocks Economy | <ul style="list-style-type: none"> • A Goldilocks economy exists when growth is neither too hot, causing inflation, nor too cold, creating a recession. • It is a situation where the economy is not expanding or contracting by a large margin | <p>A Goldilocks economy is characterised by</p> <ul style="list-style-type: none"> • Low Unemployment rate • Low market interest rate • Low inflation • Steady GDP growth rate • Increase in assets prices |

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| | | <ul style="list-style-type: none"> When an economy has two consecutive quarters—or six months—of negative GDP growth economist say the country is experiencing a recession. |
| Negative Rate Policy | <ul style="list-style-type: none"> It is an unusual monetary policy tool in which nominal interest rates are set with a negative value, below the theoretical lower bound of zero percent. Therefore, it is a situation where money deposits incur a charge for storage at a bank, rather than receiving interest income | <ul style="list-style-type: none"> Negative interest rates might be seen during deflationary periods when people or institutions are inclined to hoard money, rather than spend or lend it. Negative rate Policy is thus intended to incentivize banks to lend money more freely. Japan had introduced a negative policy interest rate in 2016 |
| Circular Economy NITI Aayog CEO “Circular economy has potential to create nearly one-and-half crore jobs in next five to seven years and create lakhs of new entrepreneurs” | <ul style="list-style-type: none"> A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which resources are kept in use for as long as possible and aimed at minimising waste. Circular economy employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a closed system, minimising the use of resource input and the creation of waste, pollution and emissions | <ul style="list-style-type: none"> In circular economy all ‘waste’ should become ‘food’ for another process: either a by-product or recovered resource for another industrial process, or as regenerative resources for nature, eg compost. |
| Regional Rural Banks (RRBs) Government is eyeing a mega revamp of its RRBs for better operational efficiencies. Plan envisages bringing RRBs down to 38 from present 56 | <ul style="list-style-type: none"> RRBs were set up under Regional Rural Banks Act, 1976 RRBs aim to combine efficiency of a commercial bank with grassroots networking of a cooperative society RRBs are jointly owned by <ul style="list-style-type: none"> Central Government (50%), Concerned State Govt (15%) Sponsor Banks (35%) Objectives of RRBs are: <ul style="list-style-type: none"> To serve primarily rural areas of India with basic banking and financial services. To fulfil credit needs of relatively unserved sections in rural area like farmer, labourer, women, marginalised sections of society <ul style="list-style-type: none"> RRBs can also set branches set up for urban operations Regulated by NABARD, which is a subsidiary of RBI. Other banks in India are directly regulated by RBI. | <ul style="list-style-type: none"> RRBs are scheduled commercial banks (Government banks) and therefore have to maintain RBI’s CRR, SLR & PSL norms. These were set up based on Narshimham committee Working Group recommendations set up under Indira Gandhi government K C Chakrabarty committee was formed in 2009 to suggest measures to improve financial conditions of RRBs |
| Credit Guarantee Fund Trust for Micro and | <ul style="list-style-type: none"> Trust established by Ministry of Micro, Small and Medium | Objectives of this fund are: <ul style="list-style-type: none"> To check the financial viability of |

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| <p>Small Enterprises (CGTMSE)</p> <p>To implement Credit Guarantee Fund Scheme for Micro and Small Enterprises.</p> | <p>Enterprises, GoI and Small Industries Development Bank of India (SIDBI)</p> <ul style="list-style-type: none"> • Aim: To make available collateral-free credit to the micro and small enterprise sector. • Both the existing and the new enterprises are eligible to be covered under the scheme • These schemes provide the assurance to the lenders that in case of default by them a guarantee cover will be provided by trust in the ratio of 50/75/80/85 percent of the amount so given. | <p>the project of these companies</p> <ul style="list-style-type: none"> • To give term loans and composite credit schemes <p>Extent of guarantee cover</p> <ul style="list-style-type: none"> • 85% for micro enterprises for credit up to Rs 5 lakh • 50% of the sanctioned amount of the credit facility for credit from Rs 10 lakh to Rs 100 lakh per MSE borrower for retail trade activity. |
| <p>Price Stabilisation Fund</p> | <ul style="list-style-type: none"> • The fund is constituted for the purpose of containing extreme volatility in prices of selected commodities. • PSF will be maintained as a Central Corpus Fund by Small Farmers Agribusiness Consortium (SFAC), which will act as Fund manager • Set up in 2014-15 under the Department of Agriculture, Cooperation & Farmers Welfare. • However, PSF scheme was transferred to the Department of Consumer Affairs from April, 2016. | <ul style="list-style-type: none"> • The fund is utilised for <ul style="list-style-type: none"> ○ Maintaining Strategic buffer by procuring directly from farmers or by import of goods. ○ For granting interest free advance of working capital to Central/State agencies to undertake market intervention operations. • SFAC is a society promoted by the Ministry of Agriculture for linking agriculture to private businesses and investments and technology |
| <p>Development Banks</p> | <ul style="list-style-type: none"> • These are financial institutions that provide long-term credit for capital-intensive investments spread over a long period • They often lend at low and stable rates of interest to promote long-term investments that has considerable social benefits. • These are different from commercial banks which mobilise short- to medium-term deposits and lend for similar maturities | <ul style="list-style-type: none"> • Some of the development banks in India are IFCI (1948), IDBI (1964), IIBI (1972), NABARD and EXIM Bank (1982), SIDBI (1990). • China has established Development Banks like Asian Infrastructure Investment Bank and the New Development Bank (with its BRICS partners) |
| <p>The Livelihood and Enterprise Development Programme</p> | <ul style="list-style-type: none"> • Launched by NABARD in 2015 • Aim: at creation of sustainable livelihoods amongst Self Help Group members through cluster approach. • The scheme provides for intensive training for skill building, refresher training, backward-forward linkages and handholding & escort supports. • It also encompasses the complete value chain and offers end-to-end solution to the SHG members | <ul style="list-style-type: none"> • National Bank for Agriculture and Rural Development (NABARD) is statutory body established in 1982 • NABARD is development bank focusing on providing finance for Agriculture and rural development. • NABARD also supervises Cooperative Banks and Regional Rural Banks (RRBs) and helping them develop sound banking practices and integrate them to the CBS (Core Banking Solution) platform. |

Environment

| TOPICS | KEY ASPECTS | Value Addition |
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| Special Report on Climate Change and Land | <ul style="list-style-type: none"> Released by Intergovernmental Panel on Climate Change (IPCC). First time IPCC focused solely on the land sector <p>Key findings</p> <ul style="list-style-type: none"> Inter-linkages between land degradation and climate change, both reinforce each other. Land is a critical resource - Agriculture, forestry and other types of land use account for 23% of human greenhouse gas emissions. Desertification and land degradation - less productive and reduces the soil's ability to absorb carbon. This exacerbates climate change, while climate change in turn exacerbates land degradation in many ways. Climate change and Food Security - Climate change is affecting food security and How food system aids climate change. How could 'negative emissions' affect land, food and wildlife. Recommended Sustainable land management, including sustainable forest management to combat desertification. | <ul style="list-style-type: none"> Negative emissions - methods that aim to remove CO₂ from the atmosphere and store it in the land or ocean. <p>IPCC</p> <ul style="list-style-type: none"> Intergovernmental scientific body under UN. Established in 1988 by WMO and UNEP. Does not carry its own original research. It assesses the science related to climate change. Produced 5 assessment reports and few Special Reports. Function under UNFCCC. Won Nobel Peace prize in 2007 IPCC Working Group III - preparing Sixth Assessment Report <p>Recent reports</p> <ul style="list-style-type: none"> IPCC Special Report on Global Warming of 1.5 C IPCC Special Report on the Ocean and Cryosphere in a Changing Climate |
| International Coalition for Disaster Resilient Infrastructure (CDRI) | <ul style="list-style-type: none"> India launched the establishment of an CDRI along with its supporting Secretariat Office in New Delhi at UN Climate Action Summit, New York. ICDRI registered as a society under the Societies Registration Act, 1860. National Disaster Management Authority (NDMA) to finalise charter document in consultation with Ministry of External Affairs. <p>Role of CDRI</p> <ul style="list-style-type: none"> CDRI would guide and handhold in creating disaster-proof | <ul style="list-style-type: none"> Hyogo Framework for Action (2005-2015) Sendai Framework (2015-2030) – disaster risk reduction Sendai – city in Japan Hyogo Prefecture is the key port city in Honshu island of Japan. Prefecture – administrative division of Japan UN Global Assessment Report on Disaster Risk Reduction |

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| | <p>infrastructure.</p> <ul style="list-style-type: none"> • As a knowledge platform – exchange best practices • Assist countries in capacity building. | |
| <p>Convention on International Trade in Endangered Species on Wild Fauna and Flora (CITES)</p> | <ul style="list-style-type: none"> • 18th Conference of Parties (CoP18) to the CITES held at Geneva. • CoP to CITES, is the supreme decision-making body. • India hosted CoP 3rd in 1981. <p>Key Highlights</p> <ul style="list-style-type: none"> • Smooth-coated otter (<i>Lutrogale perspicillata</i>) small-clawed otters (<i>Anoxyx cinereus</i>) and Indian star tortoise moved to CITES Appendix I. • Tokay gecko (<i>Gekko gekko</i>) - CITES Appendix II. <p>Species Classification</p> <ul style="list-style-type: none"> • Appendix I: Species in danger of extinction. Prohibits commercial trade except in extraordinary situations for scientific or educational reasons. • Appendix II: Species not threatened with extinction but that might suffer a serious decline if trade is not restricted. Their trade is regulated by permit. • Appendix III: Species protected in at least one-member country and that has petitioned others for help in controlling international trade. | <ul style="list-style-type: none"> • CITES also known as Washington Convention. • International agreement to regulate worldwide commercial trade in wild animal and plant species. • Signed on March 3, 1973 (World wildlife day on March 3). • Entered into force in July 1975. • 183 Parties (countries and organizations). • Legally binding on parties, but does not take the place of national laws. • Administered by the UNEP. • Secretariat at Geneva. • Wildlife Crime Control Bureau of India – statutory body under Environment Ministry. • The International Consortium on Combating Wildlife Crime (ICCWC), a consortium of the CITES Secretariat, INTERPOL, UN Office on Drugs and Crime, World Bank and World Customs Organization - to tackle illegal wildlife trade. • The TRAFFIC, the Wildlife Trade Monitoring Network – an NGO, is a joint program of WWF and IUCN. |
| <p>Amazon Fund</p> | <ul style="list-style-type: none"> • Norway - have slashed their funding to an Amazon Fund. • Fund created in 2008 to receive donations for non-reimbursable investments. • Fund is managed by the National Bank for Economic and Social Development (BNDES) of Brazil. • Norway is the main donor, followed by Germany. • It is a REDD+ mechanism created to raise donations for investments in efforts to prevent, monitor and combat deforestation, as well as | <ul style="list-style-type: none"> • 2019 saw increased forest fires at Amazon forest. • Policies of current regime in Brazil have accentuated deforestation. • Amazon forest – 'Lungs of the Earth', largest equatorial rainforests. • Amazon river – largest river of the World. • REDD+ (Reducing Emissions from Deforestation and forest Degradation), is a mechanism developed by parties to |

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| | <p>to promote the preservation and sustainable use in the Brazilian Amazon.</p> | <p>UNFCCC.</p> <ul style="list-style-type: none"> • G7 – group of 7: USA, Canada, UK, France, Germany, Italy and Japan. • E.U. - Mercosur Free Trade Agreement. • Mercosur - South American trade bloc consisting Brazil, Argentina, Paraguay and Uruguay. |
| Bioenergy with Carbon Capture and Storage (BECCS) | <ul style="list-style-type: none"> • Process of extracting bioenergy from biomass and capturing and storing the carbon, thus removing it from the atmosphere. • Crops suck carbon dioxide (CO₂) from the atmosphere, power plants burn the biomass to generate electricity, and the emissions are captured in a smokestack and pumped underground for long-term storage. • It is a Geo-Engineering mitigation technique. • BECCS achieves negative emissions – net removal of CO₂. | <p>Climate Change Mitigation Strategies</p> <ul style="list-style-type: none"> • Carbon Sequestration • Carbon Sink • Carbon Credit • Carbon Offsetting • Carbon Tax • Geo-Engineering |
| Ratapani Tiger Reserve | <ul style="list-style-type: none"> • NTCA (National Tiger Conservation Authority) approved Madhya Pradesh (MP) proposal to declare Ratapani Tiger Reserve (TR) to be carved out of the Ratapani wildlife sanctuary. • Madhya Pradesh's 7th TR. • Located in Raisen district in Vindhayan Range (Bhopal-Raisen forest division) • Flora – Teak forests. • Other Fauna – Leopard, Dhole, Hyena, rhesus macaque, four-horned antelope, Vultures, sarus crane etc. | <ul style="list-style-type: none"> • Waterbodies – Dahod Dam, Barna Reservoir and Ratapani Dam (Barrusot lake). • Tiger – Endangered IUCN) and Schedule I animal. • Tiger census – once in 4 years. Tiger count: MP > Karnataka > Uttarakhand. • Highest no. of TRs – MP (7) Maharashtra (6) > Karnataka (5). • TRs governed by Project Tiger. • NTCA – statutory body, administer Project Tiger. • Global Tiger Forum – 13 tiger range countries. • Bhimbetka Rock Shelters (UNESCO World Heritage Site) located within this TR. |
| Recovery Program for Critically Endangered Species | <ul style="list-style-type: none"> • Species Recovery Programme of the Union Environment Ministry is implemented under Integrated Development of Wildlife Habitats (IDWH). • Aims at targeted conservation CR species. | <ul style="list-style-type: none"> • IUCN Red List of Threatened Species – CR (Critically Endangered), EN (Endangered) and VU (Vulnerable). <p>Criteria for CR</p> |

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| | <ul style="list-style-type: none"> • 21 species covered: Snow Leopard, Indian Bustard, Dolphin, Hangul, Nilgiri Tahr, Marine Turtles, Dugongs, Edible Nest Swiftlet, Asian Wild Buffalo, Nicobar Megapode, Manipur Brow-antlered Deer, Vultures, Malabar Civet, Indian Rhinoceros, Asiatic Lion, Swamp Deer, Jerdon's Courser, Northern River Terrapin, Clouded Leopard, Arabian Sea Humpback Whale and Red Panda. • NBWL has authority to add/remove species. | <ul style="list-style-type: none"> • 90% population reduced over the last 10 years OR • < 50 mature individuals exist • At least 50% probability of extinction in wild in their 10 years. • IDWH is a Centrally Sponsored Scheme, has following 3 components: <ol style="list-style-type: none"> 1. Support to Protected Areas 2. Protection of Wildlife Outside Protected Areas 3. Species Recovery programmes • National Board for Wildlife (NBWL) – statutory body, Chaired by Prime Minister. |
| Indian Star Tortoises | <ul style="list-style-type: none"> • CITES upgraded the protection to the star tortoises (Geochelone elegans) by listing in Appendix I. • Giving it the highest level of international protection from commercial trade. • Threat - Illegal smuggling for use as exotic pets in Asian countries. | <ul style="list-style-type: none"> • Distribution - India, Pakistan and Srilanka. • State wise – Kerala, Karnataka, Tamil Nadu, Andhra, Odisha, Gujarat, Rajasthan. • Habitat - dry vegetation types. • IUCN status – VU (Vulnerable). • CITES Appendix I. • Schedule IV of WPA, 1972. |
| Enhancing Coastal and Ocean Resource Efficiency (ENCORE) Program | <ul style="list-style-type: none"> • ENCORE aims to strengthen integrated coastal zone management in all coastal States and Union Territories of India. • A World Bank-funded project. • Society of Integrated Coastal Management (SICOM), under MoEFCC is the National Project Management Unit (NPMU) for ENCORE Program. | <ul style="list-style-type: none"> • Integrated Coastal Zone Management Project (ICZMP), also a World Bank supported project. • Draft Environmental and Social Management Framework (ESMF) is a part of ENCORE program. |
| Mesovelgia | <ul style="list-style-type: none"> • Scientists from Zoological Survey of India (ZSI) have discovered seven new species of water treaders belonging to genus Mesovelgia. • Water treaders are semi-aquatic insects that can walk or run on surface of water. • They are equipped with hydrophobic setae (bristles) on their legs. • 7 new insects are <ul style="list-style-type: none"> • Mesovelgia andamana (from Andaman Island) • M. isiasi and M. bispinosa (from Meghalaya) | <ul style="list-style-type: none"> • The combination of hydrophobic setae and water surface tension prevents them from sinking. • These are hemimetabolous insects without having larval stage i.e., they go from egg to nymph to adult. • These bugs serve as predators and scavengers. • The claws of Mesovelgia are placed apically (tip or extreme end of legs), whereas in water striders, they arise from the pre-apex (just before the tip) of legs. • ZSI established in 1916 at Kolkata. |

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| | <ul style="list-style-type: none"> • M. tenuia and M. occulta (from Tamil Nadu) • M. dilatata and M. brevia (both in Meghalaya and Tamil Nadu) | <ul style="list-style-type: none"> • Founder director of ZSI was Thomas Nelson Annandale. • ZSI publishes Red Data Book on Indian Animals. |
| Khangchendzonga Biosphere Reserve | <ul style="list-style-type: none"> • Included in the UNESCO's World Network of Biosphere Reserve (WNBR). • It's the 11th Indian BR in WNBR, is in Sikkim. • Third highest mountain peak in the world, Kanchenjunga (8,586 m). • Highest biosphere reserve of India. • 86% of the core area, is situated in the Greater Himalayas. • The core zone - Khangchendzonga National Park is only 'Mixed World Heritage Site' on UNESCO World Heritage List from India. • Flora - temperate broadleaf and mixed forests consisting of oaks, fir, birch, maple, willow and alpine grasses, herbs and shrubs. • Fauna - Snow leopard, Himalayan tahr, Asiatic wild dog, Sloth bear, Civet, Red panda, Tibetan wild ass, Himalayan blue sheep, rat snake and Russell's viper. • Birds - Blood pheasant, Himalayan griffon, Green pigeon, Tibetan snowcock, Snow pigeon, Asian emerald cuckoo etc. • Tribes found – Lepcha. | <ul style="list-style-type: none"> • BR is an in-situ conservation under UNESCO's Man and Biosphere (MAB) Programme. • 11 of the 18 Biosphere Reserves (BR) of India are in WNBR – Nilgiri BR (first to be included), Gulf of Mannar, Great Nicobar, Pachmarhi, Achanakmar-Amarkantak, Simlipal, Nokrek, Sundarbans, Nandadevi, Agastyamalay and Khangchendzonga. • Other 7 BRs – Manas, Dibrusaikkhawa, Dihang-Dibang, Rann of Kachch, Panna, Sheshachalam and Cold Desert. • Large number of medicinal plants found in Dzongu Valley in north Sikkim is part of this BR. |
| Laboratory for Conservation of Endangered Species (LaCONES) | <ul style="list-style-type: none"> • A dedicated facility of CSIR's Centre for Cellular and Molecular Biology (CCMB) in Hyderabad. • India's only facility, uses modern biotechnologies for conservation of endangered wildlife. • Indian Mouse Deer was successfully reintroduced by breeding of the elusive species at the dedicated facility. | <ul style="list-style-type: none"> • Council of Scientific and Industrial Research (CSIR) - largest R&D organisation of India. • CSIR function as autonomous body, funded by Ministry of Science and Technology. • Prime Minister is the ex-officio CSIR President. • CSIR-CCMB is a premier research organization in frontier areas of modern biology. |
| National Wildlife Genetic Resource Bank at LaCONES. | <ul style="list-style-type: none"> • Established by CCMB-LaCONES • India's first genetic resource bank. • So far, genetic resources from 23 species of Indian wild animals | <ul style="list-style-type: none"> • Gene bank is an ex-situ conservation method. • For cryogenic preservation, liquid Nitrogen at minus 195 degrees Celsius. |

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| | <p>have been collected and preserved.</p> <ul style="list-style-type: none"> It facilitates exchange of genetic material between the Indian zoos for maintaining genetic diversity and conservation management. | |
| Environmental and Social Management Framework (ESMF) | <ul style="list-style-type: none"> The Environment Ministry (MoEFCC) has unveiled a draft ESMF for coastal zone management. It was prepared by Society for Integrated Coastal Management, an MoEFCC -affiliated body as part of a World Bank-funded project. It lays out guidelines for coastal States to adopt when they approve and regulate projects in coastal zones. Salient features of ESMF - Resettlement Policy Framework, Gender Action Plan, Indigenous Peoples Planning Framework, Labour Management Framework and Grievance Redress Mechanism. | <ul style="list-style-type: none"> Integrated Coastal Zone Management (ICZM) Project is a World Bank supported project that aims to build national capacity for implementation of comprehensive coastal management. ICZM Plan – only 3 states West Bengal, Odisha and Gujarat have prepared ICZM plan so far. ICZM uses ‘ecosystem approach’. National Centre for Sustainable Coastal Management (NCSCM) at Chennai. |
| Flue-gas Desulfurization Technology - Sulphur Dioxide Emissions REPORT BY Green Peace | <p>Greenpeace report findings</p> <ul style="list-style-type: none"> India is the largest emitter of Sulphur dioxide (SO₂) in the world, contributing more than 15 per cent of global anthropogenic emissions. Largest source of SO₂ – burning fossil fuels at power plants due to expansion of coal-based electricity generation. The vast majority of power plants in India lack flue-gas desulfurization technology to reduce their air pollution. Major SO₂ emission hotspots in India are Singrauli in Madhya Pradesh, Neyveli and Chennai in Tamil Nadu, Talcher and Jharsuguda in Odisha, Korba in Chhattisgarh, Kutch in Gujarat, Ramagundam in Telangana and Chandrapur and Koradi in Maharashtra - as detected by the NASA OMI (Ozone Monitoring Instrument) satellite. | <p>Impacts of SO₂ pollution</p> <ul style="list-style-type: none"> Formation of high resistance, visible corrosion layers Formation of acid rain. A precursor for sulphate aerosols, that can affect the properties of clouds. Greenpeace is an environmental NGO. Flue Gas Desulfurization (FGD) involves either wet scrubbing or dry scrubbing, a pollutant absorption process. Wet FGD systems, uses liquid absorbent, where SO₂ gets trapped. Singrauli is at number five in the world list of SO₂ emission Hotspots. |
| Cnemaspis Anandani (Anandan's day gecko) | <ul style="list-style-type: none"> 35th species of day gecko found in Western Ghats, in Nilgiris forests | <ul style="list-style-type: none"> Western Ghats - Biodiversity Hotspot, UNESCO Heritage site. |

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| | <p>of Tamil Nadu.</p> <ul style="list-style-type: none"> • Only around 42 mm in size. • It's a species of diurnal, rock-dwelling, insectivorous gecko. • Endemic to India. • Named after Anandan Sethuraman, a conservationist. • Faces the threat of extinction - natural predators such as calotes (lizards), birds and anthropogenic factors. | <ul style="list-style-type: none"> • Two endangered species-lion-tailed macaque and Nilgiri Tahr found in Nilgiri Biosphere Reserve (NBR). • NBR includes the Aralam, Mudumalai, Mukurthi, Nagarhole, Bandipur and Silent Valley National Parks, as well as the Wayanad and Sathyamangalam Wildlife sanctuaries. |
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Agriculture

| TOPICS | KEY ASPECTS | Value Addition |
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| Geoponic, Hydroponic, Aquaponic, Aeroponic | <ul style="list-style-type: none"> • Geoponic refers to growing plants in normal soil. • Aeroponics growing plants in mist environment without the use of soil medium. • Hydroponics growing plants using mineral nutrient solutions, in water, without soil. • Aeroponic symbiotic environment of aquaculture and hydroponics. | <ul style="list-style-type: none"> • Protected cultivation practices are cropping techniques wherein the microenvironment is controlled partially/fully as per plant need during their period of growth to maximize the yield and resource saving. • National Mission on Sustainable Agriculture under National Action Plan on Climate Change. |
| Precision Farming | <ul style="list-style-type: none"> • Refers to precise application of agricultural inputs based on soil, weather and crop requirement to maximize sustainable productivity, quality and profitability. • A modern agriculture practice involving the use of technology such as remote sensing (RS), GPS, and geographical information system (GIS). • More effective use of inputs means greater crop yield and/or quality, without much polluting the environment. | <ul style="list-style-type: none"> • SMART Farming – application of ICT into agriculture. • 3 interconnected tech fields to SMART Farming are, Management Information Systems, Precision Agriculture and Agricultural automation and robotics. • National Mission on Agriculture Extension & Technology – support tech adoption in agriculture. • Challenges in adopting Precision Farming – small size of landholdings, large small and marginal farmers and high cost of adoption. |

Science and Technology

| TOPICS | KEY ASPECTS | Value Addition |
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| Lithium ion battery | <ul style="list-style-type: none"> Anode - graphite (carbon). Cathode - a combination of lithium-cobalt. Electrolyte (lithium salt) enables the movement of lithium ions between the electrodes. When the battery is being charged, lithium ions are absorbed (stored) in the anode. During discharge, lithium ions naturally flow back to the cathode through the electrolyte. <p>Advantages</p> <ul style="list-style-type: none"> Smaller and lighter High energy density Low self-discharge Zero to low memory effect Quick charging High open-circuit voltage Longer lifespan <p>Disadvantages</p> <ul style="list-style-type: none"> Expensive Sensitivity to high temperature Aging effect Deep discharge Safety concerns | <ul style="list-style-type: none"> IIT Madras researchers have for the first time fabricated a rechargeable iron ion battery, Fe²⁺ ions perform the function of Lithium ions here. Iron ion battery uses mild steel as the anode and Vanadium pentoxide as the cathode. Ether-based electrolyte containing dissolved iron perchlorate is used as an electrolyte. Lithium is lightest known metal. No lithium reserves in India. Lithium Reserves: Chile > China > Australia. Li Production: Australia > Chile > Argentina > China. 2019 Chemistry Nobel goes to three scientists for developing lithium-ion batteries. National Mission on Transformative Mobility and Battery Storage to promote clean, connected, shared, sustainable and holistic mobility initiatives. |
| Transiting Exoplanet Survey Satellite (TESS) | <ul style="list-style-type: none"> It is a NASA's space telescope designed to search for exoplanet. TESS will occupy a never-before-used orbit high above Earth - elliptical orbit, called P/2. TESS orbits Earth every 13.7 days. Its closest point to Earth (108,000 km) is about triple the distance of geosynchronous orbit. It's a two-year survey mission. It employs the transit method to detect exoplanets. So far TESS has identified about 1400 candidate exoplanets, of which 34 have been confirmed so far. Eg. HD 21749 c, GJ 357 d, TOI 700 d, L 98-59b etc. | <ul style="list-style-type: none"> Exoplanet or extrasolar planet is a planet outside the Solar System. Transiting Exoplanet Survey Satellite (TESS) is successor of NASA's Kepler Mission. TESS exploration area is 400 times larger than that covered by the Kepler mission. It was launched by a SpaceX Falcon 9 rocket from Cape Canaveral. Goldilocks Zone – habitable zone Super-Earth is an extrasolar planet with a mass higher than Earth's. |

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| <p>Internal Combustion Engine Vehicles (ICEVs) vs. Electric Vehicles (EVs)</p> <p>EVs use one or more electric motors for propulsion rather than the ICEVs.</p> | <p>Comparison</p> <ul style="list-style-type: none"> • EVs are lighter than ICEVs • EVs occupy less space than ICEVs • EVs are more energy efficient • EVs maintenance cost is low • EVs is cleaner, ICEVs has more global warming potential • EVs reduces import bill as India depends upon oil imports • ICEVs initial cost of development is low compared to EVs • Fuelling of EVs take long time | <p>Need for EVs</p> <ul style="list-style-type: none"> • To combat increasing air pollution • Energy security • INDC goals • Cut oil imports • National Electric Mobility Mission Plan (NEMMP) • Faster Adoption and Manufacturing of Hybrid & Electric vehicles in India (FAME India) |
| <p>Helium Molecule Hydride</p> | <ul style="list-style-type: none"> • Scientists have spotted the helium hydride molecule (HeH^+) for the first time in space. • The helium hydride ion or hydridohelium ($1+$) ion is a cation (positively charged ion) with chemical formula HeH^+. • Found in a planetary nebula, NGC 7027, which is the dusty remnant of a sun-like star. • It is the lightest heteronuclear ion, and is believed to be one of the first compounds formed in the Universe after the Big Bang. | <ul style="list-style-type: none"> • Helium is a noble gas • Researchers used the NASA's SOFIA, the world's largest airborne observatory. • Stratospheric Observatory for Infrared Astronomy (SOFIA) is a Boeing 747SP jetliner modified to carry a 106-inch diameter telescope. • GREAT Spectrometer Installed on SOFIA Observatory. • Key to understand chemistry of the early universe. |
| <p>Quick Reaction Surface-to-Air missiles (QRSAM)</p> | <ul style="list-style-type: none"> • A Short-Range Surface to Air Missile system. • Developed by DRDO in association with BEL and Bharat Dynamics Limited for the Indian Army. • QRSAM is a compact weapon system with fully automated Command and Control System and is mobile. • This missile is an all-weather, all-terrain surface-to-air missile equipped with electronic counter measures against jamming by aircraft radars. • The system has the capability to search and track targets while moving. • It uses solid fuel propellant and has a strike range of 25-30 km. • Tested for 7th time at Integrated Test Range (ITR). • It is likely to be inducted into the armed forces by 2021. | <ul style="list-style-type: none"> • ITR, a missile testing facility in Chandipur, Odisha. • Receding waters at low tide offer an excellent opportunity to walk into the sea at Chandipur. • Dr. Abdul Kalam Island, formerly known as Wheeler Island is located 70km south of Chandipur. |
| <p>Genome India Initiative</p> | <ul style="list-style-type: none"> • India's first Human Genome mapping project. | <ul style="list-style-type: none"> • Genome is the organism's complete set of DNA, including |

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| | <ul style="list-style-type: none"> Under it Department of Biotechnology (DBT) plan to scan nearly 20,000 Indian genomes over the next five years, in a two-phase exercise, and develop diagnostic tests that can be used to test for cancer. Phase I: genome sequencing of 10,000 healthy Indians. Phase II: genome sequencing of 10,000 diseased individuals. Implemented by DBT, Ministry of Science and Technology. | <p>all of its genes.</p> <ul style="list-style-type: none"> Genome sequencing is figuring out the order of DNA nucleotides, or bases, in a genome. Data generated would be accessible to all researchers for analysis. 'Biological Data Storage, Access and Sharing Policy' envisaged for establishment of National Biological Data Centre. |
| Albendazole Tablets | <ul style="list-style-type: none"> Haryana Health Department will administer Albendazole tablets to 94 lakh children of 1-19 years in the state on the National Deworming Day (NDD). Deworming is a process to kill worms commonly tape, round and hook worm, that infest bodies of children. Albendazole tablet paralyses the muscles of these worms, the worm loses its grip of intestinal tract and is flushed out of the human body. | <ul style="list-style-type: none"> NDD observed bi-annually on 10th February and 10th August. Union Ministry of Health and Family Welfare (MoHFW) launched National Deworming Initiative (NDI) NDI aims to reach more than 32.2 crore children aged between 1 to 19 years to combat parasitic worm infections. Parasitic worm infections may lead to severe complications resulting in anaemia, malnutrition and improper mental and physical development. |
| FSOC Technology | <ul style="list-style-type: none"> Free Space Optical Communication (FSOC) is an optical communication technology that uses light to wirelessly transmit data to telecommunication and internet applications. Advantages - unregulated spectrum, huge bandwidth, less interference and low power consumption. Disadvantages - influenced by weather conditions, require high sensitive receivers and scattering of signal. It is a effective for short range communications. | <ul style="list-style-type: none"> Optical fiber cables employs Total Internal Reflection principle of light to transmit data with high efficiency. Bharat Net project, national optic fiber network – to provide internet access to 1 lakh gram panchayats. |
| Beresheet and Tardigrade | <ul style="list-style-type: none"> Beresheet probe is a first private mission to the Moon by Israeli non-profit SpaceIL organisation. It was launched by SpaceX Falcon | <ul style="list-style-type: none"> Tardigrade, also known as water bear, are a phylum of water-dwelling eight-legged segmented micro-animals. |

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| | <p>9 rocket but crashed on the lunar surface while landing.</p> <ul style="list-style-type: none"> Beresheet carried thousands of specimens of a living organism called tardigrade. Beresheet's crash landing may have scattered the tardigrades onto the lunar surface. | <ul style="list-style-type: none"> One among the toughest and most resilient creatures on Earth. Can withstand gamma radiation, lack of oxygen, blast of solar winds and go without food and water for over ten years. Half a millimetre long, is essentially a water-dweller but also inhabits land. The organism is known to "come back to life" on rehydration |
| Rotavirus | <ul style="list-style-type: none"> Health Ministry's 100 days agenda to provide Rotavirus vaccine to every child across India by September, 2019. Rotavirus is a leading cause of severe diarrhoea and death among children. Rotavirus is a contagious disease Symptoms - Severe diarrhea, throwing up, dehydration, fever, vomiting and stomach pain. Rotavirus is responsible for around 10% of total child mortality every year. | <ul style="list-style-type: none"> Two Rotavac available are Rotarix (monovalent vaccine) and Rota Teq (pentavalent vaccine). Pentavalent vaccine protects a child from 5 life-threatening diseases – Diphtheria, Pertussis, Tetanus, Hepatitis B and Haemophilus Influenzae type b (Hib). Rotavac is included in Health Ministry's Universal Immunisation Programme (UIP) and provided under Mission Indradhanush. Intensified Mission Indradhanush 2.0 – targets districts with low immunization coverage. |
| Gomphothere | <ul style="list-style-type: none"> Gomphothere is an extinct elephant-like animal, whose fossil evidences found in Palasava village. Indian and French researchers said hot arid desert of Kutch was once a humid sub-tropical forest with rich diversity of fauna and flora. The fossils, unearthed from Palasava village of Rapar taluk in Kutch, Gujarat consisting mostly of ribs, and parts of teeth and bones from Miocene. Bulk of fossils unearthed in Kutch have so far been mainly marine organisms. | <ul style="list-style-type: none"> Miocene Epoch - 23.03 to 5.3 million years ago. Gondwana land – supercontinent existed 550 million years ago. Kutch district of Gujarat is the largest district in India by area followed by Leh, Ladakh. Kutchi people and Kutchi language. Katch Peninsula Rann of Katch – shallow wetland, marshy salt flats Gulf of Katch Banni grasslands is in Katch. |
| Versavo (bevacizumab) | <ul style="list-style-type: none"> Dr. Reddy's Laboratories launched in India Versavo (bevacizumab), a biosimilar of Roche's Avastin for | <ul style="list-style-type: none"> Generic drugs are identical to the original in chemical composition, biosimilar drugs |

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| | <p>the treatment of cancers.</p> <ul style="list-style-type: none"> • Biosimilar a biological medicine highly similar to another already approved biological medicine (the 'reference medicine'). • Biosimilars are highly similar in terms of safety, purity and potency, but may have minor differences in clinically inactive components. | <p>are 'highly similar'.</p> <ul style="list-style-type: none"> • India is one of the leading manufacturers of biosimilars. • Both generic and biosimilar drugs reduce cost of drugs, thus make it affordable. • Cancer is the uncontrolled growth of abnormal cells in the body. • National Cancer Grid (NCG) is a network of major cancer centers, research institutes, patient groups and charitable institutions across India. |
| Pretomanid | <ul style="list-style-type: none"> • U.S. Food & Drug Administration (FDA) has approved a new drug Pretomanid for treating drug-resistant tuberculosis — multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB). • Only the third new anti-TB drug after Bedaquiline and Linezolid. • Drug developed by TB Alliance, a not-for-profit organisation. | <ul style="list-style-type: none"> • Tuberculosis (TB) - bacterial infectious disease caused by Mycobacterium tuberculosis. • Most often affects the lungs – Pulmonary and Extra pulmonary TB. • Symptoms - Coughing with blood, Bad cough for more than 3 weeks, Chest pain, Night sweats, Fatigue & weakness etc |
| Multidrug-resistant TB (MDR -TB) | <ul style="list-style-type: none"> • AMR (Antimicrobial Resistance) - resistance acquired by any microorganism against antimicrobial drugs. • MDR-TB - do not respond to at least, first-line TB drugs (isoniazid and rifampicin). • XDR-TB - resistant to first-line TB drugs, plus any fluoroquinolone and at least one of three injectable second-line drugs (amikacin, kanamycin, or capreomycin). | <ul style="list-style-type: none"> • WHO – Global TB Report • India – highest TB Burden - 24% of MDR-TB cases in the world. • Revised National TB Control Program (RNTCP) • Nikshay Poshan Abhiyan - DBT scheme for nutritional support to TB patients by MoHFW • Schedule H-1 drugs and Red line campaign • India target – Zero TB by 2025 • Moscow Declaration to End TB by 2030. |
| BPaL Regimen | <ul style="list-style-type: none"> • US FDA has approved new oral three-drug regimen for XDR-TB. • The treatment involves pretomanid tablets in combination with bedaquiline and linezolid, collectively referred to as the BPaL regimen, and has an efficacy rate of 90 per cent. • Unlike 18-24 months needed to treat highly-resistant TB using nearly 20 drugs, the BPaL regimen | <ul style="list-style-type: none"> • The success rate of treatment for XDR-TB in India is merely 23 per cent while for MDR-TB it is 46 per cent. • Thus, the new drug regimen is important for India, which has the second-highest XDR-TB burden, after Russia. |

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| | takes just six months with reduced dose of 5 pills/day. | |
| CBNAAT (Cartridges Based Nucleic Acid Amplification Test) | <ul style="list-style-type: none"> A revolutionary rapid molecular test which detects Mycobacterium tuberculosis and rifampicin drug resistance, simultaneously. This test is fully automated and provides results within two hours. It is a highly sensitive diagnostic tool and can be used in remote areas without sophisticated infrastructure or specialised training. | <ul style="list-style-type: none"> Over 500 CBNAAT machines have been deployed under national TB control programme. Line Probe Assay (LPA) is another diagnostic technique used to detect TB. DOTS (Directly Observed Treatment, Short course) Strategy used in controlling TB on a mass basis. |
| Dolutegravir (DTG) | <ul style="list-style-type: none"> Cost-effective HIV treatment drug recommended by WHO. Preferred first-line and second-line treatment drug for all populations, including pregnant women. It is sold under the brand name Tivicay. Human Immunodeficiency Virus (HIV) attacks CD4, a type of White Blood Cell (T cells) HIV multiplies itself and destroys CD4 cells, thus severely damaging the human immune system Acquired Immune Deficiency Syndrome (AIDS) - last stage of HIV when the infection is very advanced and if left untreated will lead to death. | <ul style="list-style-type: none"> India - over 2.1 million people living with HIV Treatments - Anti-Retroviral Therapy (ART), Stem Cell Transplant SDG 3 target to reduce HIV/AIDS. 90:90:90 Strategy - 90% diagnosed: 90% gets ART treatment: 90% suppressed Mission Sampark - to trace and bring under ART services. HIV and AIDS (Prevention and Control) Act, 2017 - to prevent and control the spread of HIV and AIDS, prohibits discrimination against persons with HIV and AIDS UNAIDS at Geneva |
| Lokiarchaea | <ul style="list-style-type: none"> The tree that represents all known living things has three main branches: eukaryotes, bacteria and archaea. Some scientists suggested a kind of archaea, Asgard archaea, may have been interacted with bacteria, resulting in the first eukaryotes. DNA analysis of samples of mud from the deep ocean showed evidence of both archaea and eukaryote-like genomes. The samples were given the name Lokiarchaea, because they were uncovered from an area close to Loki's Castle, a deep-sea hydrothermal vent. | <ul style="list-style-type: none"> Archaea are single-celled microorganisms with structure similar to bacteria. Eukaryotes - the group of organisms whose cells have nuclei. Hydrothermal vent is a fissure on the seafloor from which geothermally heated water issues. Hydrothermal vents are commonly found near volcanically active places Metagenomics is the study of genetic material recovered directly from environmental samples. |

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| | <ul style="list-style-type: none"> Now team of researchers in Japan has succeeded in cultivating samples of Lokiarchaea in a special tank in their lab. It took 12 long years to culture. | |
| Hydrothermal Carbonisation (HTC) Technology | <ul style="list-style-type: none"> IIT Kharagpur has developed this technology which can generate energy from solid waste with high moisture content. Aims at conversion of wet biomass into hydro-char (a coal like fuel). It can convert municipal solid waste to bio-fuel, soil amendment and absorbents. By-products include ash (can be applied as a plant nutrient enhancer due to its phosphorus content) and potassium loaded liquid (can be used for watering plants). | Benefits of HTC <ul style="list-style-type: none"> Effective solid waste management. Bio-energy is a renewable source, help in achieving INDCs. Indigenisation of technology help India adopt it widely. |
| Zmapp, Remdesivir, REGN-EB3 and mAb114 | <ul style="list-style-type: none"> These are four candidate drugs tested in a randomised trial for treating Ebola in Congo. Two of them REGN-EB3 and mAb114, were found to be highly effective. REGN-EB3 is a cocktail of three antibodies generated by injecting Ebola virus into a mice model that has a human-like immune system. mAb114's development goes back to the Ebola outbreak in 1995 in Congo. WHO coordinated this Congo treatment trial. | <ul style="list-style-type: none"> WHO announced Ebola outbreak in Democratic Republic of Congo in July, 2019 as global health emergency. Merck's preventive Ebola vaccine (rVSV-ZEBOV-GP), which has had a 97.5% efficacy, helped slow the virus's spread Ebola viral disease –human to human transmission possible, fruit bats is the natural host. First Ebola outbreak in Guinea, Liberia, and Sierra Leone. ELISA (antibody-capture enzyme-linked immunosorbent assay) – a diagnostic tool. |
| Formalin | <p>A toxic, colorless solution that is derived by dissolving formaldehyde gas in water.</p> <ul style="list-style-type: none"> A cancer-inducing chemical used to preserve fish. Usage - In pressed wood products, fabrics, insulation materials and as fungicide, germicide & disinfectant and as a preservative for bodies and organs to ensure the specimen doesn't decompose | <ul style="list-style-type: none"> Operation Sagar Rani by Food Safety department of Kerala seized fish preserved in formalin. Formaldehyde (CH_2O) is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms - bacteria, plants, fish, animals and humans - naturally |

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| | <ul style="list-style-type: none"> • Formalin causes irritation in the eyes, throat, skin and stomach. | <p>produce formaldehyde as part of cell metabolism.</p> |
| Magnetospheric Multiscale Mission (MMS) | <ul style="list-style-type: none"> • MMS recently made the first precise measurements of an interplanetary shock using high-resolution instrument. • MMS is NASA's unmanned space mission to study the Earth's magnetosphere, using four identical satellites flying in a tetrahedral or pyramid formation. • It aims to map magnetic reconnection. • MMS holds Guinness world record for highest altitude fix of GPS signal at 70,000 km above the Earth. | <ul style="list-style-type: none"> • Interplanetary shocks - type of collision less shock, where particles transfer energy through electromagnetic fields. • Magnetic Reconnection - a process that occurs as the sun and Earth's magnetic fields interact. • Magnetosphere is the region of space in which charged particles are controlled by the object's magnetic field. • Auroras are the result of disturbances in the magnetosphere caused by solar wind. • Aurora borealis at north pole and Aurora australis at south pole. |
| Mission Shakti | <ul style="list-style-type: none"> • An operation that demonstrated India's anti-satellite (ASAT) missile capability by shooting down a live satellite. • Mission Shakti is a joint programme of DRDO and ISRO. • India is only the 4th country to acquire such capability after US, Russia and China. • ASAT hit Microsat R at Low Earth Orbit (LEO). • ASAT is a 3-stage modified interceptor missile of DRDO's Ballistic Missile Defence system. | <ul style="list-style-type: none"> • A LEO is an Earth-centered orbit with an altitude of 2,000 km or less. • Kessler Syndrome - a self-sustaining cascading collision of space debris in low earth Orbit. • Operation Shakti - Pokhran-II nuclear test in 1998. • Mission Shakti sports initiative • Of Maharashtra - to train athletes' international events like the Olympics. |
| GROWTH-India | <ul style="list-style-type: none"> • India's first robotic telescope and the first one designed to observe transient events in the universe. • Located at the Indian Astronomical Observatory (IAO) at Hanle in Ladakh. • It is a joint project of the Bangalore-based Indian Institute of Astrophysics (IIA) and the IIT Bombay. • It is fully funded by the SERB (Science and Engineering Research Board) under the Partnerships for International Research and Education (PIRE) project. | <ul style="list-style-type: none"> • Global Relay of Observatories Watching Transients Happen (GROWTH) • International collaborative network of astronomers and telescopes. • 5-year project, funded by the National Science Foundation, an agency of US government. • Other telescopes at IAO are Himalayan Chandra Telescope, the High-Altitude Gamma-ray Array Telescope (HAGAR), and the Major Atmospheric Cerenkov |

| | | Experiment Telescope (MACE). |
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| Software Defined Radio (SDR) | <ul style="list-style-type: none"> Defence Acquisition Council (DAC) approved for the procurement of SDR technology. SDR is a radio communication system where components implemented by means of software on a personal computer or embedded system. SDR technology is the 'mother' of all solutions for the desired Tactical Communication needs of the Armed Forces. SDR is indigenously developed through joint efforts of Weapons Electronics System Engineering Establishment (WESEE) / Defence Research and Development Organisation (DRDO) and BEL (Bengaluru). | <ul style="list-style-type: none"> Advantages of SDR <ol style="list-style-type: none"> Improved transfer rates for data, voice and video information Reduced Network latency DAC – Chaired by Defence Minister is the highest decision-making body regarding defence acquisition. Defence Procurement Procedure - contains policies and procedures for procurement and acquisition. WESEE - is an autonomous organisation under Ministry of Defence engaged in R&D. Make-in-India-to transform India into a global manufacturing hub. |
| South Atlantic Anomaly (SAA) (Figure 1) | <ul style="list-style-type: none"> SAA is a region above the South Atlantic Ocean where there are a large number of charged particles that can damage sensitive instruments. It is a portion of Van Allen Radiation Belt. All space telescopes are shut down when they pass through the SAA. India's Astrosat telescope could not detect gravitational wave emanating from a possible collision with a neutron star, as it was above SAA. | <ul style="list-style-type: none"> Van Allen Radiation Belt a zone of energetic charged particles, most of which originate from the solar wind, that are captured by and held around a planet by that planet's magnetic field. Earth has two such belts. Gravitational waves space-time disturbances generated by accelerated masses, at the speed of light. LIGO India (IndIGO) – gravitational wave observatory in India. Astrosat is India's first dedicated multi-wavelength space telescope. |
| Phages and Phage Therapy | <ul style="list-style-type: none"> Researchers in IISER, Pune determined the structure of McrBC, which prevents viral infections in bacteria. This determination has long-term implications in 'phage therapy' and could help combat drug-resistant infections. Phages or Bacteriophage are groups of viruses that infect and kill bacterial cells. Bacteriophage means 'bacteria eater'. | <ul style="list-style-type: none"> McrBC — a complex bacterial protein which helps prevent viral infections in a bacterial cell and functions as a molecular scissor. Antimicrobial resistance (AMR) is the ability of a microbe to resist the effects of medication. Microbes resistant to multiple antimicrobials are called multidrug resistant or superbugs. |

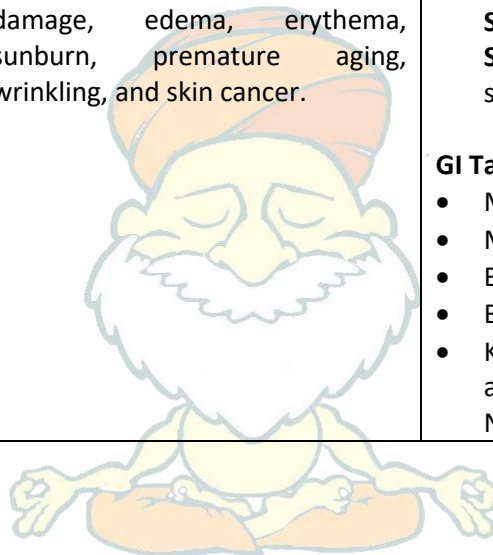
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| | <ul style="list-style-type: none"> • Phage therapy is the therapeutic use of phages to treat bacterial infections. • Like the human immune system, bacteria too have an elaborate defence system to combat phages. • To prevent infection caused by phages, bacteria have specialised 'molecular scissors' which specifically cut the foreign DNA, thus preventing phages multiplication in bacterial cells. | <ul style="list-style-type: none"> • Best advantage of phage therapy is the ability to tailor treatment accurately to kill the pathogenic bacteria. • Bacteriophages are not approved for treatment in India though clinical trials are underway. • Uses of bacteriophages – phage therapy, basic research, diagnostics, counteracting bio-weapons and toxins. |
| Adratiklit boulahfa | <ul style="list-style-type: none"> • New species of stegosaurus discovered in the Middle Atlas Mountains of Morocco. • Dated it to 168 million years ago makes it the oldest known member of that group of dinosaurs. • First stegosaurus to be found in North Africa. • The name is derived from the words used by the Berber (an ethnic group indigenous to North Africa) for mountains (Adras), lizard (tiklit) and the area where the specimen was found. (Boulahfa). | <ul style="list-style-type: none"> • The Adratiklit was armoured and herbivorous and lived on Gondwana, which later split into Africa, South America, Australia and Antarctica. • Most stegosaurus remains so far have been found in the northern hemisphere. |
| Coprolite or Coprolith | <ul style="list-style-type: none"> • Coprolites are fossilised feces belonging to animals that lived millions of years ago. • Scientists have found the oldest parasite DNA in the Coprolite of a prehistoric Puma in Argentina. • It is estimated that the age of the coprolite is between 16,500-17,000 years. | <ul style="list-style-type: none"> • Paleofeces are ancient human feces, often found as part of archaeological excavations. • Carbon dating is a method for determining the age of an object containing organic material by using the properties of radiocarbon, a radioactive isotope of carbon (C14). |
| Mitra Crater | <ul style="list-style-type: none"> • Is a lunar impact crater that is attached to the western outer rim of the larger crater Mach, on the far side of the Moon. • Mitra lies within the Dirichlet-Jackson Basin. • It is named after Sisir Kumar Mitra, Indian radio physicist. • Crater pictures were taken by the Terrain Mapping Camera-2 (TMC-2) of Chandrayaan 2. | <ul style="list-style-type: none"> • Impact crater is an approximately circular depression in the surface of a planet, moon. • Other examples of Moon Impact craters Bose, Jackson, Korolev, Mach etc. • South Pole - Aitken Basin - Largest crater on the Moon. <p>Chandrayaan-2</p> <ul style="list-style-type: none"> • It is the first Space Mission to conduct a soft landing on the Moon's south polar region. |

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| | | <ul style="list-style-type: none"> Lander (Vikram) and Rover- (Pragyan). |
| Gravitational Lensing (Figure 2) | <ul style="list-style-type: none"> NASA's James Webb Space Telescope (JWST), going to use gravitational lensing (GL) in investigating how new stars are born. This programme of NASA is called TEMPLATES (Targeting Extremely Magnified Panchromatic Lensed Arcs and Their Extended Star Formation). The gravitational lensing occurs when a huge amount of matter, such as a massive galaxy, cluster of galaxies or a black hole, creates a gravitational field that distorts and magnifies the light from objects behind it. | <ul style="list-style-type: none"> GL is based on Einstein's theory of general relativity (Mass bend light). The more massive the object, the stronger its gravitational field and hence the greater the bending of light rays. <p>Applications of GL</p> <ul style="list-style-type: none"> Understand the past and how stars are formed Study the far away galaxies Observe invisible things in the Universe – dark matter NASA to launch JWST in 2021 to succeed Hubble Space Telescope. |
| SUPRA Scheme (Scientific and Useful Profound Research Advancement). | <ul style="list-style-type: none"> Developed by Science and Engineering Research Board (SERB) Sole objective - funding exploration of new scientific and engineering breakthroughs with global impact with long-term impact on our fundamental scientific understanding. It attracts high quality research proposals to provide 'out-of-box' solutions. Funding - normally for 3 years which could be extended to 2 years (5 years total) as assessed by an expert committee. | <ul style="list-style-type: none"> SERB - statutory body under Department of Science and Technology (DST) to promote and fund research in different scientific disciplines. DST - Scientific Social Responsibility (SSR) Policy <p>Other schemes</p> <ul style="list-style-type: none"> SERB – VAJRA Faculty Scheme DST - INSPIRE (INNOVATION IN SCIENCE PURSUIT FOR INSPIRED RESEARCH) SCHEME MHRD – SPARC, STARS, IMPRESS MHRD and DST - Impacting Research Innovation and Technology (IMPRINT) India |
| Falaq - Radar System of IRAN | <ul style="list-style-type: none"> Iran's radar air defence missile system. Upgraded version of the Gamma system (Russian origin). Can identify all types of cruise missiles, stealth planes, drone systems and ballistic missiles for a range of 400 kms. Expected to complement the existing air defence systems, such as the S-300 | <ul style="list-style-type: none"> Iran's indigenously developed Khordad 3 air defence system managed to detect and down the US reconnaissance drone, RQ-4 Global Hawk in the Gulf. Khordad 15 - Iranian designed and built surface-to-air missile (SAM) system. <p>Indian Radars</p> <ul style="list-style-type: none"> Indian Doppler Radar (INDRA) RAJENDRA Radar |


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| | | <ul style="list-style-type: none"> • ROHINI Radar • Swathi Weapon Locating Radar • AEROSTAT Radar |
| Sericin | <ul style="list-style-type: none"> • A silk protein produced by silkworm • Known to possess anti-oxidant and other medicinal properties. • These properties depend on amino acid composition and secondary metabolites (polyphenols and flavonoids) of sericin. • They vary with source of silkworms and their availability depends on the length of sericin peptides. • Uses - protection from oxidative damage, edema, erythema, sunburn, premature aging, wrinkling, and skin cancer. | <ul style="list-style-type: none"> • India – 2nd largest silk producer after China • Top 3 States – Karnataka > Andhra Pradesh > Assam. • Silk varieties - Mulberry, Tasar, Muga silk and Eri • Except mulberry, other non-mulberry varieties of silks are wild silks, known as vanya silks. • Central Silk Board at Bengaluru - statutory body, Ministry of Textiles. • Silk Samagra or Integrated Scheme for Development of Silk Industry - a central sector scheme implemented by CSB. <p>GI Tags for Silk</p> <ul style="list-style-type: none"> • Mysore silk - Karnataka • Muga silk of Assam • Bhagalpur silk – Bihar • Banaras silk - UP • Kancheepuram, Salem, Arani and Thirubhuvanam – Tamil Nadu |



Indian and World Geography

| TOPICS | KEY ASPECTS | Value Addition |
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| Clarion-Clipperton Zone | <ul style="list-style-type: none"> • Is a geological submarine fracture zone of the Pacific Ocean, with a length of around 7240 km • The zone is administered by the International Seabed Authority. • It contains nodules made up of various rare-earth elements - 5.95 Billion tonnes of manganese, 0.27 Bt of nickel, 0.23 Bt of copper and 0.05 Bt of cobalt. | |
| India's Deep-Sea Mission | <ul style="list-style-type: none"> • The mission proposes to explore the deep ocean similar to the space exploration by ISRO | <ul style="list-style-type: none"> • India has been allotted 75,000 square kilometres in CIO) by UN International Sea Bed Authority |

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| <p>Ministry of Earth Sciences plans Rs 8000 Crore 'Deep Ocean Mission' To Boost India's Sea Exploration Capabilities</p> | <ul style="list-style-type: none"> • focus of the mission will be on deep-sea mining, ocean climate change advisory services, underwater vehicles and robotics related technologies. • Mission includes Two key projects: <ul style="list-style-type: none"> ○ Desalination plant powered by tidal energy and ○ Submersible vehicle that can explore depths of at least 6 km • Mission enable India to develop capabilities to exploit resources in Central Indian Ocean Basin (CIOB) | <p>(ISBA) for exploration of poly-metallic nodules (potential of 380 million metric tonnes)</p> <ul style="list-style-type: none"> • CIOB reserves contain deposits of metals like iron, manganese, nickel and cobalt. • ISBA is an intergovernmental body based in Kingston, Jamaica, that was established under 1982 UNCLOS to organize, regulate and control all mineral-related activities in the international seabed area beyond the limits of national jurisdiction |
| <p>Pampa River</p> | <ul style="list-style-type: none"> • Pampa River is the third longest river in the Kerala after Periyar and Bharathappuzha. • It originates at Pulachimalai hill in the Peerumedu plateau in the Western Ghats in Kerala. • It then flows west before emptying into the Vembanad Lake. • The river is also known as 'Dakshina Bhageerathi' and 'River Baris' | <ul style="list-style-type: none"> • Sabarimala temple dedicated to Lord Ayyappa is located on the banks of the river Pamba. • Parts of terracotta artefacts of archaeological value have been unearthed from the banks of the Pampa river giving further support to the theory that 'Pampa Valley Civilisation' flourished. |
| <p>Heat Domes</p> <p>Was one of the reasons for high temperatures in North America and Western Europe during the months of June & July.</p> | <ul style="list-style-type: none"> • Heat domes is used to describe a "lid" that forms when high pressure hovers in the atmosphere, stopping the hot air from escaping and trapping it at the Earth's surface. • They can fuel violent thunderstorms, stoke dangerous wildfires and exacerbate drought • They form blocking patterns in the atmosphere, which halt the west-to-east movement of weather |  <ul style="list-style-type: none"> • Hot air tries to escape, the lid causes it to sink • The air is forced to warm even more as it sinks. |
| <p>Tawi River</p> | <ul style="list-style-type: none"> • Indian Air Force rescues 2 men stranded in Tawi river. • Originates from the lap of Kailash Kund glacier • Tawi is a river that flows through the city of Jammu. • Tawi is a major left bank tributary of river Chenab. | <ul style="list-style-type: none"> • After traversing Jammu city, the river crosses into Pakistan's Punjab and joins Chenab river. • The flow of water in the river has been decreasing in recent years as the source glacier (Kailash Kund glacier) has been retreating. |
| <p>Sripada Yellampalli Project (SYP) which is a part of Kaleshwaram Lift Irrigation Project (KLIP)</p> | <ul style="list-style-type: none"> • KLIP is claimed to be the world's largest multi-stage and multi-purpose lift irrigation scheme. • It is located at the confluence point of Pranhita River and Godavari River i.e, at Kaleshwaram village in Telangana • Under the scheme, 89 cumecs (cubic | <ul style="list-style-type: none"> • KLIP was previously known as Pranahita-Chevella Lift Irrigation Project. • Pranahita river in itself is a confluence of various other smaller tributaries like Wardha, Penganga and Wainganga Rivers. • KLIP is meant to irrigate over 37 lakh |

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| | metres per second) of water will be lifted to a height of 106 metres from the Sripada Yellampalli reservoir to Medaram reservoir and will be used for irrigation and water supply in nearby drought-prone areas. | acres of land and supply drinking water to Hyderabad and villages en route. |
| Bharati Huda Excavations done here by Archaeological Survey of India (ASI) | <ul style="list-style-type: none"> The site is in Jalapur village in Odisha's Cuttack district As per ancient artefacts and grain discovered here by the ASI, a rural settlement had thrived at Bharati Huda nearly 3600 years ago The age of the settlement was arrived at after radiocarbon dating of charcoal samples found at the site <p><u>Other Findings from Excavation</u></p> <ul style="list-style-type: none"> Chalcolithic Culture Economy: Agriculture and animal husbandry (findings of varieties of rice & jute & domesticated cattle) Worship: Nature worship as evident from single specimen of sun motif found | <ul style="list-style-type: none"> During Chalcolithic (Chalco = Copper and Lithic = Stone) period, both metal and stone were utilized for the manufacture of the equipment in day-to-day life. Chalcolithic period spanned around 2500 BC to 700 BC The world-famous Sun temple of Konark, located some 30 kilometres from the excavation, was built in the 13th century CE. The tradition of Sun worship seems to have evolved with human settlements in the region. |
| Kremlin | <ul style="list-style-type: none"> The Moscow Kremlin is a fortified complex in the center of Moscow, overlooking the Moskva River to the south The name "Kremlin" means "fortress inside a city" The complex now serves as the official residence of the President of the Russia and as a museum | <ul style="list-style-type: none"> It is similar to "White House" which refers to the Executive Office of the President of USA  |
| Apusiajik Glacier | <ul style="list-style-type: none"> It is located on the south-eastern shore of Greenland During summer, the glacier edge is also a popular tourist destination for boat trips With increasing temperature, alarms have been raised about the melting of ice and glaciers Glacier is a slowly moving mass or river of ice formed by the accumulation and compaction of snow on mountains or near the poles. | <ul style="list-style-type: none"> Greenland is the world's largest island located between the Arctic and Atlantic oceans. Greenland is an autonomous territory within the Kingdom of Denmark Though physiographically a part of the continent of North America, Greenland has been politically and culturally associated with Europe |
| Pallikaranai Marshland | <ul style="list-style-type: none"> Only surviving wetland ecosystem of Chennai city, shrunk miserably losing 90% of it in last 50 years. Originally formed as a salt marsh created by the backwaters of Bay | <ul style="list-style-type: none"> Wetlands mitigate floods. Eg. Chennai floods of 2015 was devastating as key wetlands were encroached. Flora and fauna —birds, mammals, amphibians, fishes, butterflies, and |

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| | <p>of Bengal, it now receives freshwater through rains and surplus water from 31 sub-urban water tanks.</p> <ul style="list-style-type: none"> • Southern portion of the marshland drain towards Buckingham Canal. • It's a part of the Central Asian flyway. • Threats – Large scale infrastructure development and Perungudi sewage treatment plant etc. | <p>plants.</p> <ul style="list-style-type: none"> • Birds found – Grey wagtail, pallas' grasshopper warbler, Asian pied starling (Pied Myna). • Ramsar Convention on wetlands. <p>Wetlands of Tamil Nadu</p> <ul style="list-style-type: none"> • Point Calimere – Ramsar site. • Pulicat Lake Bird Sanctuary • Muthupet mangroves. • Vettangudi Bird Sanctuary. |
| <p>Herat City (Figure 3)</p> | <ul style="list-style-type: none"> • New York Times 'Afghan War Casualty Report' - multiple casualties in Heart by Taliban militant attacks. • Third-largest city of Afghanistan. • Capital of Herat Province. • Situated in the fertile valley of the Hari River. | <ul style="list-style-type: none"> • Garland road of Afghanistan connects Kandahar, Kabul, and Mazar-i-Sharif with Heart. (Refer Figure 1) • Salma Dam / Afghan-India Friendship Dam is on Hari river. • India developed Iran port city Chabahar – key to access central India through Afghan. • Afghan is a member of SAARC and party to SAFTA (South Asia Free Trade Agreement). |
| <p>Lambahraun Lava Field (Figure 4)</p> | <ul style="list-style-type: none"> • NASA has chosen the Lambahraun lava field in Iceland as the site to prepare for the next mission to Mars in 2020. • Site is at the foot of Iceland's second biggest glacier, Langjokull. • With its black basalt sand, wind-swept dunes and craggy peaks, it is in many ways reminiscent of Mars. • NASA is working on MARS 2020 Rover and tests its prototype rover on this site. | <ul style="list-style-type: none"> • NASA's 'Curiosity' rover – at Gale crater in 2012 • NASA's MAVEN (Mars Atmosphere and Volatile EvolutionN). • NASA's Mars InSight probe – to study interior of Mars. • ISRO's MOM (Mars Orbiter Mission) - orbiter • ISRO's Mangalyaan 2 – orbiter plus rover. |
| <p>Long Period Average (LPA) of Monsoon</p> | <ul style="list-style-type: none"> • LPA is the averages of rainfall received over a 50-year period between 1951 and 2001. • New LPA value is 88cm (1961-2010), 1 cm less than earlier 89cm (1951-2000). • LPA is considered to be the 'normal' rainfall in India. • The 2019 southwest monsoon season - 110% LPA, above normal rainfall. • IMD (India Met Department) – agency of MoES (Ministry of Earth Sciences), provides meteorological services. • After 2010, this is the first time, | <p>Five rainfall distribution categories by IMD</p> <ul style="list-style-type: none"> • Normal or Near Normal: When per cent departure of actual rainfall is +/-10% of LPA, that is, between 96-104% of LPA • Below Normal: When departure of actual rainfall is less than 10% of LPA, that is 90-96% of LPA • Above Normal: When actual rainfall is 104-110% of LPA • Deficient: When departure of actual rainfall is less than 90% of LPA • Excess: When departure of actual rainfall is more than 110% of LPA |

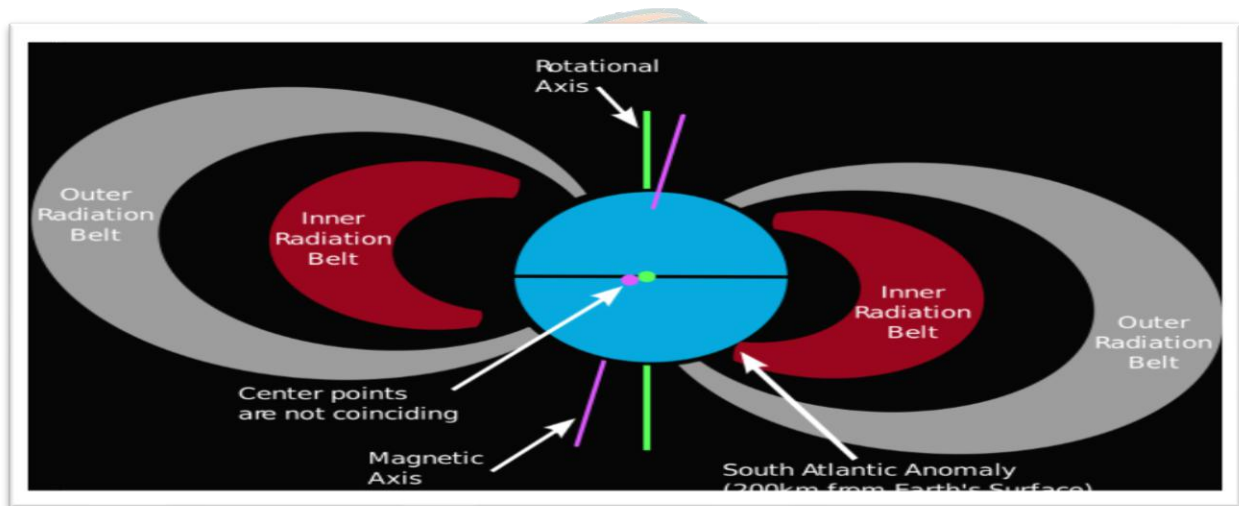
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| | rainfalls during all the last three months (July to September) were above LPA. | <ul style="list-style-type: none"> Ensemble Prediction Systems (EPS) - IMD's new forecast model. MoES - Monsoon Mission of India. |
| Lower Subansiri Hydropower Project (Figure 5) | <ul style="list-style-type: none"> Is the biggest hydroelectric project undertaken in India so far and is a run of river scheme on the river Subansiri. Located near North Lakhimpur on the border of Aruncachal Pradesh and Assam. Capacity: 2,000 MW NHPC (National Hydro Power Corporation) signed MoU with both State governments to generate hydroelectricity. Subansiri River originates in the Tibet Plateau and enters India through Miri hills in Arunachal Pradesh. Subansiri is a right bank tributary of Brahmaputra. | <ul style="list-style-type: none"> Left bank tributaries Brahmaputra: Bibang, Lohit and Dhansiri. Right bank tributaries Brahmaputra: Kamneng, Manas and Teesta. Koyna HEP of 1960 MW is the second largest one. Share of hydropower in the total capacity has declined from 50.36% in the 1960s to around 13% in 2018-19. NHPC - is a Mini Ratna Category-I Enterprise of the Central Government. |
| Port Velho City (Figure 6) | <ul style="list-style-type: none"> The capital city of Rondonia state of Brazil, located at the upper Amazon River basin. It is on the eastern shore of the Madeira River, one of the main tributaries of the Amazon River. Porto Velho's airport had to be closed as the Amazon forest fire raged right up against its perimeter. | <ul style="list-style-type: none"> Amazon river is largest river in the world. Amazon river - Source is Mantaro river in Peru, Atlantic Ocean is the Mouth. Countries of Amazon basin are Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela. |
| Bonavista Bay (Figure 7) | <ul style="list-style-type: none"> Located on the northeast coast of the island of Newfoundland in the province of Newfoundland and Labrador in Canada. It opens directly onto the Atlantic Ocean. The bay is demarcated by Cape Freels to the north and Cape Bonavista (eastern limit of the Bonavista Peninsula) to the south. | <ul style="list-style-type: none"> A bay is a recessed, coastal body of water that directly connects to a larger main body of water. Newfoundland Island – one of the major fishing zones as cold Labrador current meets with warm Gulf stream. Island blocks the mouth of the Saint Lawrence River, creating the Gulf of Saint Lawrence, the world's largest estuary. |
| Gandhamardhan Hills (Figure 8) | <ul style="list-style-type: none"> Heavy rain triggered a major landslide near Harishankar Temple, situated on the southern slopes of the Gandhamardhan Hills in western Odisha. Hill is known for medicinal plants and Bauxite reserve. BSI has reported the existence of 220 plant species of medicinal | <ul style="list-style-type: none"> Source of two major tributaries of the river Mahanadi. Main occupation of local people - collect herbs and supply them to companies such as Dabur and Zandu. Tribes - Kondha and Gond Two ayurvedic colleges and hospitals on both side of |

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| | <p>value.</p> <ul style="list-style-type: none"> • Nrusinghanath Temple at northern slope of hill. | <p>Gandhamardan.</p> <ul style="list-style-type: none"> • Medicinal plants from Gandhamardan, as the epic Ramayana says, saved the life Laxman. |
| <p>Rice bowl of Karnataka</p> | <ul style="list-style-type: none"> • Koppal, Ballari and Raichur districts for growing top class rice known as rice bowl of Karnataka. • Rice varieties - Sona masuri, IR - 64, bapatla sona. • At crisis as water level in Tungabhadra dam sinks – Tungabhadra command area affected. | <ul style="list-style-type: none"> • It is in Hyderabad Karnataka (Art 371J) region. • Tungabhadra river – right tributary of Krishna. • Tungabhadra reservoir or Pampa Sagar. • Gangavati in Koppal district – rice bowl city of Karnataka. • 'Rice Bowl of India' is the state of Andhra Pradesh. • International rice research institute at Varanasi. • National Rice Research Institute at Cuttack, Odisha. • Hampi is situated on the banks of the Tungabhadra River in the eastern part of central Karnataka near the state border with Andhra Pradesh. |
| <p>Evapotranspiration</p> <p>Sum of evaporation and plant transpiration from the Earth's land and ocean surface to the atmosphere.</p> | <ul style="list-style-type: none"> • IIT Bombay team along with researchers from Pacific Northwest National Laboratory and Oak Ridge National Laboratory – developed land-surface model to understand linkages between irrigation and monsoon shift. • Land-surface processes including irrigation affect the heat fluxes and evapotranspiration. | <ul style="list-style-type: none"> • Potential evapo transpiration is a measure of the ability of the atmosphere to remove water from the surface through the processes of evaporation and transpiration assuming no control on water supply. • Actual evapo transpiration or AE is the quantity of water that is actually removed from a surface due to the processes of evaporation and transpiration. • It is a part of Hydrologic cycle (a gaseous cycle). |

Figures and Maps



Figure

1

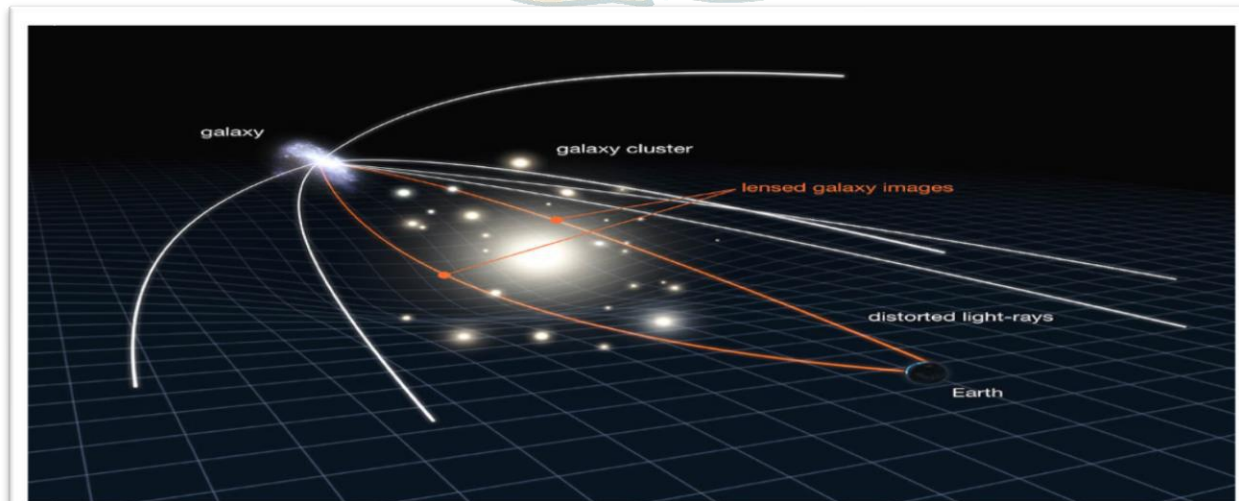


Figure 2

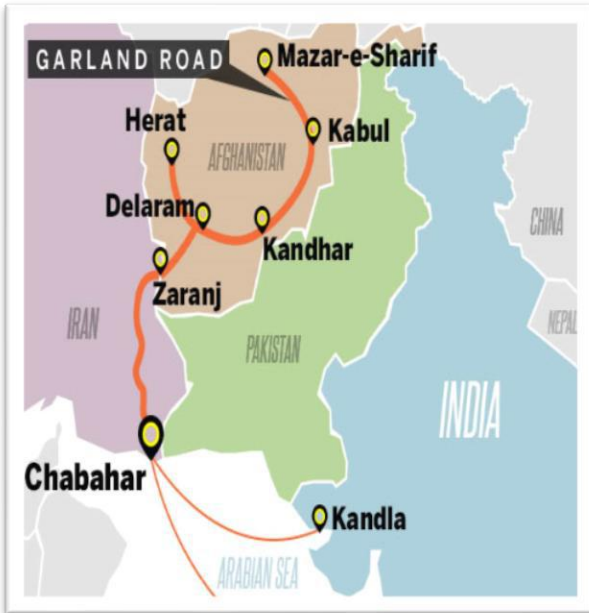


Figure 3



Figure 4



Figure 5

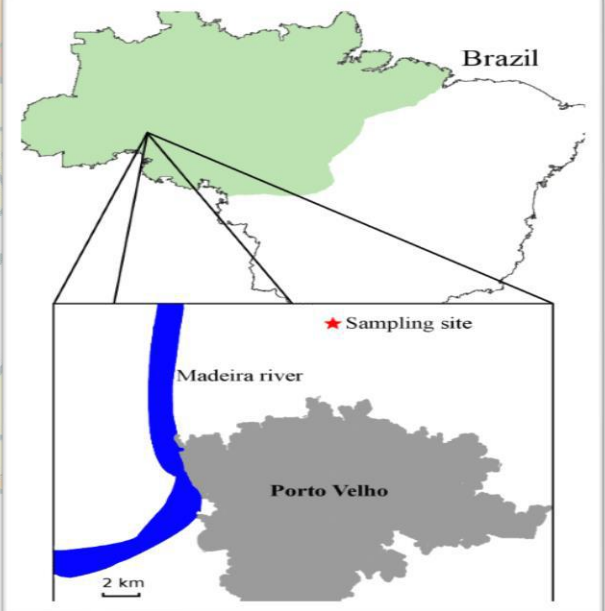


Figure 6



Figure 7

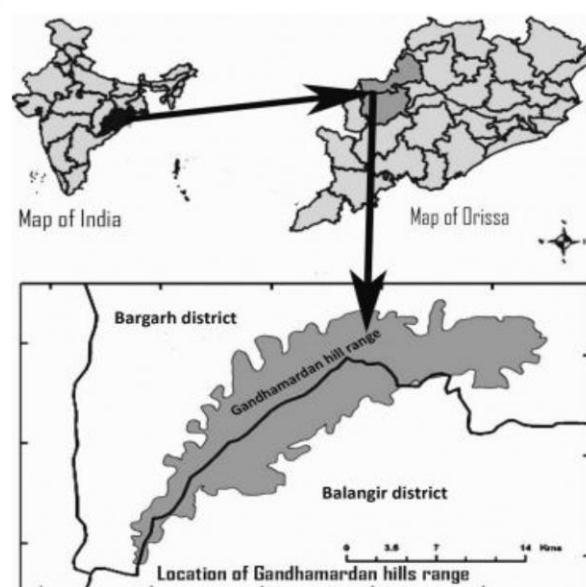


Figure 8

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