



SIVARAJAVEL IAS ACADEMY
FOUNDER - DIRECTOR OF **SMART LEADERS IAS**

the **CATALYST**

A Monthly Publication

OCTOBER 2022

**NOBEL PRIZE FOR THE DISCOVERY OF
DENISOVANS**



OCTOBER 2022

The CATALYST

DIRECTOR: S. SIVARAJAVEL

EDITOR: P. Mohan

SUB-EDITOR: Manivannan.S

EDITORIAL TEAM:

J.J. Deepak, S. Infency,
N. Shanmuga Priya,
M.Ravimuthu, RajanSurya.M

DESIGNER: Thomas Kalaivanan

COVER DESIGN: P.Mohan

Sivarajavel IAS Academy 's



Visit us at

🌐 : www.sivarajavelias.com

🔗 : <https://t.me/thecatalystsr>

📺 : <https://www.youtube.com/c/SivarajavelIASAcademy>

HEAD OFFICE

No.97, AF Block, Shanthi Colony, 12th Main Road,
Anna nagar West, Chennai – 600 040

Ph: 9626364444

TIRUNELVELI

No.106B, 3rd floor, Gilgal Complex, VOC ground opposite,
Palayamkottai - 627 002.

Ph: 9626252500

TRICHY

No.143, 4th Floor, Lakshmi Complex, Salai Road,
Thillai Nagar, Trichy - 620 018.

Ph: 9751500300 / 9786500300

The CATALYST is a monthly magazine for current affairs which tries to give aspirants an in-depth comprehension of certain topics which appeared in different sources over the month. The Magazine has been designed in such a way that the reading experience is enriching and insightful for the readers.

The contents have been grouped into a thematic structure to help aspirants focus on the overall GS syllabus.

Section I contains theme based Current affairs Analysis:

- I. Within the Sub themes first few topics will be Prelims oriented followed by indepth coverage of Mains Topics.
- II. A Section with an Essay Topic is also added.
- III. The last section will have Questions for practice*.
- IV. Fact Sheet and Quotes have also been provided

**New sections will be added or removed based on the new updates we include in the forthcoming issues.*

Information contained in this work has been obtained by sources believed to be reliable. We do not guarantee the accuracy or completeness of any information published herein, and neither Sivarajavel IAS Academy nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information.



SIVARAJAVEL IAS ACADEMY
FOUNDER - DIRECTOR OF **SMART LEADERS IAS**

the **CATALYST**

From the Editor's Desk

Dear Readers,

"Smile is the chosen vehicle of all ambiguities". This UPSC Essay - A quote by Herman Melville has a profound meaning which upon reflection will draw us to a surer path of courage. Have you ever chosen smile as your companion when something unexpected occurs, when life leads to paths unknown, when the burden you carry is overpowering, or when you fail miserably. Not many have the courage to wear a smile always. Remember that to overcome some setbacks we need not always strive but rather laugh the problem away.

There was a point in life where I was feeling embarrassed to even accidentally fall before all. I was raging inside when others were laughing. Someone falling isn't funny I used to think. I was disturbed at the indifference of others. But there was a realisation upon me that some petty ego was stopping me to accept the laughter of others. Since then, I used to always smile whenever I tripped. I did not feel bad or cloak myself with self pity. It brought a deep sense of calm within. Smile is really powerful dear Friends. Learn to wear one always.

I appreciate Ms. Ram Sindhiya.C to have chosen this difficult topic to write an essay. In this OCTOBER Issue (From Oct 1 to Oct 30, 2022, Current Affairs), we have covered a range of topics with special emphasis on **Doctrine of Pleasure, Lifestyle for Environment - LiFE, List of Nobel Prize winners, Inflation and Climate change etc**

We are constantly motivated by the reception given by our dear readers. We aspire to enrich the forthcoming issues. All feedback is welcome and suggestions to improve the magazine can be sent to sivarajaveliasacademy@gmail.com.

Sincerely,
P.Mohan

CONTENTS

POLITY AND GOVERNANCE

LEGAL RIGHTS TO NON-HUMANS	7
BENCHES OF SUPREME COURT	W
50TH CHIEF JUSTICE OF INDIA	9
ANTI-SUPERSTITION LAWS IN INDIA	10
NATIONAL CREDIT FRAMEWORK	11
DOCTRINE OF PLEASURE	13

INTERNATIONAL RELATIONS

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE	16
INTERPOL NOTICES	16
WOLF WARRIOR DIPLOMACY	18
NIHONSHU OR JAPANESE SAKE	18
PAKISTAN OUT OF FATF 'GREY LIST'	19
ALLEGATIONS AGAINST GOOGLE BY NBDA	21
NOPEC BILL	21

NOBEL PRIZES 2022 23

SOCIETY AND SOCIAL JUSTICE

"PROFESSORS OF PRACTICE" – AN INITIATIVE OF UGC	24
GLOBAL HUNGER INDEX (GHI), 2022	24
FIRST-EVER FUNGAL PRIORITY PATHOGEN LIST	25
MAKING MENTAL HEALTH FOR ALL A GLOBAL PRIORITY	26
WORLD FOOD DAY: "LEAVE NO ONE BEHIND"	27

ECONOMIC DEVELOPMENT AND AGRICULTURE

RBI'S SUPTECH APP DAKSH	31
CNG TERMINAL	31
INTERNAL OMBUDSMAN MECHANISM FOR CREDIT INFORMATION COMPANIES	33
LEADS REPORT 2022	34
SCIENCES 2022	36
K.G.F (KOLAR GOLD FIELDS)	38
ONE NATION, ONE FERTILISER' SCHEME	38
KALANAMAK RICE	39
DIGITAL BANKING UNITS	40
CHINA'S TOTAL TRADE SURPLUS WITH INDIA 'SURPASSES \$1 TRILLION'	41

RAISING INTEREST RATES	42
CRISIS IN COFFEE INDUSTRY	44
INFLATION AND CLIMATE CHANGE	46
ROLE OF WOMEN IN LIVESTOCK SECTOR	47

GEOGRAPHY, ENVIRONMENT AND BIODIVERSITY

ACHIEVING GREEN STEEL	50
CORBETT TIGER RESERVE	50
ARCTIC ICE MELT AND ACIDIFICATION	51
GRADED ACTION RESPONSE PLAN (GRAP)	53
GREAT NICOBAR MEGA PROJECT	54
LIVING PLANET REPORT 2022	55
SLENDER LORIS SANCTUARY	56
SOIL CARBON STABILITY	57
WORLD ENERGY OUTLOOK 2022	58
VULTURES IN TAMIL NADU	59
PLACES IN NEWS: KHANGKHUI MANGSOR CAVE	60
LIFESTYLE FOR ENVIRONMENT - LIFE	61

SCIENCE AND TECHNOLOGY

HYDROGEN VALLEY PLATFORM	64
INDIA'S SPACE ECOSYSTEM	64
RNA ORIGAMI	65
A NEW LUNAR MAP IN SODIUM	65
OVERHAUSER MAGNETOMETERS	66
MASTITIS	67
GM MUSTARD	68
LVM 3 M2 MISSION	70
SATELLITE PHONES	71
HERBICIDE GLYPHOSATE	71
EFFECTS OF NEURAL PRECURSOR CELLS' ABNORMAL MIGRATION	72
NAVIC	73
DILIP MAHALANABIS	74
CHALLENGES OF LITHIUM ION BATTERIES	75

SECURITY

CHIEF OF DEFENCE STAFF	78
PRACHAND	78
KAMIKAZE DRONES	79
DIRTY BOMB ATTACK	79
CONTOURS AND DIMENSIONS OF CYBER ATTACKS	81

HISTORY ART AND CULTURE

UNESCO LAUNCHES LIST

DOCUMENTING 50 ICONIC INDIAN

HERITAGE TEXTILES 85

100 YEARS OF SAKA PANJA SAHIB 85

MAHAKALESHWAR TEMPLE 86

HATTI COMMUNITY 86

NATIONAL MARITIME HERITAGE

COMPLEX AT LOTHAL 87

MIYA MUSEUM 88

ESSAY/FEATURE 89

SMILE IS THE CHOSEN VEHICLE OF ALL
AMBIGUITIES

PRACTICE QUESTIONS 94

FACT SHEET

GENERAL STUDIES – I 105

GENERAL STUDIES – II 106

GENERAL STUDIES-III 108

TERMS IN NEWS 112

VALUE ADDITION

RELEVANT QUOTES 113

POLITY AND GOVERNANCE

What's Inside?



सत्यमेव जयते

1. LEGAL RIGHTS TO NON-HUMANS
2. BENCHES OF SUPREME COURT
3. 50TH CHIEF JUSTICE OF INDIA
4. ANTI-SUPERSTITION LAWS IN INDIA
5. NATIONAL CREDIT FRAMEWORK

DOCTRINE OF PLEASURE

GS-II Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure, devolution of powers

Pg 13

LEGAL RIGHTS TO NON-HUMANS

Consultancy group Jigsaw Foresight and The Law Society of England and Wales, in their report published in August 2022 titled 'Law in the Emerging Bio Age', have proposed giving legal rights to plants, animals, and non-living entities is crucial to building meaningful human-environment relationships in the future. Experts have said changes in legal frameworks could help.

The report focused on rapid developments in biotechnology and the need to understand its ethical consequences on humanity's relationship with the environment.

What is the "bio age"?

As per the report, the increased integration of biotechnology in human life will bring in the bio age. Integration of life sciences with modern technology through the production of genetically modified organisms (GMOs), engineering of genes to enhance disease resistance, gene editing, and more, indicate that biotechnology is most likely to pervade our lives in the future.

It will mark the end of the digital Information Age and this era will require legal intervention to hold researchers accountable for the impact of their work on the environment.

This is where the question of nature as a "juristic person" or an entity recognized in law as a person, which otherwise is not, comes in. As the Law Society report argues, granting legal rights and protection to non-human systems – flora, fauna, rivers, ecosystems and landscapes – would recalibrate human-environment relationships and bring ethical conduct to the field.

Countries to recognize rights of nature

Ecuador: The first country in the world to recognise the rights of nature

The South American country of Ecuador, in 2008, approved a Constitution that grants tropical forests, islands, rivers and air, legal rights to "exist, flourish and evolve".

More recently, in April 2022 Ecuador became the first country to grant legal rights to individual wild animals. The judgment states: "wild species and their individuals have the right not to be hunted, fished, captured, collected, extracted, kept, retained, trafficked, marketed or exchanged."

Bolivia: Establishing the Law of Mother Earth

Bolivia granted all nature rights equal to that of humans in 2011. It established the Law of the Rights of Mother Earth, which redefined Mother Earth as "an indivisible community of all living systems and living organisms, interrelated, interdependent and complementary, which share a common destiny." It provided legal status to Mother Earth and all its components, which includes human beings, entitling them to inherent rights recognized by law.

This includes: the right to life and to exist; the right to continue vital cycles and processes free from human alteration; the right to pure water and clean air; the right to balance; and the right to pollution-free living.

New Zealand's Whanganui river: First in the world to be given legal status

The Maori people had been fighting for the river to be recognized as a living entity for about 160 years. The New Zealand parliament, on March 15, 2017, passed the Whanganui River Claims Settlement Bill, which granted legal personhood to river Whanganui and its surrounding ecosystem, in North Island. The river, revered by the Maori people, is represented in court proceedings by iwi – one of the members of the Maori tribe – and one from the Crown.

Where does India stand?

Article 51-A (g) of the Constitution of India lays down that it is the fundamental duty of every citizen to protect wildlife and have compassion for all living creatures. However, such duties are not enforceable by law.

The Uttarakhand High Court, on March 20, 2017, granted the river Ganga and its longest tributary Yamuna the legal right to be protected and not be harmed. The rivers were to be represented by Uttarakhand's chief secretary, advocate general, and the chief of the National Mission for Clean Ganga, a government body that oversees the conservation of river Ganga. While both rivers

are held sacred by Hindus, they are also highly polluted.

A compelling shift from competition to cooperation between humans and living systems for future survival is currently an underexplored area, with the question of how India is preparing for the "bio age" still remaining.

BENCHES OF SUPREME COURT

Why in news?

A Constitution Bench of the Supreme Court has unanimously held that a judgment delivered by a larger Bench will prevail over the decision of a smaller Bench, irrespective of the number of judges constituting the majority in the larger Bench.

About

The bench is used to refer to a group of judges as a collective whole. It is a tribunal or place where justice is administered. To appear before the full bench means to appear before the entire group of judges of the court.

It is well-known in law that the decision of a superior court will always be binding on a lower court and that the decision of a larger Bench will always hold force over a smaller Bench of the same court. This canon of law seeks to ensure that there is stability and consistency in the decisions of the court. This principle stems from the assumption that a Bench with more strength is more likely to arrive at a correct decision.

A vast majority of cases before the Supreme Court is heard and decided by a Bench of two judges (**Division Bench**) or three (**full Bench**).

It is a settled position that a Bench of equal strength cannot overrule or reconsider a decision of a coordinate Bench; it can, at best, doubt the correctness of it. Whenever there is doubt or conflict between decisions of co-equal Benches, it is referred to the Chief Justice of India and this is where larger Benches are constituted. The larger Benches examine the question or correctness of the decision and the majority opinion expressed by them becomes the verdict, which is binding

on the lower Benches.

A majority decision is treated as the ruling of the entire Bench, including the dissenting judges.

Issue with the number

This is where the problem originates. If the correctness of a law laid down unanimously by a five-judge Bench is doubted, could it be overruled by four judges of a seven-judge Bench? Could it be said that the four judges of the larger Bench arrived at the correct decision and not the five judges of the smaller Bench?

As even in a study, the one with the larger sample space (larger Bench) is assumed to reflect a correct outcome over a study with a smaller sample space. This is the underlying *raison d'être* for the Rule of Precedents.

However, a blanket adherence to the Doctrine of Precedents as enunciated by the Supreme Court can have serious consequences, as the correctness of a decision would become a game of numbers rather than reasons. The Supreme Court justified the binding nature of the larger Bench's view saying that this view was arrived at after deliberation by more judges

Benches around the world

Such an anomaly is usually avoided in the U.S. and in South Africa owing to the fact that any reconsideration of a precedent is a matter deliberated by the entire sitting strength of the court as opposed to division(s).

While both the U.K. and Australia follow a system similar to that of India, the entire act of 'reconsidering a precedent' is viewed as a delicate and grave judicial responsibility in these countries.

Rarely do precedents get re-decided more than once, unlike in India, in order to give quietus to litigation and in the limited occasion where a

decision is reopened, the only requirement is that it would be examined by a Bench of all 'available judges'.

50TH CHIEF JUSTICE OF INDIA

Why in news?

President Droupadi Murmu will administer the oath of office to the new (50th) Chief Justice of India, Justice D Y Chandrachud at Rashtrapati Bhawan on Wednesday. He will succeed Justice Uday Umesh Lalit who is retiring on 8th November 2022.

About

Article 124 - "Establishment and constitution of Supreme Court".

There shall be a Supreme Court of India consisting of a Chief Justice of India and, until Parliament by law prescribes a larger number, of not more than seven other Judges. It is mentioned in Article 124 that appointment by the President is to be done after consultation with judges of the Supreme Court, as the President may deem necessary.

.At present, the Supreme Court has a sanctioned strength of 34 judges. H. J. Kania was the first CJI. The trio of Justices Hima Kohli, Chief Justice of the Telangana High Court, and Bela Trivedi of Gujarat High Court and BV Nagarathna of Karnataka High Court will make it the largest appointment of women to the top court ever since its inception. In fact, the first woman judge in SC received appointment only in 1989. Justice M Fathima Beevi has been followed by seven judges, but instances are rare when the apex court has had more than one woman judge.

Article 217, which deals with the appointment of High Court judges, says the President should consult the CJI, Governor, and Chief Justice of the High Court concerned. Further, the tenure of a CJI is until they attain the age of 65 years, while High Court judges retire at 62 years.

Usually, the seniormost judge of the court after the chief justice (in terms of the years served) is recommended as the successor. This convention

was ignored by former Prime Minister Indira Gandhi, who appointed Justice AN Ray as CJI in 1973 over his seniors.

The seniority of the judge is the agreed-upon norm by the government's memorandum of procedure. The memorandum of procedure says that the Union Minister of Law, Justice and Company Affairs seeks the recommendation of the outgoing CJI for the appointment of the next CJI. After the collegium's recommendations are finalised and received from the CJI, the Law Minister will put up the recommendation to the Prime Minister who will advise the President on the matter of appointment.

Who can be a CJI?

Apart from being an Indian citizen, the person must

(a) have been for at least five years a Judge of a High Court or of two or more such Courts in succession or

(b) have been for at least ten years an advocate of a High Court or of two or more such Courts in succession, or

(c) be, in the opinion of the President, a distinguished jurist.

Article 124 (3) (c) provides for appointment of a distinguished jurist as Judge, Supreme Court of India. But the Constitution is silent about who is a distinguished jurist. One of the options which the Constitution envisages for appointment to the Supreme Court is of a distinguished jurist. But in 72 years, no jurist has been able to reach the apex court.

The draft Constitution did not contain the category of a distinguished jurist. It was added through an amendment proposed by late H.V.Kamath. The choice for the Supreme Court judges was limited to the Judges of the High Courts and the lawyers of the High Courts/Supreme

Court. The object of this little amendment was to open a wider field of choice for the President in the matter of appointment of judges to the Supreme Court.

this amendment was based on the provision relating to the qualifications for Judges of the International Court of Justice at the Hague.

While Article 217 (2) details the qualification for being appointed as a High Court judge, sub-clause (c) was added by the 42nd Constitutional Amendment (1976), and made provision for appointment of a distinguished jurist to the High Courts. Unfortunately, this addition was omitted

in the 44th Amendment (1978).

Jurist vs. Lawyer vs. Advocate

The jurist is a legal scholar who studies, analyzes, and comments on the law. Indeed, their entire work can be done inside a law library. The term 'lawyer' is very general in nature and used to designate anyone in the legal profession including a solicitor, barrister and attorneys. An advocate, on the other hand, is a qualified individual who represents the client in the court of law pleading for compensation or release depending on the nature of the case

ANTI-SUPERSTITION LAWS IN INDIA

The brutal murders of two women as part of "ritualistic human sacrifices" in the Pathanamthitta district of Kerala have left the country in shock. Chilling details of the killings have sparked a debate about the prevalence of superstitious beliefs, black magic and sorcery in Kerala. In the absence of a comprehensive law to counter such acts, the call for a strict anti-superstition law has grown louder.

Cases related to Anti-Superstition

As per the 2021 report of the National Crime Records Bureau (NCRB), six deaths were linked to human sacrifices, while witchcraft was the motive for 68 killings.

The maximum number of witchcraft cases were reported from Chhattisgarh (20), followed by Madhya Pradesh (18) and Telangana (11).

Kerala saw two cases of human sacrifice. In 2020, India saw 88 deaths due to witchcraft and 11 died as part of 'human sacrifices', the NCRB report states.

Laws in Indian states against Anti-Superstition

In India, **there is no central law** that exclusively deals with crimes related to witchcraft, superstition, or occult-inspired activities. In the absence of a nationwide legislation, a few States have enacted laws to counter witchcraft and protect women from deadly 'witch-hunting'.

Bihar was the first State to enact a law to prevent witchcraft, identification of a woman as a witch and "eliminate torture, humiliation and killing of women." The Prevention of Witch (Daain) Practices Act came into force in October 1999.

A similar law was passed in **Jharkhand** in 2001 — the Prevention of Witch (Daain) Practices Act.

Even though **Chhattisgarh** is one of the worst-affected States in terms of witchcraft-related crimes, the State enacted the Chhattisgarh Tonahi (witch) Pratadna Nivaran Act only in 2005. As per the law, a person convicted for identifying someone as a witch can be sentenced to up to three years of rigorous imprisonment with a fine.

Following the directions of the Odisha High Court to frame a law to deal with rising cases of witch-hunting in the State, the Odisha Prevention of Witch-Hunting Bill was passed by the Assembly in 2013. The bill provides penalties for a witch doctor, or a person claiming to be a black magician.

In **Maharashtra**, the Maharashtra Prevention and Eradication of Human Sacrifice and other Inhuman, Evil and Aghori Practices and Black Magic Act, 2013 was passed after the murder of anti-superstition activist Dr. Narendra Dabholkar.

Rajasthan enacted the Rajasthan Prevention of Witch-Hunting Act in 2015 to "provide for effective measures to tackle the menace of witch-hunting and prevent the practice of witchcraft."

The **Assam** Witch Hunting (Prohibition, Prevention and Protection) Act, 2015, which received the President's assent in 2018, prohibits witch hunting completely. "No person shall identify, call, stigmatise, defame or accuse any other person as witch by words, or by signs or

indications or by conducts or actions or any other manner or instigate, aid or abet such an act or commit witch hunting," the law states.

The latest law was passed in **Karnataka** where the Karnataka Prevention and Eradication of Inhuman Evil Practices and Black Magic Act, 2017 came into effect in January 2020.

NATIONAL CREDIT FRAMEWORK

In a bid to integrate academic and vocational or skill-based education, Union Education Minister on October 19 unveiled the draft report on the National Credits Framework (NCrF) and invited nationwide public consultations and suggestions on the proposed educational credits system.

NCrF would be a game changer by opening numerous options for further progression of students and inter-mingling of school and higher education with vocational education and experiential learning, thus mainstreaming skilling and vocational education.

The minister appealed to all educational and technical institutions and regulatory authorities to host public consultations on the NCrF on their website to seek suggestions from citizens, who can also send suggestions to the Ministry till November 30.

What is the National Credits Framework?

Academic credits are a recognition that a student/learner has completed a course or unit of learning that corresponds to a qualification at a given level.

Credits quantify the outcomes of learning.

In a credit-based education system, a stipulated amount of credits based either on the number of hours of learning or student workload are required to progress from one level to another, subject to assessments such as examinations.

For instance, 20 credits are required to complete a semester along with passing exams.

While there is currently no established credit mechanism for regular school education in India,

there is a credit system under the open schooling system and a Choice Based Credit System (CBCS) for higher education.

In order to "seamlessly integrate" the credits earned through school education, higher education and vocational & skill education, the Centre has drafted the National Credits Framework (NCrF) as an "inclusive umbrella Framework" under the National Education Policy (NEP) 2020.

The Credits Framework also aims to democratise education by enabling learners to earn credits not just through academic education or classroom learning but through co-curriculars, extracurriculars, vocational learning, online or distance learning, recognition of prior learning, and informal learning.

The draft document states that the total learning hours of the student could be creditised and no form of learning would remain unaccounted for; it may include:

1. classroom teaching/ learning
2. laboratory work/ innovation labs/ class projects/ assignments/ tutorials
3. sports and games, yoga, physical activities
4. performing arts, music, handicraft work
5. social work, NCC, bag less days
6. examinations/ class tests/ quizzes/ assessments
7. vocational education, training and skilling
8. minor/ major project work/ field visits in skill education
9. on the job training (OJT)/ internship/ apprenticeship/ experiential learning

including relevant experience and professional levels acquired

What is the importance of the NCrF?

The NCrF aims to blur the lines or remove the “hard separation” between curricular, extracurricular, or co-curricular, among arts, commerce, and sciences, or between vocational or academic streams.

The draft states that learning is a process that takes into account multiple dimensions of “cognitive, emotional, social and physical learning” and for holistic learning, students should be allowed to “choose subjects according to their interests irrespective of the nature of the course (academic or vocational)”.

For this purpose, it urges educational institutions or regulators to form new curricula that allow for actual choice-based multidisciplinary learning, where a student has the ability to design their own course structure.

For example, a learner in the science stream has the option of taking multiple humanities electives or courses and earning an equal number of credits.

One of the main objectives of the NCrF is to bring skilling and vocational learning to the mainstream, by creating equivalence of a vocational education and skilling program with

general education programs with or without any additional academic learning.

There are occasions when learners pursue alternative schooling, home-schooling, or online schooling or have to give up their education mid-way for various reasons.

The national credit framework will act as an enabler in this regard and regulators shall be required to define the entry and exit criteria of the programs being offered by them.

For example, a 5th-grade student with total accumulated credit points of 200 over the years and undertaking certain bridge courses is eligible to appear for 8th class exams.

Once the student clears it, he will be counted as a grade 8th pass and can continue with 9th grade onward through mainstream education.

The NCrF system also supports educational acceleration for students with gifted learning abilities and recognition of prior learning for the workforce that has acquired knowledge and skills informally through traditional family inheritance, work experience or other methods.

DOCTRINE OF PLEASURE

GS-II Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure, devolution of powers

Why in news

Kerala Governor and the State government have major differences over multiple issues.

The latest controversy has arisen after he sought the resignation of several vice-chancellors following a Supreme Court judgment setting aside the appointment of the Vice-Chancellor of a technology university.

As a fallout of comments made by the State's Finance Minister, the Governor has also sought his dismissal from his Cabinet, declaring that he has withdrawn the pleasure of having him in the Council of Ministers.

What is the concept?

The pleasure doctrine is a concept derived from English common law, under which the crown can dispense with the services of anyone in its employ at any time.

In India, Article 310 of the Constitution says every person in the defence or civil service of the Union holds office during the pleasure of the President, and every member of the civil service in the States holds office during the pleasure of the Governor.

However, Article 311 imposes restrictions on the removal of a civil servant. It

provides for civil servants being given a reasonable opportunity for a hearing on the charges against them.

There is also a provision to dispense with the inquiry if it is not practicable to hold one, or if it is not expedient to do so in the interest of national security.

In practical terms, the pleasure of the President referred to here is that of the Union government, and the Governor's pleasure is that of the State government.

Under Article 164, the Chief Minister is appointed by the Governor; and the other Ministers are appointed by the Governor on the CM's advice. It adds that Ministers hold office during the pleasure of the Governor.

In a constitutional scheme in which they are appointed solely on the CM's advice, the 'pleasure' referred to is also taken to mean the right of the Chief Minister to dismiss a Minister, and not that of the Governor.

In short, the Governor of an Indian State cannot remove a Minister on his own.

Doctrine Of Pleasure in India:

Doctrine of Pleasure under

the Indian Constitution is also based on the same policy considerations as it existed under the common law in England. Though doctrine of pleasure is accepted in India as it has developed in England, it has not been completely accepted in India.

This Doctrine of Pleasure is embodied in India in Article 310(1). It reads as follows:

Tenure of office of persons serving the Union or a State.

Except as expressly provided by this Constitution, every person who is a member of a defence service or of a civil service of the Union or of an all India.

service or holds any post connected with defence or any civil post under the Union, holds office during the pleasure of the President, and every person.

who is a member of a civil service of a State or holds any civil post under a State holds office during the pleasure of the Governor of the State.

This is the general rule which operates "except as expressly provided by the Constitution." This means that the Doctrine is subject to constitutional limitations.

Therefore, when there is a specific provision in the Constitution giving to servant tenure different from that provided in Article 310, then that servant

would be excluded from the operation of the pleasure doctrine.

The following are expressly excluded by the Constitution from the rule of Pleasure.

They are:

1. Supreme Court Judges Article 124,
2. Auditor General (Article 148)
3. High Court Judges (Article 217, 218)
4. A member of Public Service Commission (Article 317)
5. The Chief Election

Commissioner.

Though doctrine of pleasure is accepted in India as it has developed in England, it has not been completely accepted in India.

It is subject to the provisions of Article 311 which provides for procedural safeguards for civil servants.



INTERNATIONAL RELATIONS



What's Inside?

1. INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE
2. INTERPOL NOTICES
3. WOLF WARRIOR DIPLOMACY
4. NIHONSHU OR JAPANESE SAKE
5. PAKISTAN OUT OF FATF 'GREY LIST'
6. ALLEGATIONS AGAINST GOOGLE BY NBDA
7. NOPEC BILL

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Why in news?

The Ninth Session of the Governing Body (GB9) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) had been hosted in India

About

The International Treaty on Plant Genetic Resources for Food and Agriculture was adopted by the Thirty-First Session of the Conference of the Food and Agriculture Organisation of the United Nations on 3 November 2001.

The legally binding International Treaty on Plant Genetic Resources for Food and Agriculture entered into force on 29 June 2004.

There are 149 contracting parties to the Plant Treaty (147 Member States and 1 intergovernmental organization, the European Union). India is a party too.

Aims of the treaty

recognizing the enormous contribution of farmers to the diversity of crops that feed the world;

establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials;

ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have been originated.

CGIAR Genebanks

Gene banks are a type of biorepository that

preserves genetic material. For plants, this is done by in vitro storage, freezing cuttings from the plant, or stocking the seeds (e.g. in a seedbank). For animals, this is done by the freezing of sperm and eggs in zoological freezers until further need.

In plants, it is possible to unfreeze the material and propagate it. However, in animals, a living female is required for artificial insemination. While it is often difficult to use frozen animal sperm and eggs, there are many examples of it being done successfully.

In an effort to conserve agricultural biodiversity, gene banks are used to store and conserve the plant genetic resources of major crop plants and their crop wild relatives.

Consultative Group on International Agricultural Research (CGIAR) maintains genebanks that safeguard a unique global resource of crop and tree diversity and respond to thousands of requests for this diversity every year from users in more than 100 countries worldwide. The goal of the CGIAR Genebank Platform was to conserve these collections – and make their diversity available to farmers, breeders and researchers – in a manner that is cost-efficient, secure, reliable, sustainable over the long-term and in compliance the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty).

CGIAR is a global partnership that unites international organizations engaged in research about food security.

INTERPOL NOTICES

Why in News?

The Interpol has rejected a second request by India to issue a Red Corner Notice against Gurpatwant Singh Pannun, the Canada-based founder and legal advisor of the pro-Khalistan outfit Sikhs for Justice (SFJ), whom the Union Ministry of Home Affairs has listed as a “terrorist”

under the Unlawful Activities (Prevention) Act (UAPA).

About Interpol

The Interpol, or International Criminal Police Organization, is an inter-governmental organisation comprising 195 member countries,

which helps police forces in all these countries to better coordinate their actions.

The organisation enables member countries to share and access data on crimes and criminals, and offers a range of technical and operational support.

The Interpol general secretariat coordinates the organisation's day-to-day activities. It is run by a secretary general with its headquarters in Lyon, France, with a global complex for innovation in Singapore, and several satellite offices in different regions.

Interpol has a **National Central Bureau (NCB)** in each member country, which is the central point of contact for both the general secretariat and the other NCBs around the world. Each NCB is run by police officials of that country, and usually sits in the government ministry responsible for policing. (Home Ministry in India.)

Interpol manages 19 police databases with information on crimes and criminals (from names and fingerprints to stolen passports), accessible in real-time to countries. It also offers investigative support such as forensics, analysis, and assistance in locating fugitives around the world.

What are Interpol Notices?

Its notices are international requests for cooperation or alerts allowing police in member countries to share critical crime-related information. Notices are issued by the General Secretariat at the request of a member country's INTERPOL National Central Bureau and are made available for all our member countries to consult in our Notices database.

Notices can also be used by the United Nations, International Criminal Tribunals and

the International Criminal Court to seek persons wanted for committing crimes within their jurisdiction, notably genocide, war crimes, and crimes against humanity.



What is a Red Notice?

Criminals or suspects often flee to other countries to evade facing justice. A Red Corner Notice, or Red Notice (RN) alerts police forces across the world about fugitives who are wanted internationally.

Interpol says “Red Notices are issued for fugitives wanted either for prosecution or to serve a sentence. A Red Notice is a request to law enforcement worldwide to locate and provisionally arrest a person pending extradition, surrender, or similar legal action.”

RNs contain information that helps identify wanted persons, such as their names, dates of birth, nationality, and physical attributes such as the colour of their hair and eyes, as well as pictures and biometric data such as fingerprints, if they are available. RNs also mention the crime(s) they are wanted for.

An RN is published by Interpol at the request of a member country. The fugitives may be wanted for prosecution or to serve a sentence. The country issuing the request need not be the home country of the fugitive; Interpol acts on the

request of a country where the alleged crime has been committed.

These RNs are restricted for use by law enforcement authorities only. An RN is published

on Interpol's website only in cases where the help of the public is needed to locate an individual, or if those individuals pose a threat to public safety.

WOLF WARRIOR DIPLOMACY

Why in news?

As China's position has undergone a change in world affairs over the years, Xi has advocated for a more intensive approach towards handling issues both domestically and internationally. The "wolf warrior" style of Chinese diplomacy particularly attracted attention.

About

A term that gained popularity, especially after Xi became President, "wolf warrior diplomacy" is a tactic for the Chinese government to extend its ideology beyond China and counter the West and defend itself. It is an unofficial term for the more aggressive and confrontational style of communication that Chinese diplomats have taken to in the last decade.

Need for Wolf Warrior Diplomacy

This change did not occur suddenly. Since 2010, when China's GDP overtook Japan's as the world's second largest, the Chinese have become more confident and China's foreign policy has become more assertive, gradually departing from Deng Xiaoping's taoguang yanghui dictum.

"Taoguang yanghui," means "keep a low

profile and bide your time." Deng also said, "By no means should China take the lead

As the Communist Party continues to promote "four confidences"— in our chosen path, in our political system, in our guiding theories, and in our culture — nationalism has been on the rise. "Wolf-warrior diplomacy" is an extension of soaring nationalism at home.

"Wolf-warrior diplomacy" is evidenced not only in combative words but aggressive actions. For example, in early April, a Chinese coastguard ship allegedly sank a Vietnamese fishing trawler near the Paracel Islands.



NIHONSHU OR JAPANESE SAKE

Why in News?

The Embassy of Japan, New Delhi, has filed an application seeking a Geographical Indication (GI) tag for nihonshu/Japanese sake, an alcoholic beverage.

This is the first time a product from Japan has filed for a tag at the Geographical Indication Registry in Chennai

About Nihonshu

It is regarded as a special and valuable beverage

made from fermenting rice.

People traditionally drink nihonshu on special occasions, such as festivals, weddings or funerals, but it is also consumed on a daily basis. Thus, it is an integral part of the lifestyle and culture in Japan.

The sake market (almost all are nihonshu) is the second largest brewed liquor (such as beer) market in Japan.

About GI Tag

Geographical Indication (GI) is an indication used to identify goods having special characteristics originating from a definite geographical territory.

The Geographical Indications of Goods (Registration and Protection) Act, 1999 seeks to provide for the registration and better protection of geographical indications relating to goods in India.

It is governed and directed by the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

It is primarily an agricultural, natural or a manufactured product (handicrafts and industrial goods).

This tag is valid for a period of 10 years following which it can be renewed.

Significance

Once a product gets this tag, any person or company cannot sell a similar item under that name. GI registration of a product provides it legal protection and prevention against unauthorized use by others.

GI tag helps in promoting the exports of the product. It also provides comfort to customers about the authenticity of that product.



PAKISTAN OUT OF FATF 'GREY LIST'

Why in News?

Recently, the Financial Action Task Force (FATF), the international watchdog on terror financing and money laundering, has removed Pakistan from the list of countries under “increased monitoring” (Grey List).

India's other neighbor on the grey list, Myanmar, was moved to the “black list” due to

actions by the military leadership after the 2021 coup.

About

FATF maintains a “grey list” of countries that it watches closely. In essence, these are countries that have, in the assessment of the FATF, failed to prevent international money laundering and

terrorist financing, and are, therefore, on a global watchlist for bad behaviour.

Countries on the list are The Philippines, Syria, Yemen, the United Arab Emirates, Uganda, Morocco, Jamaica, Cambodia, Burkina Faso, and South Sudan, and the tax havens of Barbados, Cayman Islands, and Panama.

What are countries on the grey list expected to do?

FATF calls these countries “jurisdictions under increased monitoring”. Basically, these countries have to comply with certain conditions laid down by the FATEF, failing which they run the risk of being “blacklisted” by the watchdog. Their compliance is periodically reviewed by the FATF.

Why was Pakistan taken off the grey list?

FATF has said that Pakistan had completed two action plans comprising a 34-point tasklist in the period since 2018. Based on this progress, FATF has taken Pakistan off the Grey list.

Implications of Removing Pakistan

from the List

For Pakistan - Being removed from the grey list, Pakistan has essentially received a reputational boost and a clean bill of health from the international community on terrorist financing. Considering the current situation of the country’s economy, it is essentially in desperate need of investments from other countries. Removal from the grey list will definitely do the deed in this context.

For India - While four years of greylisting has scaled-down the cross-border terror, the occasional incidents of terrorists infiltration and the regular sightings of drones bearing weapon-payloads along the border suggest that Pakistan’s terrorism infrastructure directed against India is presently in a recessed mode but far from being dismantled comprehensively.

India will have to continue mustering all available instruments and options to deny Pakistan operating space to wield the terror-weapon.

India’s interests lie in playing the long game in these diplomatic battles with the goal of making the region more stable and secure.

Financial Action Task Force	
FATF is the global money laundering and terrorist financing watchdog. It also aims to counter the financing of proliferation of weapons of mass destruction. It was set up in 1989 out of a G-7 meeting of developed nations in Paris.	India joined with ‘observer’ status in 2006 and became a full member of FATF in 2010. India is also a member of its regional partners, the Asia Pacific Group (APG) and the Eurasian Group (EAG).
Its Secretariat is located at the Organisation for Economic Cooperation and Development (OECD) headquarters in Paris.	Those are two types of lists that FATF maintains.
As of today, it is a 39-member body with 37 countries and two regional organizations: the European Commission, and the Gulf Cooperation Council. Indonesia is the only observer country of FATEF.	<ul style="list-style-type: none">A blacklist is given to the countries that FATF considers uncooperative tax havens. These countries are known as Non-Cooperative Countries or Territories (NCCTs).A Grey list is a warning given to the country that it might come on the Black list. But even when a country comes under a grey list it faces many problems like problems in getting loans Economic sanctions Reduction in trade.

ALLEGATIONS AGAINST GOOGLE BY NBDA

Why in News?

Recently, the News Broadcasters and Digital Association (NBDA) approached the Competition Commission of India (CCI) against search-engine operator Google, alleging that the latter had deprived them of their justifiable revenue acquired from news dissemination on the tech-giant's platforms.

How search engines are the first port of call for information online?

As per the NBDA, Google's search engine commands a 94% market share in the country.

The traditional newspaper industry in India has sustained itself on a business model wherein advertising accounts for two-thirds of its total revenue. With online proliferation, there is an increased reliance of news publishers on digital ad revenues, and in turn, tech-based companies.

More than half of the total traffic on news websites is routed through Google. The search engine determines which news websites would be prioritised in search queries. This has made search engines the first port of call for information online.

What are the key allegations against Google?

Google has been found to be dominant in both markets of relevance to digital publishers. A news website sells advertising spaces on its platform through ad exchanges. Google also operates a platform that manages a publisher's sale of online

ads and tools to purchase display ad space.

But, Google has not compensated news publishers for their contribution to (Google's various) platforms and has engaged in practices to bolster its monopoly in the space. The website publishers receive only 51% of the advertisement revenue.

On the other hand, Google says that the revenues accrued are spent towards running "a complex and evolving business" such as maintaining data centres, further technological investments, enabling innovations that increase publisher revenue and maximising advertiser return on investment.

How do other countries view and manage Google and News publishers?

The European Publishers Council (EPC) filed an anti-trust complaint against Google with the European Commission. The EPC also complained about Google's "ad tech stranglehold" over press publishers.

Australia introduced the 'Media Bargaining Code' to address the imbalance. The code requires news outlets to negotiate commercial deals individually or collectively with Facebook and Google with violations calling for civil penalties of up to \$10 million. The tech firms would also have to give media outlets notice when they change search algorithms that may affect publishers' content.

NOPEC BILL

Why in news?

Recently, the No Oil Producing and Exporting Cartels (NOPEC) bill was passed by a Senate committee which intends to protect U.S. consumers and businesses from engineered oil spikes.

About NOPEC bill

Purpose of the Bill

The bipartisan NOPEC bill would tweak U.S. antitrust law to revoke the sovereign immunity that has protected OPEC+ members and their national oil companies from lawsuits.

If signed into law, the U.S. attorney general would gain the option to sue the oil cartel or its members, such as Saudi Arabia, in federal court.

Issue in the Bill

It is unclear exactly how a federal court could enforce judicial antitrust decisions against a foreign nation.

The United States could also face criticism for its attempts to manipulate markets by its planned release of 165 million barrels of oil from the emergency oil reserve between May and November.

NOPEC would create further instability in the marketplace and exacerbate existing challenges in international commerce.

NOPEC legislation could ultimately lead to overproduction by OPEC, bringing prices so

low that U.S. energy companies have difficulty boosting output. Saudi Arabia and other OPEC countries have some of the world's cheapest and easiest reserves to produce.

The Bill could lead to unintended blowback, including the possibility that other countries could take similar action on the United States for withholding agricultural output to support domestic farming.

Doing so would undermine the dollar's status as the world's main reserve currency, reduce Washington's clout in global trade, and weaken its ability to enforce sanctions on nation-states.

THE NOBEL PRIZES, 2022

Nobel prizes are awarded to those who shall have conferred the greatest benefit to humankind.

As per Alfred Nobel's wishes, the Nobel Peace Prize is presented in Norway while the other

Since the 1st Nobel Prizes were awarded in 1901, they have been awarded annually. It was not awarded mostly during World War I and II.

A Nobel Prize cannot be awarded posthumously.

When Alfred Nobel died leaving the majority of his fortune to the establishment of the Nobel Prize, he stated that the money should be converted into a fund and invested in "safe securities."

Today the interest earned on that money is used to fund the Nobel Prizes.

About Nobel Prize

- Nobel Prizes are a group of five separate prizes awarded to "those who have conferred the greatest benefit to humankind."
- Named after Alfred Nobel, a Swedish chemist, engineer, and industrialist most famously known for the invention of dynamite.
- Nobel Prizes were first awarded in 1901.
- The prizes carry a cash award of 10 million Swedish kronor (nearly \$900,000).
- The money comes from a bequest left by the prize's creator, Alfred Nobel, who died in 1895.

awards are handed out in Sweden.

NOBEL PRIZE IN PHYSICS 2022

Awarded to Alain Aspect, John F Clauser and Anton Zeilinger for their work in quantum entanglement.

Quantum entanglement is a counterintuitive phenomenon that explains how two subatomic particles can be intimately linked to each other even if separated by billions of light years of space.

Despite their vast separation, a change induced

in one will affect the other, if both are quantum entangled. Einstein called entanglement "spooky action at a distance".

Applications: It can help in developing quantum technologies of the future. Ex: quantum cryptography, and precise timekeeping as is done in atomic clocks.

NOBEL PRIZE IN CHEMISTRY 2022

Awarded to Carolyn R. Bertozzi, Morten Meldal, K. Barry Sharpless for the development of click chemistry and bio-orthogonal chemistry.

The click chemistry is a functional form of chemistry, where reactions occur quickly and the unwanted by-products are avoided.

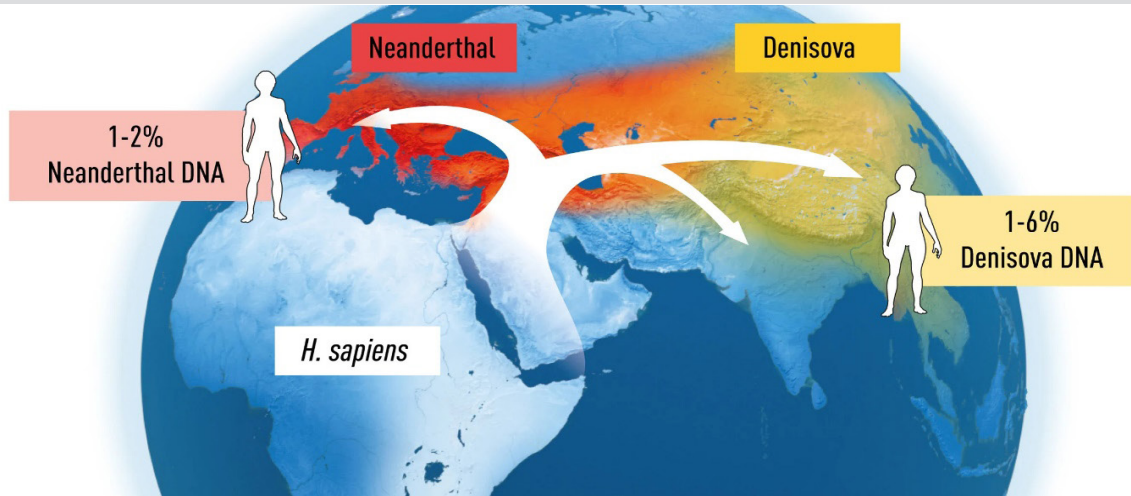
In click chemistry, molecular building blocks snap together quickly and efficiently.

Carolyn Bertozzi has started utilising it in living organisms. She developed click reactions that work inside living organisms, in order to map

an elusive biomolecule on the surface of cells - glycans (carbohydrate-based polymers made by all living organisms.)

Applications: These reactions are now used globally to explore cells and track biological processes. Using bio-orthogonal reactions, researchers have improved the targeting of cancer pharmaceuticals, which are now being tested in clinical trials.

NOBEL PRIZE IN MEDICINE 2022

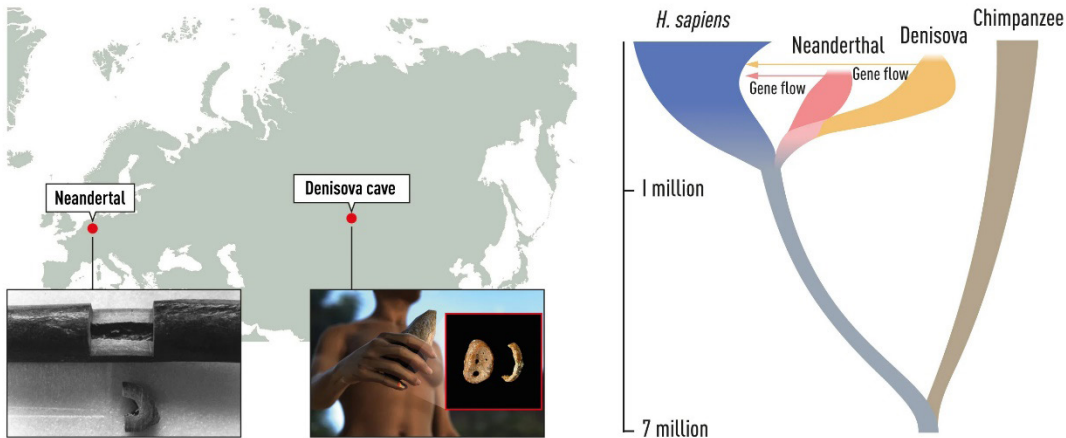


Awarded to **Swedish geneticist Svante Pääbo** for his research in the field of genomes of extinct hominins and human evolution.

After analysing a 40,000-year-old finger bone

from a Siberian cave, Pääbo proved that it belonged to a new species of hominin called Denisova.

Palaeogenomics - It is the study of ancient hominins by extracting their DNA.



NOBEL PRIZE IN LITERATURE 2022

Awarded to French author **Annie Ernaux** for the courage and clinical acuity with which she uncovers the roots, estrangements and collective

restraints of personal memory. Her work turned her in a prominent French feminist figure.

NOBEL PEACE PRIZE 2022

Awarded to one individual and two organisations. To honour three outstanding

champions of human rights, democracy and peaceful co-existence in the neighbour countries

Belarus, Russia and Ukraine.

Human rights advocate Ales Bialiatski from Belarus,

The Russian human rights organisation

Memorial and

The Ukrainian human rights organisation Center for Civil Liberties.

NOBEL PRIZE IN ECONOMIC SCIENCES 2022

Why in News?

The Royal Swedish Academy of Sciences has decided to award the 2022 **Sveriges Riksbank Prize in Economic Sciences** in Memory of Alfred Nobel to Ben S. Bernanke, Douglas W. Diamond, and Philip H. Dybvig “for research on banks and financial crises.”

Other 2022 Nobel Prizes for Literature, Chemistry, Physics, Medicine and Peace have already been announced.

About

Unlike the other prizes, the economics award wasn't established in Alfred Nobel's will of 1895 but by the Swedish central bank in his memory. The first winner was selected in 1969.

Ben S Bernanke:

Ben Bernanke analysed the Great Depression of the 1930s, the worst economic crisis in modern history. Through statistical analysis, Bernanke demonstrated how failing banks played a decisive role in the global depression of the 1930s.

He showed how bank runs were a decisive factor in the crisis becoming so deep and prolonged. It also helped in understanding the importance of well-functioning bank regulation.

Bernanke was the head of the US central bank, the Federal Reserve, when the 2008 crisis hit, and was able to “put knowledge from research into policy”.

Douglas W Diamond and Philip H Dybvi:

The model captures the central mechanisms of banking, as well as its weaknesses. They argue that banks emerge as natural intermediaries that help ease liquidity.

They discuss how banks need to be more careful about assessing the loans they give out, or how bailing out banks in crisis might turn out

to be and how the financial markets should be regulated to fulfil their function – channelling savings to productive investments without causing recurring crises – is a question that researchers and politicians continue to wrestle with.

This reduces the risk of financial crises developing into long-term depressions with severe consequences for society, which is of the greatest benefit to us all.

Nobel Prize Related Facts

As of 2022, 61 Nobel Prizes have been awarded to 60 women.

Youngest Nobel Laureate - Malala Yousafzai (at the age of 17 years).

Oldest Nobel Laureate - John B Goodenough (at the age of 97 years).

Two Nobels - Marie Curie, John Bardeen, Linus Pauling, Frederick Sanger, and Karl Barry Sharpless have won the Nobel Prize twice.

Three Nobels - Switzerland-based International Committee of the Red Cross is the only three-time recipient of the Nobel Prize (Peace Prize in 1917, 1944, and 1963)

Mother Teresa, Amartya Sen, and Kailash Satyarthi were three of the laureates who were citizens of the Republic of India.

Ronald Ross and Rudyard Kipling are the two of the Nobel laureates who were of foreign origin, but were born in India.



SOCIETY &

SOCIAL JUSTICE

What's Inside?

MAKING MENTAL HEALTH FOR ALL A GLOBAL PRIORITY

*Gs-II Issues relating to development and
management of Social Sector/Services
relating to Health,*

Pg 26

WORLD FOOD DAY: "LEAVE NO ONE BEHIND"

*GS-II Issues relating to poverty and
hunger. G_III Issues related to direct and
indirect farm subsidies and minimum
support prices; Public Distribution
System*

Pg 27

1. "PROFESSORS OF PRACTICE"
– AN INITIATIVE OF UGC
2. GLOBAL HUNGER INDEX
(GHI), 2022
3. FIRST-EVER FUNGAL PRIORITY
PATHOGEN LIST

“PROFESSORS OF PRACTICE” – AN INITIATIVE OF UGC

The National Education Policy (NEP) 2020 had recommended integrating vocational education with general education and strengthening industry-academia collaboration in higher education institutions (HEIs). Towards this, the UGC has taken a new initiative called “Professor of Practice”.

The UGC has not earmarked funds for the scheme and says that such experts can be paid through funding from industries or through the institution’s own funds.

It will not affect the number of sanctioned posts and the recruitment of regular faculty members. In turn, the industry and society will benefit from trained graduates equipped with the relevant skills.

It aims to,

- develop courses and curriculum to meet the industry and societal needs and enable the HEIs to work with industry experts.

- bring in distinguished experts from various fields such as engineering, science, technology,

entrepreneurship, management, commerce, media, literature, etc., into the academic institutions.

Eligibility:

Distinguished experts who have made remarkable contributions in their professions from various fields.

However, this role is not open to those from the teaching profession, serving or retired.

Those who have proven expertise in their specific profession or role with at least 15 years of service/experience, preferably at a senior level.

A formal academic qualification is not considered essential for this position if they have exemplary professional practice.

About UGC

The University Grants Commission (UGC) of India is a statutory body set up in 1956, and is charged with coordination, determination and maintenance of standards of higher education.

GLOBAL HUNGER INDEX (GHI), 2022

The Global Hunger Index (GHI) 2022 has ranked India at 107th out of 121 countries (score of 29.1) puts India in the “serious” category. (101st position of 116 countries in 2021; 94th position in 2020).

The GHI is a tool designed to comprehensively measure and track hunger at global, regional, and national levels, reflecting multiple dimensions of hunger over time.

The GHI is published annually as part of a partnership between Concern Worldwide, Ireland’s largest aid and humanitarian agency and Welthungerhilfe. The first GHI report was published in 2006.

It is calculated based on a formula combining 4 indicators that together capture the multi-

dimensional nature of hunger.

Undernourishment: share of population with insufficient caloric intake.

Child stunting: share of children under age 5 who have low height for their age, reflecting chronic undernutrition.

Child wasting: share of children under age 5 who have low weight for their height, reflecting acute undernutrition.

Child mortality: share of children who die before their 5th birthday, partly reflecting the fatal mix of inadequate nutrition and unhealthy environments.

Key Findings

In India:

India's child wasting rate at 19.3%, is worse than earlier levels recorded in 2014 (15.1%) and 2000 (17.15) and is the highest for any country in the world. It drives up the South Asian region's average due to India's large population.

Prevalence of undernourishment has also risen in India from 14.6% in 2018-2020 to 16.3% in 2019-2021. Thus, 224.3 million people in India are considered undernourished.

Child stunting has declined from 38.7% to 35.5% between 2014 and 2022.

Child mortality has also dropped from 4.6% to 3.3% in the same comparative period.

Global Scenario:

India fares worse than all South Asian countries- Sri Lanka (64), Nepal (81), Bangladesh (84), and Pakistan (99); except war-torn Afghanistan (109).

Top rankings in GHI are dominated by European nations including Croatia, Estonia, and Montenegro etc.

Yemen lies at the lowest position (121).

FIRST-EVER FUNGAL PRIORITY PATHOGEN LIST

Recently, The World Health Organisation released the first-ever list of fungal infections (Priority Pathogens) that can be a threat to public health.

Fungal pathogens are a major threat to public health and are becoming increasingly common and resistant to treatment with only four classes of antifungal medicines currently available, and few candidates in the clinical pipeline. Most fungal pathogens lack rapid and sensitive diagnostics and those that exist are not widely available or affordable globally.

Emerging evidence indicates that the incidence and geographic range of fungal diseases are both expanding worldwide due to global warming and the increase of international travel and trade. During the COVID-19 pandemic, the reported incidence of invasive fungal infections increased significantly among hospitalized patients.

As the fungi that cause common infections (such as candida oral and vaginal thrush) become increasingly resistant to treatment, risks for the development of more invasive forms of infections in the general population are also growing.

These fungal infections often affect severely ill patients and those with significant underlying immune system related conditions. Populations at greatest risk of invasive fungal infections include those with cancer, HIV/AIDS, organ transplants, chronic respiratory disease, and post-primary tuberculosis infection.

Fungal priority pathogens list (FPPL) includes 19 fungi that represent the greatest threat to human health. The list takes precedence from the bacterial priority pathogens list, first established by WHO in 2017 with a similar focus to galvanise global attention and action.

It aims to focus and drive further research and policy interventions to strengthen the global response to fungal infections and antifungal resistance.

The classification is based on the pathogen's public health impact or emerging antifungal resistance risk. They are classified into three: Critical Priority Group, High Priority Group and Medium Priority Group.

MAKING MENTAL HEALTH FOR ALL A GLOBAL PRIORITY

Gs-II Issues relating to development and management of Social Sector/Services relating to Health,

World Mental Health Day is marked on 10th October every year since 1992 to spread awareness and education about mental health issues across the world.

Theme for the Year 2022: “Making mental health for all a global priority.”

On the occasion of World Mental Health Day, the Lancet released a report titled “Ending Stigma and Discrimination in Mental Health” and called for radical action to end stigma and discrimination associated with mental health.

Findings of the Report Prevalence of Mental Health Condition:

Nearly one billion people globally are living with a mental health condition.

One out of seven in the age bracket of 10 to 19-year-olds suffers from a mental condition.

These people experience a double threat i.e., the impact of the condition itself and the damaging social consequences of stigma and discrimination.

The Covid-19 pandemic helped highlight the urgent mental health situation across the world.

There was an estimated 25% rise in the prevalence of

depression and anxiety in the first year of the pandemic.

Impacts:

90% of people living with mental health conditions feel negatively impacted by stigma and discrimination.

Stigma can “cause social exclusion and disempowerment of people with mental health conditions leading to discrimination and human rights violations, including problems in accessing healthcare, challenges in securing employment, and increased likelihood of health complications leading to early death.

Indian Scenario:

Though there is a gradual reduction of stigma in India, it continues to be a real and present problem.

Women with a diagnosis of severe mental disorder and their family members do face more stigma which has ramifications for marriage and employment preventing social inclusion.

The Indian media, especially the visual media like television serials continue to portray mental illness negatively.

Initiatives Taken by the Government

To address the huge burden of mental disorders and shortage of qualified professionals in the field of mental health, the government has been implementing the National Mental Health Program (NMHP) since 1982.

The Mental Health Care Act (MHCA) 2017 came into force in 2018 to meet the requirements of the United Nations Convention on the Rights of Persons with Disabilities which India ratified in 2007.

Kiran Helpline offers mental health rehabilitation services with the objective of early screening, first-aid, psychological support, distress management, promoting positive behaviours, etc.

The Ministry of Human Resources Development (MHRD) (now Ministry of Education) launched “Manodarpan” under Atmanirbhar Bharat Abhiyan. It is aimed to provide psychosocial support to students, family members and teachers for their mental health and well-being during the times of Covid-19.

In 2021, the government of India launched the MANAS (Mental Health and Normalcy Augmentation System) mobile App to promote mental well-

being across age different groups.

Way Forward

There should be immediate action from governments, international organisations, employers, healthcare providers and media organisations, along with active contributions from people with lived experience, to work together to eliminate mental health stigma and discrimination.

Mental health situation in

India demands active policy interventions and resource allocation by the government. To reduce the stigma around mental health, we need measures to train and sensitize the community/society.

India also needs a constant stream of funds for educating and creating awareness about mental health and chronic issues around it.

The need of the hour is to provoke the masses to learn about mental health

through campaigns like Swachh Mansikta Abhiyan.

Employers are to promote full access to educational opportunities, work participation and return-to-work programmes for people with mental health conditions and the school curriculum should include sessions for students to improve their understanding of mental health conditions.

WORLD FOOD DAY: "LEAVE NO ONE BEHIND"

GS-II Issues relating to poverty and hunger. G_III Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System

World Food Day is celebrated to commemorate the establishment of the UN Food and Agriculture Organisation (FAO) on the 16th of October 1945.

It is observed annually to address the problem of global hunger and emphasises Sustainable Development Goal 2 (SDG 2) i.e., Zero Hunger.

Theme for 2022: "Leave No One Behind."

Significance

As a global community, we each have a role to play in bringing forward those left behind by making our agrifood systems more inclusive and sustainable.

Promote worldwide awareness and action for those

who suffer from hunger and for the need to ensure healthy diets for all.

Many awareness initiatives are also held to educate people about malnutrition and obesity, both of which cause major health consequences.

Status of Global Hunger

Food and nutrition security continue to be impacted by various factors like the COVID-19 pandemic, climate change, food inflation, conflicts, inequality etc.

The Hunger Hotspots Outlook (2022-23), by the FAO and World Food Programme (WFP) forebodes escalating hunger, as over 205 million people across 45 countries will

need emergency food assistance to survive.

The Global Report on Food Crises 2022 released by the Global Network against Food Crises underscored that about 180 million people across 40 countries will face inescapable food insecurity.

Global Hunger Report, 2022 says, globally, the progress against hunger has largely stagnated in recent years, with a global score of 18.2 in 2022 as compared to 19.1 in 2014.

Barring war-torn Afghanistan, India has performed worse than all the countries in the South Asian region in the Global Hunger Index 2022. It has ranked 107 out of 121 countries.

Production and Nutrition in India

India increased its production levels and achieved self-sufficiency. It is now one of the largest exporters of agricultural products in the world.

India recorded \$49.6 billion in total agriculture exports in the year 2021-2022 (20% increase from the exports in 2020-21).

FAO has played a crucial role in India since 1948 in various fields like crop/livestock/fisheries production, food security, and natural resources management.

Concerns and remedial measures

The recent climate shocks in India have raised concerns about wheat and rice production for the subsequent year. A greater focus should be given to climate adaptation and resiliency.

India has a large population that is expected to rise further (Approximately 1.5 billion by 2030). Thus, it is important to adopt effective, inclusive, and sustainable methods of improving production thus moving away from conventional input-intensive agriculture.

India's upcoming G20 presidency can be used as an opportunity to bring food and nutrition security to the very centre of a resilient and equitable future.

Apart from climate

change, nutrition and agricultural production are also associated with environmental sustainability. Excessive use of chemicals and non-judicious use of water causes soil degradation which hampers the nutritional value of food.

Focusing the Millets

India is the largest producer of millet in the world. It produced nearly 41% of total millet production in 2020.

Millets are climate-smart crops that are good for nutrition, health, and the overall planet. They require fewer inputs and are less extractive for the soil.

Moreover, they can revive the health of the soil and preserve agro-biodiversity.

They have the potential to increase yields for small farmers (including rural women).

The International Fund for Agricultural Development's (IFAD's) Tejaswini programme with the Government of Madhya Pradesh highlighted that millet production can increase income by nearly ten times. For instance, the income of 1,800 per month in 2013-14 increased to 16,277 in 2020-21.

It also ensures better food security as millet crops are not impacted by excessive rainfall.

Indian Initiatives on Food Security

Eat Right India and Fit India Movement along with Swachh Bharat Abhiyan, Jal Jeevan Mission and other efforts will improve the

health of Indians and heal the environment.

Introduction of 17 new biofortified varieties of crops to overcome the shortcomings of the common variety of crops which lacks important micronutrients. Example: MACS 4028 Wheat, Madhuban Gajar, etc.

To ensure food equity India adopted National Food Security Act (NFSA) 2013 which anchors the Targeted Public Distribution System (TPDS), the PM POSHAN scheme (earlier referred to as the Mid-Day Meals scheme) and the Integrated Child Development Services (ICDS).

Amendments to the APMC (agricultural produce market committee) Acts to make them more competitive.

Steps to ensure that farmers get one and a half times the cost as Minimum Support Price (MSP), which along with the government procurement, is an important part of ensuring the country's food security.

Development of a large network of Farmer Producer Organisations (FPOs).

Amendments in the Essential Commodities Act, 1955 to deal with the issue of grain wastage in India.

The government is making efforts to make India Trans-fat-free by 2022, a year ahead of the WHO target, in synergy with the vision of New India @75 (75 years of India's independence). Trans Fat is a

food toxin present in Partially Hydrogenated Vegetable Oils (PHVOs) (e.g., vanaspati, shortening, margarine, etc.), baked and fried foods.

FAO supported India's proposal to declare 2023 as the International Year of Millets.

India adopted the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) to deal with the impacts of the COVID-19 pandemic on food security. An International Monetary Fund (IMF) paper titled 'Pandemic, Poverty, and Inequality: Evidence from India' asserted that extreme poverty was maintained below 1% in 2020 due to the PMGKAY.

The Union government has implemented a Sub-Mission on Nutri-Cereals (Millets) under

the ambit of the National Food Security Mission.

State-level interventions in Andhra Pradesh, Madhya Pradesh, and Odisha are proof of India's resolve to revive indigenous crops.

Way Ahead

Transformation of food systems, making them more sustainable, resilient, and equitable.

Improving food and nutrition security, including non-distortionary income support and social protection schemes.

Encouraging the production and consumption of indigenous foods like millet through consumer sensitization.

The global and regional supply chain should be strengthened by increasing transparency. Measures like labelling and tracing can be used.

Promoting cooperation among various stakeholders to leverage innovations.

India can showcase its local solutions and best practices to champion the principle of leaving no one behind and lead the world in Food and Nutritional security.

Food security continues to be a major issue across the world. India has proactively worked in this direction but still, a lot needs to be done. India can also lead the world in this aspect, thus ensuring that no one is left behind.

Economic Development & Agriculture



What's Inside?

CRISIS IN COFFEE INDUSTRY

GS-III Major crops-cropping patterns in various parts of the country, transport and marketing of agricultural produce

Pg 42

INFLATION AND CLIMATE CHANGE

Gs-III Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.

Pg 44

ROLE OF WOMEN IN LIVESTOCK SECTOR

Pg 45

1. RBI'S SUPTECH APP DAKSH
2. CNG TERMINAL
3. INTERNAL OMBUDSMAN MECHANISM FOR CREDIT INFORMATION COMPANIES
4. LEADS REPORT 2022
5. NOBEL PRIZE IN ECONOMIC SCIENCES 2022
6. K.G.F (KOLAR GOLD FIELDS)
7. ONE NATION, ONE FERTILISER' SCHEME
8. KALANAMAK RICE
9. DIGITAL BANKING UNITS
10. CHINA'S TOTAL TRADE SURPLUS WITH INDIA 'SURPASSES \$1 TRILLION'
11. RAISING INTEREST RATES

RBI'S SUPTECH APP DAKSH

Why in News?

Reserve Bank of India (RBI) Governor Shaktikanta Das on Thursday launched a new SupTech initiative "DAKSH" - Reserve Bank's Advanced Supervisory Monitoring System" to make the Supervisory processes more robust.

About

DAKSH is a web-based end-to-end workflow application through which **RBI shall monitor compliance requirements** in a more focused manner with the objective of further improving the compliance culture in Supervised Entities (SEs) like Banks, NBFCs, etc.

The application will also enable seamless communication, inspection planning and execution, cyber incident reporting and analysis,

provision of various MIS reports etc., through a platform which enables anytime-anywhere secure access.

As per RBI's annual report, an integrated supervisory data structure for the entities supervised by the Reserve Bank has been developed by consolidating and optimising the present framework of returns. Data collection from the banks is being further rationalised as part of Centralised Information Management System (CIMS).

While technology has been leveraged in strengthening and expanding the scope of off-site analytics, market intelligence and off-site surveillance have been made more structured and are being continuously refined.

CNG TERMINAL

Why in news?

Prime Minister Narendra Modi laid the foundation stone for the "world's first CNG (Compressed Natural Gas) terminal" at Bhavnagar in Gujarat. This project is expected to infuse Rs 4,000 crore into developing the port infrastructure at Bhavnagar.

About

The CNG Terminal project has a cargo handling capacity of 1.5 million metric tonnes per annum (MMTPA).

The Gujarat Maritime Board (GMB) will support the project as it would be developed using a public-private partnership (PPP) approach by a consortium of the Mumbai-based Padmanabhan

Mafatlal Group and the UK's Foresight Group.

The CNG Terminal will have the fourth largest lock gate system in the world in addition to an ultra-modern container terminal, a multipurpose terminal, a Ro-Ro terminal, and a liquid terminal.

The future brown field project will also have direct door-step connectivity to the existing roadway and railway network connecting to the largest industrial zones, the Dedicated Freight Corridor, and the northern hinterland of India.

The project will provide several career opportunities in warehousing, transportation, and logistics for youth in Bhavnagar and the surrounding area

Compressed Natural Gas	Liquified natural gas	Liquified Petroleum gas
<p>CNG is obtained by compressing Natural Gas under high pressure which reduces its volume.</p> <p>Advantages</p> <ul style="list-style-type: none"> ● Viable alternative fuel (Storage cylinders) ● Cheaper and reduce emissions. ● Versatile and low storage costs. ● Cleaner solution from diesel <p>Disadvantages</p> <ul style="list-style-type: none"> ● Reduced power for the same engine capacity. ● CNG filling stations are very limited. ● Provide less mileage than gasoline. ● Storage space is a very big issue because ● CNG tanks are large in size so boot space is reduced. 	<p>LNG is produced by cooling NG to - 162 degree C in Cryogenic stage through Liquifaction. It is Kept in liquid form to increase quantities of Natural Gas that can be stored in tanks.</p> <p>Natural gas is methane gas natural gas which is lighter than air</p> <p>Advantages</p> <ul style="list-style-type: none"> ● Easy to transport. ● Helps in electrification. ● Clean burning fuel, smoke free, less CO₂ than Coal, no black carbon 	<p>It is a byproduct derived while extracting crude petroleum. It has Propane and Butane. It produces CO₂, NO_x and CO and is much cleaner than Gasoline. Heavier than air hence it will settle down on leakage.</p> <p>There is a higher energy content for LPG</p> <p>Advantages</p> <ul style="list-style-type: none"> ● It is non-toxic, non-corrosive in nature. ● It burns cleanly ● LPG engines have less knocking/ vibration. ● It does not produce harmful emission like CO, NO_x and higher hydrocarbons. ● Particulate emissions are also less. So frequent cleaning of the combustion chamber is not required. <p>Disadvantages</p> <ul style="list-style-type: none"> ● It causes suffocation, in case of leakage as it heavier than air. ● It is hazardous as it inflammable gas. ● It is consumed more as it has low energy density. ● It does not provide power to the vehicle in mountains or rough terrains. ● It is costlier than CNG. ● It has to be supplied in a heavy steel cylinder.

INTERNAL OMBUDSMAN MECHANISM FOR CREDIT INFORMATION COMPANIES

Why in News ?

To enhance the effectiveness of its grievance redressal systems, the Reserve Bank of India (RBI) has urged Credit Information Companies to designate an internal ombudsman (IO) by April 1, 2023.

About

Every CIC should appoint an Internal Ombudsman for a fixed term of not less than three years, but not exceeding five years.

Eligibility: The IO should be either a retired or a serving officer, not below the rank of Deputy General Manager or equivalent, in any financial sector regulatory body, CIC, a NBFC or bank, with at least seven years' experience in banking, non-banking finance, financial sector regulation or supervision, credit information or consumer protection.

The Internal Ombudsman will not handle complaints received directly from the complainants or members of the public and, instead, deal only with complaints that have already been examined by the CIC, but have been partly or wholly rejected by it.

What are all outside the purview of IO ?

Complaints related to fraud, misappropriation, etc., except those resulting from a deficiency in service, if any, on the part of the CIC will not be under the purview of the ombudsman.

Complaints/ references relating to internal administration, human resources, or pay and emoluments of staff will also be outside the purview.

Credit Information Company (CIC)

Credit Information Company (CIC) is an independent third-party agency that collects financial data of individuals pertaining to their loans, credit cards and other related information and shares with its members, who generally happen to be banks and other financial institutions. This data is provided to CICs by their member banks and other financial institutions.

Based on the data of the individuals, a Credit Information Company prepares a Credit Information Report and a Credit Score. Credit history of an individual is classified by a CIC into two categories: Negative data and Positive data.

When an individual applies for a loan/credit with a lender such as a bank or Non-Banking Financial Company etc., the lender contacts their Credit Information Company to get the Credit Score and Credit Information Report of the applicant-borrower.

All the CICs in India are licensed by the Reserve Bank of India (RBI). They are governed by the provisions under Credit Information Companies Regulation Act (CIC Act), 2005 and other RBI regulations and guidelines. This was further followed by Credit Information Companies, Regulations and Rules Act, 2006.

Currently, there are four CICs — Credit Information Bureau (India) Ltd (CIBIL), Equifax Credit Information Services Pvt Ltd, Experian Credit Information Company of India Pvt Ltd and CRIF High Mark Credit Information Services Pvt Ltd.

LEADS REPORT 2022

Why in News?

The Gati Shakti National Master Plan completed one year. To mark the occasion, the Ministry of Commerce and Industry (MoCI) published the fourth edition of Logistics Ease Across Different States (LEADS) Report 2022.

About

The 'Logistics Ease Across Different States' (LEADS) Report was first launched in 2018. It reflects positively on international indices, like the Logistics Performance Index which is released by the World Bank group.

The Report is released every year with the main objective of ranking Indian states and UTs on the basis of the efficiency of their respective logistics ecosystems.

The index is an indicator of the efficiency of logistical services necessary for promoting exports and economic growth.

The index aims to boost the logistics performance across India, which is critical for reducing the cost of transactions and boosting international and domestic trade.

Survey Methodology

The LEADS survey assesses viewpoints of various users and stakeholders across value chain including shippers, terminal infrastructure service providers, logistics service providers, transporters and government agencies to understand the enabler and impediments to the logistics ecosystem in the country.

The annual survey processes the data received from stakeholders (perception data) and States/UTs (objective data) and ranks the logistics

ecosystem of each State/ UT using a statistical model.

There are three performance categories:

Achievers: States/UTs with a percentage of 90% or higher.

The achievers category includes Andhra Pradesh, Assam, Chandigarh, Delhi, Haryana, Himachal Pradesh, Karnataka, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, and Gujarat.

Maharashtra ranks first among the "Achievers" states.

Fast Movers: States/UTs with percentage scores of 80-90%.

Kerala, Madhya Pradesh, Rajasthan, Puducherry, Sikkim, and Tripura are among the states.

Aspirants: States/UTs with percentage scores less than 80% have been selected.

Significance of LEADS Report

The LEADS Report is an indicator of results of various initiatives for improving the logistics ecosystem throughout the country.

The LEADS Report will assist in the implementation of the PM Gati Shakti National Master Plan (PMGS-NMP) and the National Logistics Policy (NLP) by identifying gaps in the existing logistics services, infrastructure and regulatory environment.

K.G.F (KOLAR GOLD FIELDS)

Why in news?

The Centre has decided to revive gold mining, auction tailing dumps and two blocks at the Kolar fields in Karnataka more than 22 years after it was shelved because the extraction of metals and minerals had become unviable.

About

Kolar Gold Fields (KGF) (also known as 'Little England') is a mining area in the Kolar District of Karnataka, South India, 100 km from Bengaluru. It is estimated that gold has been mined there for over 2000 years.

Kolar Gold Field's modern success is generally attributed to the firm John Taylor & Sons, after John Taylor III took control of the mines in 1880 and established what was at one time the deepest and most productive gold mine in the world. KGF was the first Indian city to be electrified in 1902. The British government had also built a lake to meet the water demands of the area.

The mines were run by the company up until 1956 when they were taken over by the Government of Mysore who employed John Taylor & Sons as mining consultants.

They were closed by the Indian government on

28 February 2001 for environmental and economic reasons; food, water and shelter were scarce, and production did not justify the investment

The extracts from Kolar gold fields mining



(gold and minerals like palladium and rhodium) are likely to fetch a value worth 30,000 crore. The mines situated in Karnataka's Kolar district are owned by Bharat Gold Mines Limited (BGML).

The pyroclastic and pillow lava at Kolar Gold Fields have been declared a National Geological Monument by the Geological Survey of India (GSI) for their protection, maintenance, and encouragement of geotourism

ONE NATION, ONE FERTILISER' SCHEME

Why in news?

Prime Minister Narendra Modi, on 18 October, launched the 'Pradhan Mantri Bhartiya Jan Urvarak Pariyojana-One Nation, One Fertiliser' scheme, which is aimed at marketing fertilisers in the country under 'Bharat' brand name. This means, there will be a uniform design of fertiliser bags across the country, labeled as BHARAT UREA, BHARAT DAP, BHARAT MOP and BHARAT NPK etc.

About -

The 'One Nation, One Fertiliser' scheme or the Pradhan Mantri Bhartiya Jan Urvarak Pariyojana

was launched during the event. Under this scheme, the all type of fertilisers, whether it is DAP, NPK or urea will be sold under the brand name of 'Bharat'. This will standardise fertiliser brands across the nation irrespective of the company that manufactures it

One Nation, One Fertiliser' scheme, the farmer will get rid of all kinds of confusion about the quality of the fertilisers and its availability

This scheme will result in reduction of the cost of fertilisers and increase their availability.

Competition among companies that push their brands will get reduced with this single branding,

which will ensure sufficient supply of fertilisers across the country

Possible Drawbacks:

It will disincentivise fertiliser companies from undertaking marketing and brand promotion activities.

They will now be reduced to contract manufacturers and importers for the government.

Currently, in case of any bag or batch of fertilisers not meeting the required standards, the blame is put on the company. But now, that may be passed on fully to the government.

How Are Fertilisers Currently Marketed In The Country?

Today, India is the third-largest producer and second-largest consumer of fertilisers in the world.

The fertiliser industry is distributed between three major participants' viz., Private sector undertakings, public sector units and cooperative societies.



The major government players are Brahmaputra Valley Fertiliser Corporation Limited (BVFCL), Rashtriya Chemicals and Fertilisers Limited (RCF), National Fertilisers Limited (NFL) and Fertilisers and Chemicals Travancore Limited (FACT).

All fertiliser companies market various types of fertilisers under their own brand name, even though, there is no product differentiation among different brands for each type of fertiliser.

KALANAMAK RICE

Kalanamak, a traditional variety of paddy with a black husk and a strong fragrance, which is considered a gift from Lord Buddha to the people of the Sravasti when he visited the region after enlightenment, is all set to get a new look and name.

Grown in 11 districts of the Terai region of north eastern Uttar Pradesh and in Nepal, the traditional variety has been prone to lodging, a reason for its low yield.

Lodging is a condition in which the top of the plant becomes heavy because of grain formation, the stem becomes weak, and the plant falls on the ground.

Addressing the problem, the Indian Agriculture Research Institute (IARI) has successfully developed two dwarf varieties of Kalanamak rice. They have been named Pusa Narendra Kalanamak 1638 and Pusa Narendra Kalanamak 1652.

The IARI says the new name is in recognition of the association the institute has with the Acharya Narendra Dev University of Agriculture and Technology in Ayodhya, where the two varieties were tested.

The yield of the new varieties is double that of the traditional variety, and the IARI and the Uttar Pradesh Council of Agriculture are working together to make the seeds available to farmers at the earliest.

The traditional Kalanamak rice is protected under the Geographical Indication (GI) tag system.

It's recorded in the GI application that Lord Budhha gifted Kalanamak paddy to the people of Sravasti so that they remembered him by its fragrance.

A tall problem with the traditional variety of Kalanamak paddy is that it's tall and prone to lodging, which badly impacted grain filling and

quality.

The yield, as a result, fell drastically, and the market for the rice dwindled, too. The traditional Kalanamak paddy's yield is barely two to 2.5 tonnes per hectare.

The idea was to combine the quality of traditional Kalanamak into high yielding varieties. Its grains are short.

In that process, we did the breeding programme by bringing the dwarfing genes from the rice variety Bindli Mutant 68, and also the gene of Pusa Basmati 1176 was used as a parent to cross with Kalanamak, and the progenies were further back-crossed with Kalanamak to restore

its quality. This is a novel mutation.

The process started in 2007, when the first cross with dwarf varieties was carried out. For the last three years, the IARI conducted extensive evaluation at 10 Krishi Vigyan Kendras (KVK) located in the GI districts.

In this kharif season, it was given to farmers. The aroma of the new breed is higher and nutritional qualities are also excellent.

Productivity has gone up to 4.5 to five tonnes per hectare as against 2.5 tonnes in the case of traditional Kalanamak.

DIGITAL BANKING UNITS

Prime Minister Narendra Modi dedicated 75 digital banking units to the nation and said that digital banking units will “further financial inclusion” and “significantly improve banking experience for the citizens”.

In the Budget for 2022-23, the Finance Minister said: “In recent years, digital banking, digital payments and fintech innovations have grown at a rapid pace in the country.

The government is continuously encouraging these sectors to ensure that the benefits of digital banking reach every nook and corner of the country in a consumer-friendly manner.

What are the digital banking units?

A digital banking unit is a specialised fixed point business unit or hub, housing a certain minimum digital infrastructure for delivering digital banking products and services as well as servicing existing financial products and services digitally in self-service mode at any time.

Who will set up these DBUs?

Commercial banks (other than regional rural banks, payment banks and local area banks) with past digital banking experience are permitted to open DBUs in tier 1 to tier 6 centres, unless otherwise specifically restricted, without having the need to take permission from the RBI in

each case.

What services will be provided by these units?

As per the RBI, each DBU must offer certain minimum digital banking products and services. Such products should be on both liabilities and assets side of the balance sheet of the digital banking segment. Digitally value-added services to conventional products would also qualify as such.

The services include saving bank accounts under various schemes, current accounts, fixed deposit and recurring deposit accounts, digital kits for customers, mobile banking, Internet banking, debit cards, credit cards, and mass transit system cards, digital kits for merchants, UPI QR codes, BHIM Aadhaar and point of sale (PoS).

Difference between the Digital Banks and DBUs

Balance Sheet/Legal Personality:

DBUs do not have legal personality and are not licensed under Banking Regulation Act, 1949. Legally, they are equivalent to “banking outlets” i.e., branches.

Digital Banks will have a balance sheet and legal personality & are proposed to be duly licensed

banks under Banking Regulation Act, 1949.

Level of Innovation/Competition:

DBUs improve existing channel architecture by offering regulatory recognition to digital channels. However, they are silent on competition.

The DBU guidelines expressly state that only

existing commercial banks may establish DBUs.

In contrast, a licensing and regulatory framework for Digital banks as proposed here, is more enabling along competition/innovation dimensions.

CHINA'S TOTAL TRADE SURPLUS WITH INDIA 'SURPASSES \$1 TRILLION'

The favourable trade balance that China has enjoyed with India, since bilateral trade began to boom in the early 2000s, has now exceeded \$1 trillion.

India-China bilateral trade

In 2021, annual two-way trade crossed \$100 billion for the first time, reaching \$125.6 billion, with India's imports accounting for \$97.5 billion, pegging the imbalance at close to \$70 billion.

This is certainly a healthy deficit compared to the industrial development in both nations.

India's imports from China surged 34.5% to a record \$57.51 billion until June 2022. India's exports to China, however, shrank 35% and accounted for only \$9.57 billion of the \$67.08 billion two-way trade.

India's biggest exports to China in recent years were iron ore, cotton and other raw material-based commodities, which have seen a recovery in demand in China last year (2021).

India has imported large quantities of electrical and mechanical machinery, Active Pharmaceutical Ingredients (APIs), auto components and, over the past two years, a range of medical supplies from oxygen concentrators to Personal Protective Equipment (PPEs) although Chinese imports of Indian seafood are one area that has recently shown robust growth.

Steps taken to Counter Dependence on China

The Indian government is restricting low-

quality Chinese imports with technical regulations, which include safety and quality standards for about 370 products that are being formulated with a view to cutting imports of these non-essential items from countries like China.

Various Chinese apps are banned in India.

Increasing scrutiny of Chinese investments in many sectors, and a decision to keep Chinese companies out of 5G trials.

India also set up a high-level empowered group of secretaries, to be chaired by the Cabinet Secretary, and a Project Development Cell (PDC) in ministries/departments with a view to attract investments to the country and boost domestic manufacturing.

The government has also made its prior approval mandatory for foreign investments from countries that share a land border with India to curb "opportunistic takeovers" of domestic firms – a move which will restrict FDI from China.

To cut import dependency on China for APIs (Active Pharmaceutical Ingredients), the government in March 2020 approved a package comprising four schemes with a total outlay of Rs. 13,760 crores to boost domestic production of bulk drugs and medical devices in the country along with their exports.

In 2020, the Union Commerce and Industry Ministry has recognised 12 sectors, including auto components, textiles, industrial machinery and furniture, where attention would be given to making India a self-reliant country and a global supplier to reduce import bills.

RAISING INTEREST RATES

Why in News?

Experts opine that banks are in a Catch-22 situation.

About

Catch-22 situation-a problematic situation for which the only solution is denied by a circumstance inherent in the problem.

In the present context it denotes a situation where banks want to reduce their surplus SLR securities to support credit growth but rising yields are not offering them the opportunity.

Cause:

Deposits are not growing at the same rate as credit i.e credit growth > deposit growth. Banks are also holding excess SLR securities on the backdrop of earlier low credit growth.

If all banks want to sell excess SLR (getting liquidity) to support credit growth given the number of buyers will lead to an excess supply of bonds > demand. Thus, prices of bonds would reduce and yield rise (as price and yield are inversely related). Bank treasuries losing by selling excess securities

Impact- rise in deposit rates to encourage deposits instead of selling excess SLR securities.

What are excess SLR holdings?

Banks are required to invest 18 percent of the deposits they mobilise in SLR securities. During times when credit growth is low, they invest over and above the regulatory minimum, leading to

excess SLR holdings.

Excess SLR holdings provide collateral buffers to banks for availing funds under the liquidity adjustment facility (LAF) and are also a component of the liquidity coverage ratio (LCR).

How are SLR and yield related?

If all banks want to sell excess SLR (getting liquidity) to support credit growth, the number of buyers will lead to an excess supply of (g-sec) bonds > demand. Thus, prices of bonds would reduce and yield rise (as price and yield are inversely related).

Bank treasuries losing by selling excess securities.

Bonds and bond yield

A bond is a fixed income instrument that represents a loan made by an investor to a borrower (typically corporate or governmental).

A company/govt. issues bonds to raise money and they pay regular fixed interest to the bondholder. This interest rate is called the coupon rate. It is declared on the face value of the bond and remains fixed until maturity.

However, since bonds are tradeable, they also give returns. These returns are called bond yields.

The bond prices and yields generally move in opposite directions. This is because, as a bond's price increases, its yield to maturity falls.

CRISIS IN COFFEE INDUSTRY

GS-III Major crops-cropping patterns in various parts of the country, transport and marketing of agricultural produce

Coffee cultivation is becoming an increasingly loss-making proposition in India. Already weighed down by the high cost of inputs and

rainfall and well-drained slopes are essential for its growth. It grows on hilly slopes at the height of 900-1800m. Low temperature, frost, dry weather

4% of the world's total coffee production. It ranks 6th in the world in coffee production. At present, more than half of the total coffee production in India

Statutory Liquidity Ratio

- SLR is the minimum percentage of deposits that the commercial bank maintains through gold, cash and other securities.
- These deposits are maintained by the banks themselves and not with the RBI or Reserve Bank of India unlike the Cash Reserve Ratio.
- Banks earn returns on money parked as SLR
- Section 24 and Section 56 of the Banking Regulation Act 1949 mandates all scheduled commercial banks, local area banks, Primary (Urban) co-operative banks (UCBs), state co-operative banks and central co-operative banks in India to maintain the SLR.
- It comprises of— cash, gold and SLR securities, comprising:
 - Dated securities
 - Treasury Bills of the Government of India;
 - Dated securities of the Government of India issued from time to time under the market borrowing programme and the Market Stabilization Scheme;
 - State Development Loans (SDLs) of the State Governments issued from time to time under the market borrowing programme; and
 - Any other instrument as may be notified by the Reserve Bank of India

production as well as labour shortage, the industry is now also affected by changes in climate patterns.

Coffee is a tropical plantation crop. 16° – 28°C temperature, 150-250cm

for a long time and harsh sunshine are harmful for its plant.

The status Coffee in India

India contributes about

is produced by Karnataka alone, followed by Kerala and Tamil Nadu. Coffee plants grow better in the laterite soils of Karnataka in India.

The Arabica variety initially brought from Yemen

is produced in the country. Indian coffee is highly rated and commands premium prices in the global coffee markets. Indian coffee offering innumerable flavors, aromas and blends. The commodity, for several decades, enjoyed a special position in India's export lists.

Coffee has high value and high imagery potential at home and overseas market. From being handled and sold as a berry, a green bean, a processed bean, a roasted bean and now a roasted and ground offering, coffee has climbed the hierarchy of value-addition. Coffee was an important export item for the Union government, when the commodity's exports were in the range of 4,000- 5,000 crore annually.

Problems being faced by coffee producers

Erratic weather conditions are helping pests to breed and new diseases to emerge. The volatility in market prices and the reduced influence of producers in the value chain render coffee cultivation an increasingly loss-making proposition. Most private banks insist that growers provide collateral for financing leading to interest rates being higher for small and medium-sized growers who lack collateral. The rise in the cost of inputs year on year and the increase in the cost of labour and benefits, constitute 60% to 70% of total plantation expenditure. Plantations face power cuts during the summer months.

This makes irrigation expensive as the cost of diesel is high.

High Cost of financing:

Most private banks insist that growers provide collateral for financing. Since small and medium-size growers are invariably not in a position to provide collateral, the interest rates are high, at around 12%. International interest rates, on the other hand, are negligible, mostly in single digits. This is an advantage for competing coffee-producing region.

Increasing cost of Inputs:

Due to the rise in the cost of inputs year on year and the increase in the cost of labor and benefits, which constitute 60% to 70% of total plantation expenditure, coffee growers are left with very little money in hand which is not adequate to repay loans. The cost of inputs around coffee such as fertilizers and agrochemicals has increased by almost 20% in a year.

No pricing mechanism:

There is no official price setting mechanism even in the domestic market. So, traders and curers are calling the shots and fixing prices, and growers are at their mercy.

Identity crisis for Indian coffee: On the brand front, Indian coffee is still facing an identity crisis in global markets, although the country started exporting coffee actively before the 19th century. The fact that India sells Robusta and Arabic at a price higher than the hugely advertised Colombia is an indication of the brand building

done by the Indian exporter and the quality of Indian coffee. Yet, Indian coffee does not have an individual brand identity in the international markets, Indian coffee was never considered a separate origin coffee. It was always used as filler.

Reasons behind the High cost of production:

1. Rising labor charges
2. Hard terrain and topography
3. High cost of Irrigation
4. Unskilled migrant labour and wage costs

Way forward

Finding alternative sources of revenue and increasing domestic consumption on the one hand and branding and promoting Indian coffee better in the global market on the other.

Considering the change in land use, the government could permit growers to plant alternate crops in a land not suitable for coffee cultivation. Timely conversion will prevent growers from going financially sick. India's share in the global coffee market may be less than 5%, but the coffee sector is hopeful that the Coffee Act and the new Coffee (Promotion and Development Bill), 2022, will do away the 80-year-old coffee regulation and usher in change.

INFLATION AND CLIMATE CHANGE

Gs-III Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.

Why in news?

Extreme weather worsened by climate change is a hidden cause of inflation, threatening to push up already high prices of everything from food and clothing to electronics.

Existing Global inflation problem

The world appears to be moving towards a stage of acceleration in inflation not seen in the last forty years. In the US inflation reached 7% year-on-year in December, the biggest increase since 1982. In the eurozone inflation reached 5.1% in January, the highest level since the advent of

harmonised statistics in 1997.

In Latin America the history of inflation is different, but here we have also seen an acceleration since the start of 2021. Starting from rates in a range of 3-4% in Brazil, Mexico and Chile, we have moved towards rates of 10% in the former and 7% in the latter two countries.

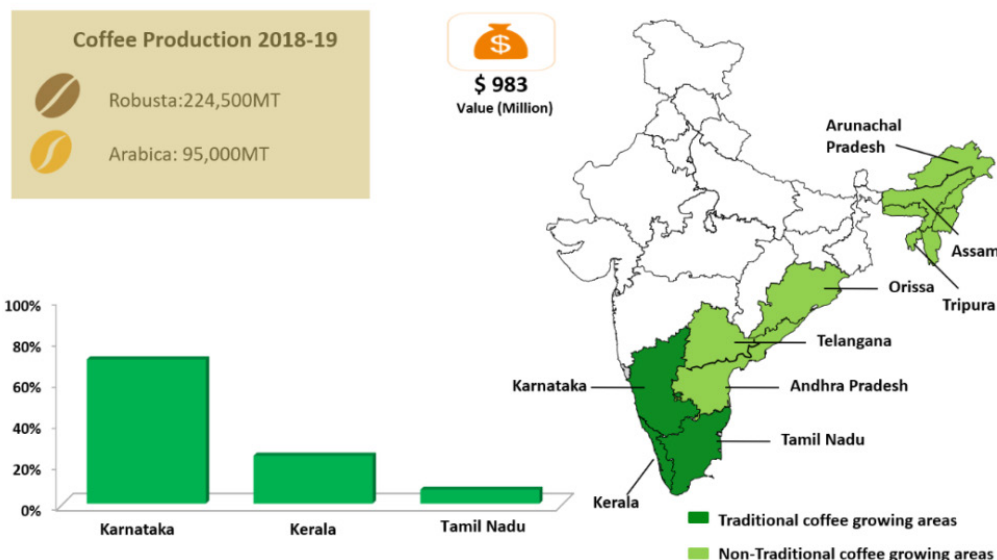
When we take a detailed look at the drivers of inflation in the various regions, there are clear signs of the presence of so-called “supply inflation”, stemming from increases in energy prices and bottlenecks in global supply chains, largely related to the ceasing

of activities during periods of lockdown in many countries and, subsequently, the recovery of the economy. Further, an important constraint factor behind the supply inflation is the “climate change related events” that halts the economic activity frequently around the world.

Effects of climate change on various sectors of economy

Cyclical effects of climate change, extreme weather events, and global warming, have an impact on agriculture, tourism and other weather dependent industries. **Agriculture, agro-**

INDIA COFFEE MARKET-KEY DATA



processing, and animal husbandry are extremely vulnerable to climate change. Higher temperatures and erratic precipitation levels reduce annual yield and quality of key food crops, cause crop failures, reduce access to food, and even help proliferate weeds and pests which further erode crop yields.

The UN's Food and Agriculture Organization has reported that world food prices have increased by more than 31% from 2020 to 2021. Higher food prices impact food affordability and food access for low-income families.

Through higher export and import prices, they **impact trade**. An unexpected adverse impact of increasing food prices has been **increased demand for farmland**. In tropical areas, agriculture has been one of the drivers for deforestation, setting a vicious cycle in motion.

In global value chains, **staple crops** are not the only essential inputs that are affected by climate change inflation. **Energy prices** have been on the rise as well, and they are expected to keep increasing as household and commercial demand for cooling and refrigeration systems continue to rise in response to global

warming.

At the recent 26th UN Climate Change Conference of the Parties (COP26), world leaders committed to strengthening global efforts for climate change mitigation, sustainable development, and poverty eradication. Looking at climate change more than as a food, environmental or energy crisis alone would diversify the diagnostic and policy tools in their arsenals to chart out all that we need to do and all the fronts on which we need to fight climate change.

Examples of inflation related to climate change

Droughts causing high cost of water utilisation in agriculture raising food prices threatening food security

The area under the agriculture reducing due to climate change and related events

The manufacturing plants produce about 2% less revenue for every one-degree rise in annual temperature.

Climate change events affect the productivity of the

human labour

Sources of Climate related inflation

Fossilflation: Increased inflation caused by a disorderly transition away from fossil fuels: a decrease in fossil fuel supplies (due to reduced investments) unmatched by efforts on demand accentuated by carbon taxes and prices.

Climateflation: Physical disruptions caused by climate change such as extreme weather events – evident in sectors like agriculture, fisheries, forestry, energy and tourism.

Greenflation: Inflation caused by increased capital investment in green energy and low carbon technologies – leading to increased demand of critical material like lithium, cobalt, nickel, graphite and manganese causing prices to increase.

Way Forward

The impact of climate change on inflation is still a topic we need to know more about. However, it is also one of the channels through which climate change accentuates inequalities

ROLE OF WOMEN IN LIVESTOCK SECTOR

Context

The livestock sector is one of the most rapidly growing components of the rural economy of India, accounting for 5% of national income and 28% of agricultural GDP in 2018-19. In the last six years, the livestock sector grew at 7.9% (at constant prices) while crop farming grew by 2%. In rural

Role of Livestock in Indian Economy

Livestock plays an important role in Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small farm households as against an average of 14% for all rural households.

India ranks 1st contributing 23% of the global production. In the last 3 decades, India witnessed over 3 times rise in milk production.

Role of Women in rural economy

It is widely recognized that the majority of women workers in rural areas (72%)



households that own livestock, women are invariably engaged in animal rearing.

What is Livestock?

Livestock are the domesticated animals raised in an agricultural setting. The livestock provides food and non-food items to the people. The livestock provides food items such as Milk, Meat and Eggs for human consumption.

Livestock provides livelihood to two-third of rural community. It also provides employment to about 8.8% of the population in India. India has vast livestock resources. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP.

India is the world's largest milk producer, followed by the United States of America, China, Pakistan and Brazil.

are engaged in agricultural activities. However, with the exception of participation in dairy cooperatives, specifically in milk marketing, women's role in the livestock economy is not as widely known or discussed.

There were five million women members in dairy cooperatives in 2015-16, and this increased further to 5.4 million in 2020-21. Women accounted for 31% of all

members of dairy producer cooperatives in 2020-21. In India, the number of women's dairy cooperative societies rose from 18,954 in 2012 to 32,092 in 2015-16.

Why women are not recognized in livestock rearing?

Sporadic nature of work: Conventional labour force surveys fail to accurately record women's work in livestock raising for many reasons. Among the many problems in data collection, two significant ones are the sporadic nature of work undertaken for short spells throughout the day and often carried out within the homestead, and women's own responses.

12 million rural women were workers in livestock raising an estimate based on the Employment and Unemployment Survey of 2011-12. However, with the augmented definition, according to estimates, around 49 million rural women were engaged in raising the livestock.

The problem clearly is that women livestock farmers are not visible to policymakers, and one reason is the lack of gender disaggregated data.

Problems associated with women and livestock rearing

Recent employment surveys such as the Periodic Labour Force Survey fail to collect data on specific activities of persons engaged primarily in domestic duties. So, the undercounting of women in the livestock economy continues.

The reach of extension services to women livestock farmers remains scarce. According to official reports, 80,000 livestock farmers were trained across the country in 2021, but we have no idea how many were women farmers. Only a few women in each village reported receiving any information from extension workers. Women wanted information but wanted it nearer home and at times when they were free.

Women in poor households, without collateral to offer to banks found it difficult to avail loans to purchase livestock. Around 15 lakh new Kisan Credit Cards (KCC) were provided to livestock farmers under the KCC scheme during 2020-22. There is no information on how many of them were women farmers.

Women livestock farmers lacked technical knowledge on choice of animals (breeding) and veterinary care. Men invariably performed these specific tasks and took animals for artificial insemination.

Women were not aware of the composition and functions of dairy boards and that the men exercised decisions even in women-only dairy cooperatives. Further, the voice of women from landless or poor peasant Scheduled Caste households was rarely heard.

GEOGRAPHY,

ENVIRONMENT,

BIODIVERSITY AND

DISASTER MANAGEMENT

LIFESTYLE FOR ENVIRONMENT - LIFE

Pg 59

What's Inside?

1. ACHIEVING GREEN STEEL
2. CORBETT TIGER RESERVE
3. ARCTIC ICE MELT AND ACIDIFICATION
4. GRADED ACTION RESPONSE PLAN (GRAP)
5. GREAT NICOBAR MEGA PROJECT
6. LIVING PLANET REPORT 2022
7. SLENDER LORIS SANCTUARY
8. SOIL CARBON STABILITY
9. WORLD ENERGY OUTLOOK 2022
10. VULTURES IN TAMIL NADU
11. PLACES IN NEWS: KHANGKHUI MANGSOR CAVE

ACHIEVING GREEN STEEL

Decarbonising the Coal sector

More than 80 per cent of the country's reserves are in the states of Odisha, Jharkhand, West Bengal, Chhattisgarh and the northern regions of Andhra Pradesh.

Thus, it is important to make accurate projection of steel demand in these states to ensure only necessary volume is produced to lessen fossil-fuel consumption.

In order to decarbonise the iron and steel sector, the primary emphasis through technological interventions would be on substituting the primary production processes with cleaner alternatives. The three main ways to produce steel from iron through clean technologies are :

1. Carbon capture, utilization and storage (CCUS)
2. Replacing conventional sources of energy with low-carbon hydrogen
3. Direct electrification through electrolysis of iron ore

These technologies are distinct from each other. Their capacity to reduce emissions and linking with the country's existing infrastructure depend on the scenario in the country.

As countries ramp up their emission reduction policies, it is necessary to have an early intervention for the steel sector to remain competitive. Some of the interventions to be explored are:

Increasing energy efficiency through the adoption of technologies that are cost-effective should be allowed especially. There are many old plants that need to be refurbished. Such plants can improve their energy efficiency with the application of largely used efficiency measures. Funding for energy efficiency measures for electricity-based

manufacturing has bright prospects for further investment. Electricity-based manufacturing methods would continue to become green as the grid becomes greener.

Increasing the use of scrap helps in lowering the energy used for making steel since it can be added to electric arc furnaces and blast furnaces, with basic oxygen furnace methods. Constructing a suitable infrastructure for recycling and the Steel Scrap Recycling Policy by the Union Ministry of Steel extends the first step in the direction. This helps in scrap utilization in these methods that reduce emissions.

Creating associations with corporates using steel could send demand signs to producers to manufacture green steel. To drive demand for green steel, the government and public sector should commit to the purchase of environmentally sustainable green steel.

Public and Private sectors would have to generate green standards and similar types of labels for the market growth of green steel. Domestic carbon-trading market is a necessity when it comes to switching to low-carbon technologies. India has gained success through its Perform Achieve Trade scheme, according to which energy efficiency certificates are traded between the designated consumers. These include the iron and steel sector. Since the need to reduce emissions is gaining prominence, one way to achieve it is by amending the policy to estimate and check the carbon emissions instead of energy consumed.

With the industry rapidly decarbonising, it is important to remove old and polluting plant facilities, which have reached the end of their life. Some of the most polluting steel facilities are currently being operated in India.

CORBETT TIGER RESERVE

Why in News?

More than 6000 trees were felled illegally to

start a tiger safari in the Kalagarh forest division of Corbett Tiger Reserve, the Forest Survey of India (FSI) has said in its report.

The Uttarakhand forest department had taken the clearance of the Union Ministry of Forest, Environment and Climate Change for the tiger safari project saying only 163 trees will be chopped off in the process.

But the FSI in its report said 6,093 trees were felled over 16.21 hectares of land in place of 163 for the tiger safari project at Pakhro in the Kalagarh forest division.

About Corbett Tiger Reserve (CTR)

It is located in the Nainital district of Uttarakhand. The national park was established in 1936 as Hailey National Park to protect the endangered Bengal tiger. It is named after Jim Corbett who played a key role in its establishment.

The core area forms the Corbett National Park while the buffer contains reserve forests as well as the Sonanadi Wildlife Sanctuary.

The entire area of the reserve is mountainous and falls in the Shivalik and Outer Himalaya geological provinces. Ramganga, Sonanadi, Mandal, Palain and Kosi are the major rivers flowing through the Reserve. Sprawling over 500 square kilometres, CTR is home to 230 tigers and has

the **world's highest tiger density** — at 14 tigers per hundred square kilometres.

Flora:

Dense moist deciduous forests are found. According to the botanical survey of India, Corbett has 600 species of plants - trees, shrubs, ferns, grass, climbers, herbs, and bamboo. Sal, Khair, and Sissoo are the most visible trees found in Corbett.

Fauna

Apart from tigers, Corbett also has leopards. Other mammals such as jungle cats, barking deer, spotted deer, sambar deer, sloth etc. are also found there.

Other Major Protected Areas of Uttarakhand

- Nanda Devi National Park.
- Valley of Flowers National Park.
- Rajaji National Park.
- Gangotri National Park.
- Govind National Park.

ARCTIC ICE MELT AND ACIDIFICATION

Why in news?

A team of researchers has flagged the changing chemistry of the western region of the Arctic Ocean after discovering acidity levels increasing three to four times faster than ocean waters elsewhere. The team also identified a strong correlation between the accelerated rate of melting ice and the rate of ocean acidification

About

The study of link between arctic ice melt and arctic acidification

Scientists have predicted that by 2050, Arctic sea ice in this region will no longer survive the increasingly warm summers. As a result, the ocean's chemistry will grow more acidic, creating life-threatening problems for the diverse population

of sea creatures, plants and other living things that depend on a healthy ocean.

Seawater is normally alkaline, with a pH value of around 8.1.

The study points to sea-ice melt as the key mechanism to explain this rapid pH decrease, because it changes surface water in three primary ways.

First, the water under the sea ice, which had a deficit of carbon dioxide, now is exposed to the atmospheric carbon dioxide and can take it up freely.

The seawater mixed with meltwater is light and can't mix easily into deeper waters, which means the carbon dioxide is concentrated at the surface.

The meltwater dilutes the carbonate ion

concentration in the seawater, weakening its ability to neutralise the carbon dioxide into bicarbonate and rapidly decreasing ocean pH.

Arctic ocean



The Arctic Ocean is a body of water between Europe, Asia, and North America, mostly north of the Arctic Circle. It includes Baffin Bay, Barents Sea, Beaufort Sea, Chukchi Sea, East Siberian Sea, Greenland Sea, Hudson Bay, Hudson Strait, Kara Sea, Laptev Sea, Northwest Passage, and other tributary water bodies.

The Northwest Passage (US and Canada) and Northern Sea Route (Norway and Russia) are two important seasonal waterways. There are 8 Arctic nations: Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia and United States of America (Alaska).

Ocean acidification

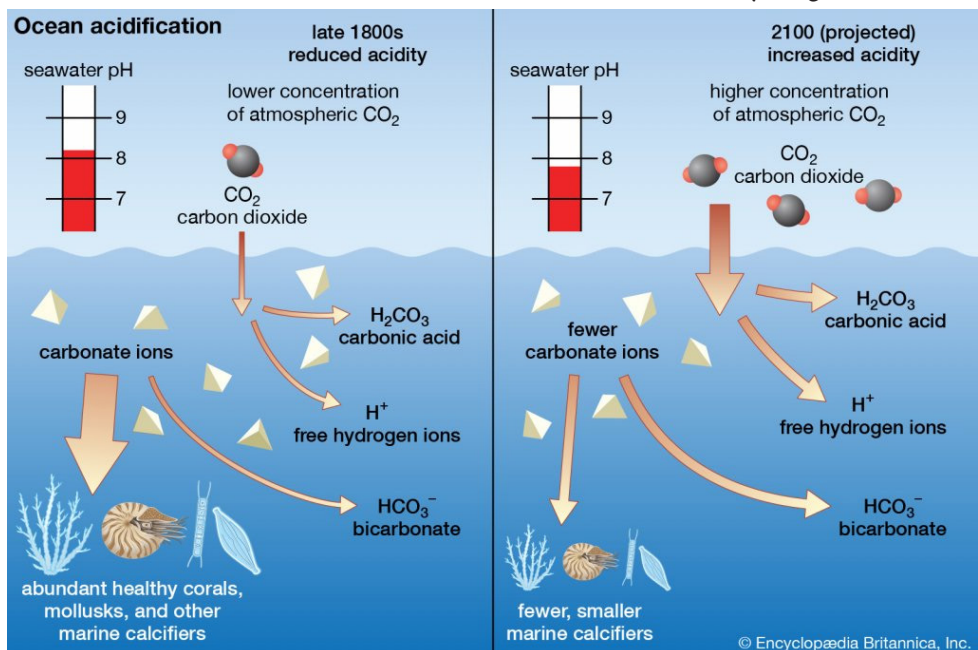
Ocean acidification is the **ongoing decrease in the pH of the Earth's oceans**, caused by the uptake of carbon dioxide (CO_2) from the atmosphere.

Currently, ocean acidification occurs approximately ten times faster than anything experienced during the last 300 million years. Ocean acidification can change marine ecosystems. It impacts many ocean-related benefits to society such as coastal protection or provision of food and income.

Increased ocean temperatures and oxygen loss act concurrently with ocean acidification.

Process of ocean acidification

CO_2 released reacts with water molecules (H_2O) and forms the weak acid H_2CO_3 (carbonic acid) to achieve chemical equilibrium. Most of this acid dissociates into hydrogen ions (H^+)



© Encyclopædia Britannica, Inc.

and bicarbonate ions (HCO_3^-). The increase in H^+ ions reduces pH (measure of acidity) and the oceans acidify, that is they become more acidic or

rather less alkaline. This process is called ocean acidification.

GRADED ACTION RESPONSE PLAN (GRAP)

GRAP is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold.

Stage 1 of GRAP is activated when the AQI is in the 'poor' category (201 to 300), and On Wednesday, for instance, the AQI in Delhi was 211. The second, third and fourth stages will be activated three days ahead of the AQI reaching the 'very poor' category (301 to 400), 'severe' category (401 to 450) and 'severe +' category (above 450) respectively. For this, the Commission for Air Quality Management (CAQM) is relying on air quality and meteorological forecasts by the Indian Institute of Tropical Meteorology (IITM) and the India Meteorological Department (IMD).

Measures being imposed under the previous categories will continue even when the subsequent category is activated, that is, if measures under Stage-2 are activated, measures under Stage-1 will continue to remain in place.

For the implementation of the plan, the Centre decided to set up the Commission for Air Quality Management (CAQM) in National Capital Region and Adjoining Areas. Commission for Air Quality Management (CAQM) is a statutory body formed by the central government. The organization works in concert with other States to develop and carry out plans for the prevention and management of air pollution in the NCR and adjoining areas.

Category	Ambient Particulate Matter (PM) Concentration	Measures
Moderate to Poor	<ul style="list-style-type: none"> PM 2.5 between 61-120 $\mu\text{g}/\text{m}^3$ PM10 between 101-350 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> Enforce pollution control in thermal power plants Mechanized sweeping on roads Ban on firecrackers Stop garbage burning
Very Poor	<ul style="list-style-type: none"> PM2.5 between 121-250 $\mu\text{g}/\text{m}^3$ PM10 between 351-430 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> Stop use of diesel generator sets Increase bus and metro services and increasing frequency of metro service Stop use of coal/firewood in hotels and open eateries
Severe	<ul style="list-style-type: none"> PM2.5 more than 250 $\mu\text{g}/\text{m}^3$ PM10 more than 430 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> Increase frequency of mechanized sweeping of road and sprinkling of water on roads Close brick kilns, Hot Mix plants, Stone Crushers Shut down Badarpur power plant Introduce concessional rates to encourage off-peak travel in public transport.
Severe+ or Emergency	<ul style="list-style-type: none"> PM2.5 of or more than 300 $\mu\text{g}/\text{m}^3$ PM10 of or 500 $\mu\text{g}/\text{m}^3$ <p>(persist for 48 hours or more)</p>	<ul style="list-style-type: none"> Stop entry of diesel trucks into Delhi (except essential commodities) Stop construction activities Introduce odd and even scheme Shutting of schools

GREAT NICOBAR MEGA PROJECT

The expert appraisal committee of the Indian Ministry of Environment, Forest and Climate Change has recommended the grant of environmental and Coastal Regulation Zone (CRZ) clearance for a big infrastructure and tourism project in Great Nicobar Island that will lead to the diversion of 15 per cent of its forest area and the felling of 8.52 lakh (852,000) trees in phases. The project is being spearheaded by Andaman and Nicobar Islands Integrated Development Corporation under a vision plan conceived by the NITI Aayog.

The main components of the Rs. 75,000 crore (Rs. 750 billion) project are an International Container Transshipment Terminal (ICTT), with the capacity to handle 14.2 million TEUs (unit of cargo capacity) eventually, a greenfield international airport handling a peak hour traffic of 4,000 passengers both ways, a township and gas and solar power plant. The airport would be “developed as a joint military-civil, dual-use airport, under the operational control of the Indian Navy.

The first phase would extend to 2036 (from 2021), and the second phase would stretch from 2037 to 2051, but the container terminal would become operational around 2027-28. A total of 166 square kilometres will be earmarked for development.

Concerns Associated with the Project

A long strip of the island predominantly covered by forests has been chosen for the implementation of the project. About 122 square kilometres of the 166 square kilometre project area is made up of forests, and nearly 9 square kilometres, are deemed forests. The northern tip of the project area falls well within the biosphere reserve, which means that about 71 square kilometres of the biosphere reserve area would also have to be earmarked for it.

Original inhabitants belonging to the indigenous Shompen and Nicobarese tribes will be affected. The area will be prone to human-induced diseases due to the expected influx of

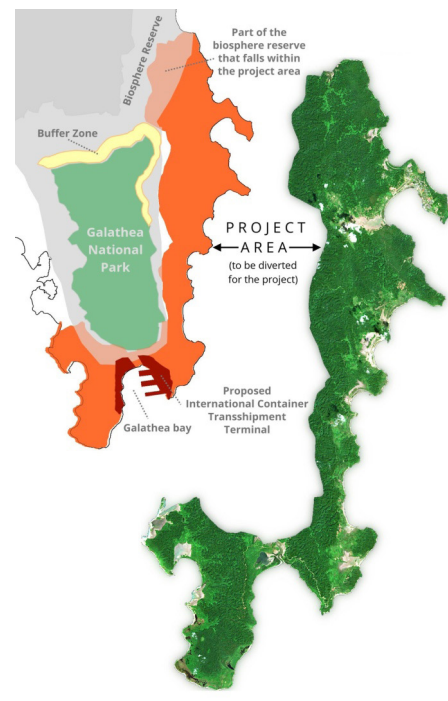
domestic and international populations.

The leatherback sea turtles, Nicobar megapode (a flightless bird endemic to the Nicobar Islands), Nicobar Macaque and saltwater crocodiles are some of the rare fauna that will be affected.

The leatherback sea turtles, Nicobar megapode (a flightless bird endemic to the Nicobar Islands), Nicobar Macaque and saltwater crocodiles are some of the rare fauna that will be affected. Galathea Bay, a major nesting site for leatherback turtles, was home to the Galathea Bay Wildlife Sanctuary. It was stripped off of its protected status and denotified recently. The Galathea National Park adjoining the project area will be largely left without a buffer zone.

Significance of development of A&N:

Strategic location: These islands help India to defend its vital stakes in Indian Ocean Region (IOR); **Economical importance:** It gives a boost to tourism and business there; **Counter Chinese presence in IOR:** In recent years, China strengthens its overall presence in IOR. Examples include deployment of a submarine at Colombo harbour, developing naval bases at Gwadar and Djibouti etc.



Source: Modified Copernicus Sentinel data 2022; Pre-feasibility report for the holistic development of the island prepared for Niti-Aayog; OpenStreetMap

LIVING PLANET REPORT 2022

Why in News?

Recently, the World-Wide Fund for Nature (WWF) released Living Planet Report 2022.

About Living Planet Report

Living Planet Report is WWF's flagship publication. It is released every two years. It is a comprehensive study of trends in global biodiversity and health of the planet. It tracks changes in the relative abundance of wild species populations across the globe.

Findings of the report

Decline in Population

There has been a 69 percent decline in the wildlife populations of mammals, birds, amphibians, reptiles and fish, across the globe in the last 50 years.

The freshwater populations have declined the most, with an average 83% decline between 1970 and 2018.

The IUCN Red List shows cycads, an ancient group of seed plants, are the most threatened species, while corals are declining the fastest, followed by amphibians.

Region wise assessment

The highest decline (94 percent) was in Latin America and the Caribbean region.

Africa recorded a 66 per cent fall in its wildlife populations from 1970-2018.

Asia Pacific's monitored populations fell by 55%.

Southeast Asia is the region where species are most likely to face threats at a significant level.

The Polar Regions and the east coast of Australia and South Africa showed the highest impact probabilities for climate change, driven in particular by impact on birds.

Mangroves

Mangroves continue to be lost to aquaculture, agriculture and coastal development at a rate of

0.13 percent per year. Mangrove-loss represents loss of habitat for biodiversity and the loss of ecosystem services for coastal communities.

Around 137 square kilometres of the Sundarbans mangrove forest in India and Bangladesh has been eroded since 1985, reducing land and ecosystem services for many of the 10 million people who live there.

Corals

About 50% of warm water corals have already been lost and a warming of 1.5 degrees Celsius will lead to a loss of 70-90% of warm water corals. The Bramble Cay Melomys, a small Australian rodent, was declared extinct after sea-level rise.

Sharks

The global abundance of 18 of 31 oceanic sharks has declined by 71% over the last 50 years and the report said that by 2020 three-quarters of sharks and rays were threatened with extinction.

Others

Only 37% of rivers longer than 1,000km remain free-flowing over their entire length.

41% land-use change is the biggest current threat to nature.

Report says action is needed to reverse biodiversity loss by 2030 and keep global warming to 1.5°C.

By moving to sustainable, healthy, and culturally appropriate diets we can reduce agricultural land use by 41% and wildlife loss by up to 46%.

Recommendations of the Report

The planet is experiencing double emergencies of human-induced climate change and biodiversity loss, threatening the well-being of current and future generations. Biodiversity loss and climate crisis should be dealt with as one instead of two different issues as they are intertwined.

A nature-positive future needs transformative, game-changing shifts in how we produce, how we

consume, how we govern and what we finance.

An all-inclusive collective approach towards a more sustainable path must be adopted. It will

ensure that the costs and benefits from our actions are socially just and equitably shared.

SLENDER LORIS SANCTUARY

Why in news?

Tamil Nadu notifies India's first sanctuary for slender lorises

About -

Slender Lorises are small nocturnal animals, which are classified as endangered by the International Union for Conservation of Nature (IUCN), and are listed under the Schedule I of the Wildlife (Protection) Act of India, 1972.

The Kadavur slender loris sanctuary is to cover Vedasandur, Dindigul East and Natham taluks in Dindigul district and Kadavur taluk in Karur district. (Tamilnadu)

They prefer to inhabit thick, thorny bushes and bamboo clumps. Their physical characteristics include thin long arms, and small, vestigial tail. However, their most prominent feature is the pair of two large, closely set, brown eyes, which sets them apart from other primates.

Their diet includes insects, leaves, flowers, slugs and sometimes eggs of birds. Since Slender Loris acts as a biological predator of pests, they benefit the

farmers in protecting agricultural crops from pests.

However, these wild primates face the threat of poaching, and destruction of habitat.

The slender loris is mostly insectivorous. It eats insects from fields and helps farmers protect their crops. So, protecting their population also has major ecological benefits in controlling the population of harmful insects that otherwise create problems for farmers. Therefore, it is necessary to ensure that protected areas are dedicated for maintaining the ecological balance.

There are two subspecies of the primate in India — Mysore grey slender loris and Malabar grey slender loris. These are native to India. In Sri Lanka, there is another species, the red slender loris.

Malabar Grey Slender Loris is found in the wet, evergreen forests of the Western Ghats. And Mysore Grey Slender Loris is found in the relatively drier regions of southern India. They are mostly found in thorn forests, Euphorbia open forests, croplands close to the forests and mixed deciduous forests.



The grey slender loris is found in regions ranging from Kanyakumari to certain parts of Maharashtra. It is found in the western slopes of the Western Ghats. In southwestern parts of India, the Malabar grey slender loris is found in the wet forests of the Western Ghats in the states of Karnataka and Kerala.

The Mysore grey slender loris inhabits the tropical dry forests of the Eastern Ghats in the states of Andhra Pradesh, Karnataka and Tamil

Nadu. Around 40 per cent to 50 per cent of their range in the Western Ghats already falls under some protected areas. But for the Mysore grey slender loris, this is the first dedicated protected area on sites with a large primate population.

The significant population of Mysore grey slender loris is found in a few districts of Tamil Nadu — Tiruchirapalli, Pudukottai, Sivaganga, Karur and Dindugal.

SOIL CARBON STABILITY

Why in News?

A study carried out by researchers at the Centre for Ecological Sciences (CES) and the Divecha Centre for Climate Change (DCCC), IISc, has revealed that grazing animals hold the key to long-term soil carbon stability.

About

Research finding

The 16-year-long study carried out by CES and DCCC researchers state that large mammalian herbivores like the Yak and Ibex play a crucial role in stabilising the pool of soil carbon in grazing ecosystems such as the Spiti region in the Himalayas.

Experimental removal of grazing by herbivores from such ecosystems was found to increase the fluctuations in the level of soil carbon, which can have unintended negative consequences for the global carbon cycle, the study revealed.

Since soil contains more carbon than all plants and the atmosphere combined, it is important to ensure its persistence.

When plants and animals die, the dead organic matter remains in the soil for a long duration before microbes break it down and release carbon into the atmosphere as carbon dioxide.

The soil pool is a reliable sink for trapping carbon. Maintaining stable levels of carbon in the soil is, therefore, key to offsetting the effects of climate change.

Fluctuations in soil carbon

From one year to the next, soil carbon was found to fluctuate 30-40% more in the fenced plots where animals were absent, compared to the grazed plots where it remained more stable each year.

A key factor underlying these fluctuations was nitrogen. Depending on the soil conditions, nitrogen can either stabilise or destabilise the carbon pool. Grazing by herbivores, however, changes their interactions in ways that tip the balance in favour of the former.

These fluctuations can be consequential for climate as they are linked to how large mammalian herbivores influence soil.

As grazing ecosystems make up about 40% of the Earth's land surface, protecting the herbivores that keep the soil carbon stable should remain a key priority for mitigating climate change.

How effective is soil as carbon sinks?

Soil organic carbon (SOC) comes from plants, animals, microbes, leaves and wood, mostly found in the first metre or so.

Soils contain around 2,300 Gt (1 gigatonne = 1 billion tonnes) of organic carbon, making this the largest terrestrial carbon pool.

Benefits of SOC

Increasing SOC through various methods can improve soil health. It can contribute to agricultural yield, food security, and water quality, and also reduce the need for chemicals.

It helps address carbon mitigation and also improves conditions of fresh water, biodiversity, land use and nitrogen use.

Moreover, carbon sequestration in soils has the potential to offset GHG emissions from fossil fuels by up to 15% annually.

Utilizing this option would thus offer breathing time before other technologies can help to transit to a zero-carbon lifestyle.

How is it achieved?

There are many conditions and processes that determine changes to SOC content.

These include temperature, rainfall, vegetation, soil management and land-use change.

Thus, increasing Soil Organic Carbon involves adopting sustainable agricultural practices to keep these factors in balance.

The approaches to increase SOC include:

reducing soil erosion

no-till-farming

use of cover crops

nutrient management

applying manure and sludge

water harvesting and conservation

agroforestry practices, etc

WORLD ENERGY OUTLOOK 2022

With the world in the midst of the first global energy crisis – triggered by Russia's invasion of Ukraine – the World Energy Outlook 2022 (WEO) provides indispensable analysis and insights on the implications of this profound and ongoing shock to energy systems across the globe.

Based on the latest energy data and market developments, this year's WEO explores key questions about the crisis:

The WEO is the energy world's most authoritative source of analysis and projections.

This flagship publication of the IEA has appeared every year since 1998. Its objective data and dispassionate analysis provide critical insights into global energy supply and demand in different scenarios and the implications for energy security, climate targets and economic development.

The annual World Energy Outlook is the International Energy Agency's flagship publication, widely recognised as the most authoritative source for global energy projections and analysis since 1998.

It provides comprehensive insights into the global energy supply and demand in different scenarios and their impact on energy security, climate targets and economic development.

The 2022 report provides indispensable

analysis and insights on the implications of this profound and ongoing shock to energy systems across the globe triggered by ongoing Russia-Ukraine conflict.

The World Energy Outlook 2022 analyzed the future global energy scenario by exploring through three different scenarios differentiated primarily by the assumptions made on government policies. They are:

The Stated Policies Scenario (STEPS) shows the trajectory implied by today's policy settings.

The Announced Pledges Scenario (APS) assumes that all aspirational targets announced by governments are met on time and in full, including their long-term net zero and energy access goals.

The Net Zero Emissions by 2050 (NZE) Scenario maps out a way to achieve a 1.5°C stabilization in the rise in global average temperatures, alongside universal access to modern energy by 2030.

Key Findings:

The Global Energy Crisis:

The global energy crisis sparked by the Russia-Ukraine conflict is having far-reaching implications for households, businesses and entire economies, prompting short-term responses from

governments as well as a deeper debate about the ways to reduce the risk of future disruptions and promote energy security.

High energy prices are causing a huge transfer of wealth from consumers to producers, back

to the levels seen in 2014 for oil, but entirely unprecedented for natural gas.

High fuel prices account for 90% of the rise in the average costs of electricity generation worldwide, natural gas alone for more than 50%.

VULTURES IN TAMIL NADU

Recently, the Tamil Nadu government formed a committee to set up an institutional framework for the effective conservation of vultures.

The State is home to four species of vultures

The white-rumped vulture (*Gyps bengalensis*)

Long-billed vultures (*Gyps indicus*)

The Asian king-vulture (*Sarcogyps calvus*)

The Egyptian vulture (*Neophron percnopterus*)

Mudumalai Tiger Reserve, parts of the Nilgiris forest division and the Sathyamangalam Tiger Reserve are crucial strongholds for the vultures in southern India.

Nilgiris, Erode and Coimbatore districts are believed to form one of the largest contiguous expanses where vultures are spotted.

Are vulture populations in Tamil Nadu decreasing?

The population of the vultures in the Nilgiris, Erode and Coimbatore districts have remained largely stable.

But the experts state that the numbers are still extremely low and that even a single poisoning event could lead to several of the species going locally extinct.

For instance, the use of some Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) to treat cattle, such as diclofenac, nimesulide, and ketoprofen among others has led to the crash in vulture populations across India.

What role do vultures play in the local ecosystem?

As scavengers, vultures help prevent the spread of many diseases and can remove toxins

from entering the environment by consuming carcasses of dead cattle/wildlife before they decompose. Unfortunately, their tolerance for harmful substances does not extend to man-made drugs.

What are the challenges faced by Vultures in Tamil Nadu?

Temple tourism in the Sigur plateau is centred primarily around vulture habitats, such as Siriyur, Anaikatty and Bokkapuram. Over the last few years, there have been recorded instances of vultures abandoning nesting sites located too close to temples inside these reserves.

The spread of invasive weeds such as the Lantana camara in vulture landscapes, which hinders the birds from scavenging as their large wing spans require plenty of open areas to safely land and to take to the skies in case of any major threats.

Due to the illegal tapping of water along the streams running through these areas,



possible climate change, and forest fires, the *Terminalia arjuna* trees, which many

vultures use as nesting sites, are disappearing.

PLACES IN NEWS: KHANGKHUI MANGSOR CAVE

The Khangkhui Cave is a natural limestone cave locally called as Khangkhui Mangsor. It consists of four major caves.

The cave was used as a shelter by the local people during World War II, after the Japanese forces advanced to Manipur and the adjoining Nagaland.

The folklore of the Tangkhul community, believed the cave was the abode of a protective deity. Tangkhul Nagas is an ethnic group living

in the Indo-Myanmar border areas of Ukhrul and Kamjong districts of Manipur.

The cave housed large populations of bats belonging to the *Rhinolophidae* and *Hipposideridae* families. Researchers recorded Blyth's horseshoe bat in the Khangkhui cave which was one of 12 new species added to Manipur's mammals. Archaeologists have discovered many important artefacts, dating back to the Palaeolithic culture from this cave.



LIFESTYLE FOR ENVIRONMENT - LIFE

The United Nations Chief Antonio Guterres is on a three-day visit to India, during which he will attend an event relating to the Mission LiFE with Prime Minister Narendra Modi

Current threats the world is facing

Triple planetary crisis of climate change, pollution and biodiversity loss.

Global warming: Nine of the warmest years on record have come in the past decade alone.

This year's record-breaking heat waves, floods, droughts, and other extreme forms of weather have forced us to face these increasingly devastating impacts.

Climate change is a disruption multiplier in a disrupted world, rolling back progress across the global Sustainable Development Goals.

Ukraine's war fuels devastating energy, food, and cost-of-living crisis.

Steps taken to deal with the crisis

The Paris Agreement and the COP26 summit in Glasgow represent urgently, collective steps countries are taking to limit emissions.

Commitments we have now will not keep warming below the 1.5 °C target that gives us the best chance of

averting catastrophe.

Lack of consumer participation: As governments and industry carry the lion's share of responsibility for responding to the crisis, we as consumers play a large role in driving unsustainable production methods.

LiFE mission

The Lifestyle for Environment (LiFE) campaign was launched by Prime Minister Narendra Modi at COP26 in Glasgow in 2021. The prime minister called upon global leaders to join the movement for safeguarding the environment by adopting environment-friendly lifestyle.

It recognises small individual actions can tip the balance in the planet's favour.

But we need guiding frameworks, information sharing and the scale of a global movement.

It recognises that accountability is relative to contribution.

Emissions across the poorest half of the world's population combined still fall short of even 1% of the wealthiest.

Each 'Pro Planet' stakeholder is nudged according to differentiated approaches.

Mindful choices cultivated by LIFE animate this spirit — actions such as saving energy at home; cycling and using public

transport instead of driving etc. and leveraging our position as customers and employees to demand climate-friendly choices.

Many of the goals of LIFE can be achieved by deploying 'nudges', gentle persuasion techniques to encourage positive behavior.

The UN Environment Programme (UNEP) employs proven nudging techniques such as discouraging food waste by offering smaller plates in cafeterias; encouraging recycling by making bin lids eye-catching.

According to the UNEP, more than two-thirds of greenhouse gas emissions can be attributed to household consumption and lifestyles — thus it requires widespread adoption of greener consumption habits.

India's track record

India has a proven track record of translating the aspirations of national missions into whole-of-society efforts

For instance, the success of the Swachh Bharat Mission, which mobilised individuals and communities across socio-economic strata to become drivers of collective good health and sanitation

From the Panchamrit targets announced by Modi at COP26, to support the International Solar Alliance, the Coalition for Disaster Resilient

Infrastructure and South-South cooperation platforms etc

Onus on the developed world

The average carbon footprint of a person in a high-income country is more than 80 times higher than that of a person in a least-developed country.

It is common sense and only fair to call on the developed world to shoulder a proportionate share of this transition.

In the words of Mahatma Gandhi, “the world has enough for everyone’s need, but not

enough for everyone’s greed.”

Conclusion

India is an excellent place to start. With over 1.3 billion people, if we achieve a true Jan Andolan here, the momentum generated will be enormous. As India leads, we see the world increasingly follow

SCIENCE & TECHNOLOGY

HYDROGEN VALLEY PLATFORM

INDIA'S SPACE ECOSYSTEM

RNA ORIGAMI

A NEW LUNAR MAP IN SODIUM

OVERHAUSER MAGNETOMETERS

MASTITIS

GM MUSTARD

LVM 3 M2 MISSION

SATELLITE PHONES

HERBICIDE GLYPHOSATE

EFFECTS OF NEURAL

PRECURSOR CELLS'

ABNORMAL MIGRATION

NAVIC

DILIP MAHALANABIS

What's Inside?

CHALLENGES OF LITHIUM ION
BATTERIES

*GS-III Science and Technology-
developments and their applications
and effects in everyday life.*

Pg 73

HYDROGEN VALLEY PLATFORM

Why in news?

Hydrogen Valley Platform and DST- India Energy Storage Alliance (IESA) Industry Research & Development Fellowship Programme (IRDFP) 2022 were launched during the International Platform on Hydrogen Economy - An Industry-Academia Conclave.

About

The Hydrogen Valley platform is a global collaboration platform for all information on large-scale hydrogen flagship projects and aims to facilitate a clean energy transition by promoting the emergence of integrated hydrogen projects along the value chain as well as by raising awareness among policy makers. It also supports the **Mission Innovation IC8 Member States**.

On this platform, the most advanced Hydrogen Valleys around the globe provide insights into their project development.

Hydrogen valley

A Hydrogen Valley is a defined geographical

area where hydrogen serves more than one end sector or application in mobility, industry and energy. This typically covers all the necessary steps in the hydrogen value chain, from production (and often even dedicated renewable electricity production) to subsequent storage and its transport & distribution to various off-takers

Objectives

The objective of hydrogen valley is to demonstrate how the entire value chain of hydrogen (production, storage and transportation) as an energy vector fit together in an integrated system approach. This concept is one of the main priorities of industry and the Department of Science and Technology for scaling-up hydrogen deployments and creating interconnected hydrogen ecosystems across India.

India has committed to facilitate the delivery of three clean hydrogen valleys in India by 2030.

INDIA'S SPACE ECOSYSTEM

Recently, Indian Space Conclave was organized to celebrate the one-year anniversary of the Indian Space Association (ISpA).

About ISpA

It was launched in 2021, and is the premier industry association of space and satellite companies. It is also part of the Government's approach to space reforms based on 4 pillars.

Allowing the private sector freedom of innovation.

Government playing the enabler's role.

Preparing youngsters for the future.

Treating the space sector as a resource for the progress of the common man.

ISpA aspires to be the collective voice of the Indian Space industry.

ISpA will undertake Policy Advocacy and engage with all stakeholders in the Indian Space domain, including the Government and its Agencies, to make India self-reliant, technologically advanced and a leading player in the space arena.

It will work towards building global linkages for the Indian space industry to bring in critical technology and investments into the country to create more high skill jobs.

Significance

One of the main goals of the organization is to supplement the government's efforts towards making India a global leader in commercial space-based excursions.

Of late, ISRO's rockets have been carrying the payload and communication satellites of various countries; now, private players will also look to

touch on this space with the new organisation.

Several private sector companies have shown an interest in India's space domain, with space-based communication networks coming to the fore.

Related Initiatives

IN-SPACE: It was launched to provide a level playing field for private companies to use Indian space infrastructure. It acts as a single-point

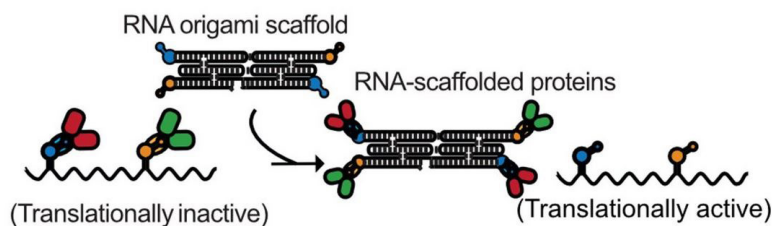
interface between the ISRO and everyone who wants to participate in space-related activities or use India's space resources.

New Space India Limited (NSIL): Announced in Budget 2019, its aim is to use research and development carried out by ISRO over the years for commercial purposes through Indian industry partners.

RNA ORIGAMI

RNA origami is the nanoscale folding of RNA, enabling the RNA to create particular shapes to organize these molecules. It is an attempt to generate complex human-made RNA-based devices. They are stable in cells, interact with other biomolecules, including other RNA and proteins, and enable unique applications, particularly in the context of gene regulation.

So far there have been two approaches in RNA origami and both attempt to regulate the production of protein.



To achieve precise control of protein production

Self-inhibiting protein expression cassettes were made by installing a strong binding site for

the expressed protein in its own gene. Afterwards, RNA origami decorated with the same protein-binding sites was expressed in large excess. In this way, the RNA origami serves as a protein-sponge that sequesters proteins in the cell and allows expression of the self-inhibited protein. This approach helped to regulate several proteins simultaneously and turn on enzymatic pathways for improved product yields.

Using for gene editing

The RNA origamis were integrated in the small RNAs that guide CRISPR-Cas9 enzyme to target specific sequences in the DNA genome. Its scaffolds were decorated with protein-binding sites capable of recruiting transcription factors. By targeting the RNA scaffolds to promoter regions, the transcription factors activated gene expression. Researchers have shown that the expression strength can be tuned by the orienting the scaffold and level of transcription factors recruited. These multi-enzyme pathways could be controlled for high-yield production of the anti-cancer drug violacein.

A NEW LUNAR MAP IN SODIUM

Why in news?

The X-ray spectrometer CLASS on the Chandrayaan-2 Orbiter has mapped the abundance of sodium on the Moon for the first time.

About

Chandrayaan-1 X-ray Fluorescence Spectrometer (C1XS) detected sodium from its characteristic line in X-rays which opened up the possibility of mapping the amount of sodium on the Moon.

In a recent work, **Chandrayaan-2** mapped the

abundance of sodium on the Moon for the very first time using its large area X-ray spectrometer, CLASS.

Chandrayaan-2 Large Area Soft X-ray Spectrometer (CLASS) measures the Moon's X-ray Fluorescence (XRF) spectra to examine the presence of major elements such as Magnesium, Aluminium, Silicon, Calcium, Titanium, Iron, and Sodium. The XRF technique will detect these elements by measuring the characteristic X-rays they emit when excited by the Sun's rays.

These sodium atoms can be nudged out of the surface by solar wind or Ultra Violet radiation more easily than if they were part of the lunar minerals.

There is also a **diurnal variation of the surface sodium** that would explain the continuous supply of atoms to the exosphere, sustaining it.

An interesting aspect that widens the interest in this alkali element is its **presence in the wispy atmosphere of the Moon**, a region so thin that the atoms there rarely meet. This region termed

an '**exosphere**' begins at the surface of the Moon and extends several thousand kilometers merging into the interplanetary space.

The new findings from Chandrayaan-2, provide an avenue to study surface-exosphere interaction on the Moon, which would aid development of similar models for Mercury and other airless bodies in our Solar System and beyond. With the solar cycle in its ascent, CLASS will provide global maps of Na in the coming years.

The Moon is significantly depleted in volatile elements when compared to Earth, an observation that has resulted in various formation scenarios leading to the loss of volatiles. Sodium is a moderately volatile element that is a lithophile, which can be utilized as a tracer of the volatile history in planetary bodies. It is also well observed in the exosphere of several bodies in our solar system and exoplanetary systems. But lunar surface sodium abundances have so far been measured only in samples brought back to Earth

OVERHAUSER MAGNETOMETERS

Why in News?

Indian scientists have developed an indigenous Overhauser Magnetometer, one of the most accurate magnetometers extensively used by all magnetic observatories around the world.

About Overhauser Magnetometers

A magnetometer is a scientific instrument used to measure the strength and direction of the magnetic field. OVH magnetometers are known for their higher accuracy, higher sensitivity, and efficient power consumption.

They find applications in all magnetic observatories worldwide as well as in international space programs. It has so far been imported for such purposes in India.

Indian Institute of Geomagnetism (IIG) has developed India's first indigenous Overhauser (OVH) Magnetometer. It has been installed at Alibag Magnetic Observatory (MO), Maharashtra.

The performance of this indigenously made magnetometer is at par with a commercial OVH sensor that is currently installed at the magnetic observatories of IIG.

The Indian OVH sensor reproduced the geomagnetic diurnal variations accurately and precisely.

It showed the signatures of various space weather events such as geomagnetic storms, sudden impulses, etc. It would also be of potential help to develop a sensitive magnetic resonance imaging (MRI) instrument.

Benefits of OVH magnetometers

OVH magnetometers reduce the cost of sampling and sensing experiments essential for geomagnetic sampling.

It can reduce India's dependence on commercial OVH magnetometers for performing

geomagnetic field measurements.

This will help in reducing the cost of sampling

and sensing experiments essential for geomagnetic sampling.

MASTITIS

Why in News ?

In a major breakthrough in creating immunity in cattle against infectious diseases, including mastitis, researchers of the Transdisciplinary University of Health Sciences & Technology (TDU), Bengaluru, have successfully validated the immunomodulation ability of a natural phytochemical compound with **curcumin** as the active ingredient.

About

What the research found

The study was carried out in the Thrissur district in Kerala as part of the academia-industry interface.

Curcumin is a yellow pigment found primarily in turmeric. It is a polyphenol with anti-inflammatory properties and the ability to increase the amount of antioxidants that the body produces.

Research revealed that Curcumin offers immunity in dairy cattle against infectious diseases including mastitis by increasing complementary protein, Interferon, Immunoglobulin (IgM), lymphocytes and monocytes.

The compound will create appropriate immunity and facilitate increased milk production by 10 percent. An increase in calcium-phosphorus and albumin-globulin ratio and digestibility index substantiates a 10% increase in milk production.

Significance of the research

For States like Kerala where more than 96% cattle are crossbreeds, control of mastitis assumes more significance.

The use of antibiotics for treating mastitis results in interspecies and intergenus transfer of antibiotic resistance and the creation of various multidrug-resistant microorganisms in the environment, which affects the immunity of

livestock and human health.

The compound with curcumin can be used to control mastitis as a prophylactic measure during the prepartum and postpartum stages along with cattle feed under scientific management practices.

The severity of mastitis in India

At a time when economic loss due to mastitis in India exceeds 13,000 crore annually, there is great relevance for the findings as no vaccination is available against mastitis yet.

Antibiotics have been used to manage various infections in cattle.

However, it has been noticed that the uncontrolled use of antibiotics results in increased antibiotic resistance.

About the Mastitis

Mastitis, or inflammation of the mammary gland, is the most common and the most expensive disease of dairy cattle throughout most of the world.

Several types of bacteria cause distinctly different mastitis infections.

Antibiotic infusions into the udder nearly always cure the clinical disease but may not eliminate the bacterial infection.

Cause

Although stress and physical injuries may cause inflammation of the gland, infection by invading **bacteria** or other microorganisms (fungi, yeasts and possibly viruses) is the primary cause of mastitis.

Infections begin when microorganisms penetrate the teat canal and multiply in the mammary gland.

GM MUSTARD

Why in news?

For the first time in 16 years, the Genetical Engineering Appraisal Committee (GEAC), the authority to approve trials and release of genetically modified crops, has paved the way for the commercial release of GM mustard.

About-

Genetically modified crops

A genetically modified organism (GMO) is any living organism whose genetic material has been modified to include certain desirable techniques. Genetic modification has previously been used for the large-scale production of insulin, vaccines, and more.

In crops, genetic modification involves the manipulation of DNA instead of using controlled pollination—the conventional method to improve crops—to alter certain characteristics of the crop.

Soyabean, maize, cotton, and canola with herbicide tolerance and insect resistance are the most widely grown GM crops around the world. Other common genetically modified characteristics include virus resistance, drought resistance, and fruit and tuber quality.

BT Cotton

Indian farmers started cultivating Bt cotton, a pest-resistant, genetically modified version of cotton, in 2002-03. Bt modification is a type of genetic modification where the Bt gene obtained from the soil bacterium *Bacillus thuringiensis* is introduced into the target crop – in this case, cotton. Bt cotton is resistant to bollworm, a pest that destroys cotton plants.

By 2014, around 96% of the area under cotton cultivation in India was Bt cotton, making India the fourth-largest cultivator of GM crops by acreage and the second largest producer of cotton.

BT Brinjal:

Mahyco jointly developed Bt Brinjal with the Dharwad University of Agricultural Sciences and the Tamil Nadu Agricultural University.

Even though GEAC 2007 had recommended the commercial release of Bt Brinjal, the initiative was blocked in 2010.

GM Mustard

Dhara Mustard Hybrid (DMH-11) is an indigenously developed transgenic mustard. It is a genetically modified variant of Herbicide Tolerant (HT) mustard.

It contains two alien genes ('barnase' and 'barstar') isolated from a soil bacterium called *Bacillus amyloliquefaciens* that enable breeding of high-yielding commercial mustard hybrids.

It has been developed by the Centre for Genetic Manipulation of Crop Plants (CGMCP) at Delhi University.

Other crops on the line

GM potato (BRL-1), GM banana and GM rubber are in the line for review and recommendations for trials and approval at different stages

GEAC :

The Genetic Engineering Appraisal Committee (GEAC), under the Ministry of Environment, Forest and Climate Change (MoEF&CC), is responsible for the assessment of proposals related to the release of genetically engineered organisms and products into the environment, including experimental field trials.

GEAC or people authorised by it have the power to take punitive actions under the Environment Protection Act.

Regulatory Framework

Acts and rules that regulate GM crops in India include:

Environment Protection Act, 1986 (EPA)

Biological Diversity Act, 2002

Plant Quarantine Order, 2003

GM policy under Foreign Trade Policy

Food Safety and Standards Act, 2006

Drugs and Cosmetics Rule (8th Amendment), 1988

The rules regarding GMO are implemented by Ministry of Environment and Forests and

Department of Biotechnology State Governments

Six Competent Authorities and their composition have been notified which are as follows:

Recombinant DNA Advisory Committee (RDAC)

Institutional Biosafety Committees (IBSC)

Review Committee on Genetic Manipulation(RCGM)

Genetic Engineering Approval Committee (GEAC)

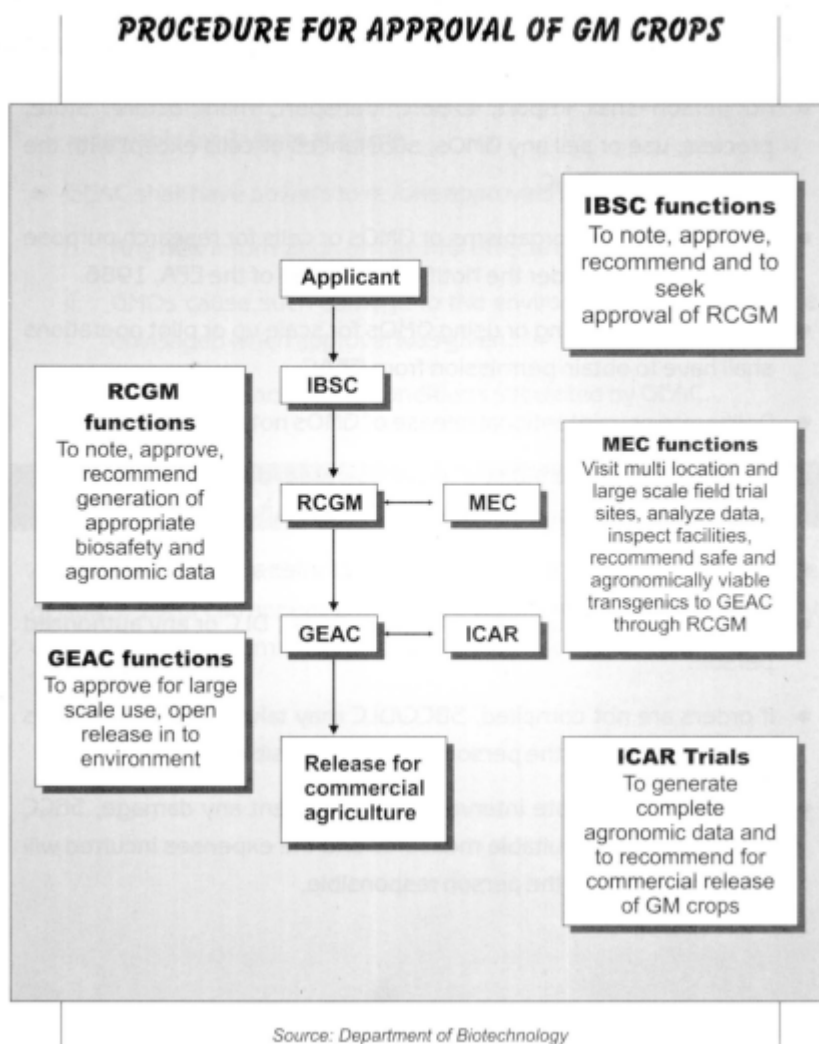
State Biosafety Coordination Committees (SBCC)

District Level Committees (DLC).

While the RDAC is of advisory in function, the IBSC, RCGM, and

GEAC are of regulatory function. SBCC and DLC are for monitoring purposes. The composition of each committee is defined in the Rules, 1989. In addition to the above, a Monitoring cum Evaluating committee (MEC) has been set up by the RCGM to monitor the field performance of GM crops.

Process of approval



LVM 3 M2 MISSION

Why in news?

The LVM3-M2 mission is a dedicated commercial mission for a foreign customer OneWeb, through NSIL. It is the first multi-satellite mission with 36 OneWeb Satellites to the LEO as the heaviest Payload mass of 5,796 kg. of LVM3 till date.

About

Salient features of the Mission

1. First Commercial Mission of LVM3
2. First Multi-Satellite mission with 36 OneWeb Satellites onboard
3. First launch of LVM3 to LEO
4. First Indian rocket with six ton payload
5. First NSIL Mission with LVM3
6. First OneWeb Mission with NSIL/DoS

LVM 3

The Launch Vehicle Mark-3 (LVM 3) previously referred to as the Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mk3) is a three-stage medium-lift launch vehicle developed by the Indian Space Research Organisation (ISRO).

Primarily designed to launch communication satellites into geostationary orbit, it is also due to launch crewed missions under the Indian Human Spaceflight Programme. GSLV Mk III has a higher payload capacity than its predecessor, GSLV Mk II

The GSLV Mk III has launched **Crew Module Atmospheric Re-entry Experiment (CARE)**, India's space capsule recovery experiment module, Chandrayaan-2, India's second lunar mission, and will be used to carry Gaganyaan, the first crewed mission under Indian Human Spaceflight Programme. In March 2022, UK-based global communication satellite provider OneWeb entered into an agreement with ISRO to launch OneWeb satellites aboard the GSLV Mk III along with the PSLV, due to the launch services from Roscosmos being cut off, caused by the Russian Invasion of Ukraine. The first launch took place on 22nd October 2022, injecting 36 satellites for Low Earth Orbit.

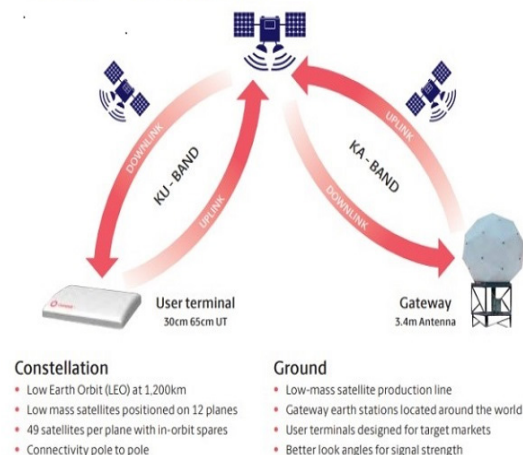
ISRO changed the name of GSLV Mk3 to LVM 3 after the successful launch of LVM3-M2 mission. The rename was done to remove any ambiguity on the ability of the vehicle to put payloads in a particular orbit

ONE WEB SATELLITE CONSTELLATION

The OneWeb satellite constellation is a planned initial 648-satellite internet constellation which is in the process of being completed in 2022 with a goal to provide global broadband internet services by the end of 2023. The constellation is being deployed by OneWeb, headquartered in London, with offices in California, Florida, Virginia, Dubai and Singapore.

The OneWeb communication satellites weigh approximately 150kg each and have a design life of five years when operating in the low Earth orbit (LEO) and up to seven years when operating at a 500km orbit. Each spacecraft is distinctly wired with fewer electrical connections between the systems.

How our connectivity works



The satellite can carry up to 60kg of payloads in a stowed box, measuring 48cm-long, 52cm-wide, and 52cm-high. It incorporates Xenon hall-effect thruster (HET) electric propulsion device, powered by a Li-ion battery.

The OneWeb satellite constellation

incorporates up to 3,600 communication antenna subsystems to provide 3G, LTE, 5G, and Wi-Fi services to end users.

SATELLITE PHONES

Why in news?

A senior executive of Saudi Aramco was arrested and jailed in Uttarakhand's Chamoli district for using an unauthorised satellite phone.

About

A satellite telephone, satellite phone or satphone is a type of mobile phone that connects to other phones or the telephone network by radio through orbiting satellites instead of terrestrial cell sites, as cellphones do. The advantage of a satphone is that its use is not limited to areas covered by cell towers; it can be used in most or all geographic locations on the Earth's surface

Satphones are much more expensive than regular cell phones. The device may cost around \$1,000 or more, and monthly/yearly plans can cost hundreds of dollars each year. The talk-time with these plans is limited, so using the phone for longer means shelling out more. People and companies who need these phones often choose to rent them — say, for the duration of their stay in a remote location during a vacation.

There are a few well known satellite connectivity providers. These are Iridium,

Inmarsat, Thuraya and Globalstar. Each sat phone device works only with a specific provider — which means a Thuraya phone will not work on the Iridium network.

It's not legal to carry one in India unless you have permission. Visitors to the country are specifically advised not to carry a satellite phone without permission. Restrictions on the possession and use of these phones were tightened after the Pakistani terrorists who attacked Mumbai in November 2008 used these devices to keep in touch with their Lashkar-e-Taiba handlers.

Section 6 of The Indian Wireless Telegraphy Act, 1933 makes it illegal to possess “any wireless telegraphy apparatus, other than a wireless transmitter, in contravention of the provisions that no person shall possess wireless telegraphy apparatus” without a licence

Section 4 of the Act allows the central government to make rules under the Act to “exempt any person or any class of persons from the provisions of this Act either generally or subject to prescribed conditions, or in respect of specified wireless telegraphy apparatus”.

HERBICIDE GLYPHOSATE

Why in news?

The Union Ministry of Agriculture and Farmers Welfare decided to restrict the Glyphosate usage through a notification 'Restriction on use of Glyphosate Order, 2022' dated October 21, 2022.

About

Glyphosate is herbicide that is applied directly to plant foliage, which is given in smaller quantitative, can acts as a plant growth regulator.

In India, glyphosate use was approved only for tea crops and non crop areas for control of weeds. But government data shows consumption in states that do not have tea crops say, UttarpPradesh, Gujarat, Jammu and Kashmir etc.

Usage:

The tea sector in India is the biggest consumer of glyphosate in the country. It is majorly used on tea planters. The tea sector of West Bengal and Assam is a key market for the sales of Glyphosate.

This herbicide is highly consumed for the growth of sugarcane, maize and many fruit crops including mango, banana, grapes, pomegranate and citrus fruits.

As per a bulletin released by the Indian Council of Agricultural Research (ICAR) (2016), in India, this pesticide goes by the name of Glycel, Roundup and Brake.

Effects:

The World Health Organization (WHO) (2015) stated that Glyphosate is probably carcinogenic to humans. Pregnant women and children may have higher risks because children and developing fetuses may be more susceptible to carcinogens.

Symptoms include irritation, swelling, burning of the skin, oral and nasal discomfort, unpleasant taste and blurred vision. Glyphosate may affect your kidney and liver

Glyphosate does not get in to groundwater as it binds well into the soil. Hence, glyphosate can persist in soil for months.

Measures:

In India, Andhra Pradesh was the first state to ban the use of Glyphosate in 2018.

It was followed by Punjab, Kerala and Telangana, which had put some restrictions on the sale of this herbicide, however, not completely banned.

Some countries have banned or restricted the use of glyphosate. These include Sri Lanka, Netherlands, France, Colombia, Canada, Israel and Argentina.

EFFECTS OF NEURAL PRECURSOR CELLS' ABNORMAL MIGRATION

Neural cells derived from patients with bipolar disorder (BD) show a difference in the way they migrate as compared to controls, finds a study.

This difference may contribute in a fundamental way to brain tissue repair and assembly.

The neural tube

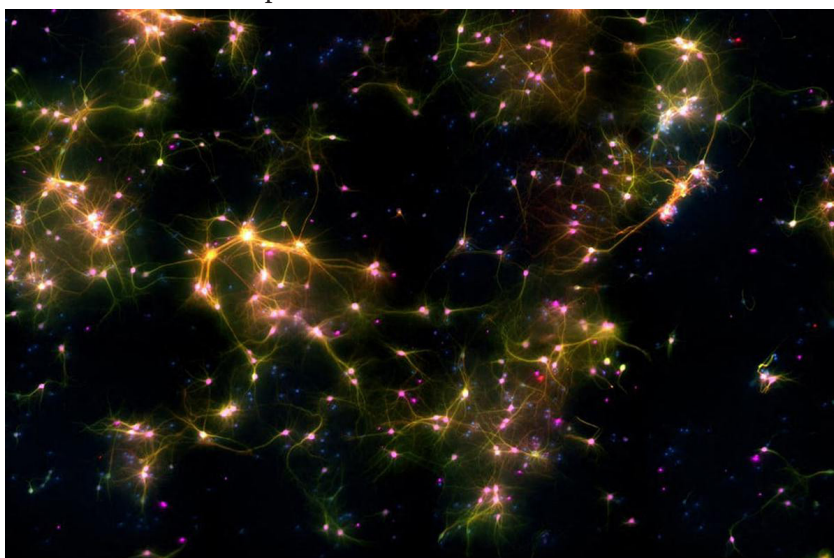
Brain development starts early during pregnancy. This starts with a single layer of cells that roll up to form a tube called the neural tube. The brain develops at one end of this neural tube.

It is a process that takes up many cell divisions as well as cells migrating through large distances.

The trajectories of migrating

neural precursors lay the foundation for the developing brain. The speed and direction of migrating cells can alter the regional cellular make-up, and, therefore, the wiring of cortical areas.

The key result of the work is that the neural precursor cells derived from stem cells from



people with bipolar disorder showed a difference in the way they migrated as compared to neural precursors derived from stem cells of people without bipolar disorder (Controls).

BD and brain structure

Bipolar disorder is a severe disabling illness where a person's mood, energy, activity levels and ability to carry out day-to-day activities undergo unusual shifts over a period. The illness has a genetic basis and neurodevelopmental origin.

Many studies have documented abnormalities in the brain structure of patients with BD. Some abnormalities include smaller brain size, reduced cortical grey and white matter and decreased number of interneurons in the cerebral cortex and hippocampus regions.

These differences perhaps exist, but need not always convert into disease as the changes are too subtle. However, they do increase the risk in general.

NAVIC

What is NavIC?

NavIC, or Navigation with Indian Constellation, is an independent stand-alone navigation satellite system developed by the Indian Space Research Organisation (ISRO).

NavIC was originally approved in 2006 at a cost of \$174 million. It was expected to be completed by late 2011, but only became operational in 2018.

NavIC consists of eight satellites and covers the whole of India's landmass and up to 1,500 km (930 miles) from its boundaries. Currently, NavIC's use is limited.

It is being used in public vehicle tracking in India, for providing emergency warning alerts to fishermen venturing into the deep sea where there is no terrestrial network connectivity, and for tracking and providing information related to natural disasters.

Enabling it in smartphones is the next step India is pushing for.

How does NavIC compare?

The main difference is the serviceable area covered by these systems.

GPS caters to users across the globe and its satellites circle the earth twice a day, while NavIC is currently for use in India and adjacent areas.

Like GPS, there are three more navigation systems that have global coverage – Galileo from the European Union, Russia-owned GLONASS and China's Beidou.

QZSS, operated by Japan, is another regional navigation system covering Asia-Oceania region, with a focus on Japan.

India's 2021 satellite navigation draft policy stated the government will work towards "expanding the coverage from regional to global" to ensure availability of NavIC signal in any part of the world.

NavIC is "as good as GPS of the United States in terms of position accuracy," the Indian government said in August.

Why is India promoting NavIC?

India says NavIC is conceived with the aim of removing dependence on foreign satellite systems for navigation service requirements, particularly for "strategic sectors."

Relying on systems like GPS and GLONASS may not always be reliable, India says, as those are operated by the defence agencies of respective nations and it is possible that civilian services can be degraded or denied.

"NavIC is an indigenous positioning system that is under Indian control. There is no risk of the service being withdrawn or denied in a given situation," the government said in 2021.

India also wants to encourage its ministries to use NavIC applications to promote local industry engaged in developing indigenous NavIC-based solutions.

DILIP MAHALANABIS

Why in News?

Dr Dilip Mahalanabis, who pioneered Oral Rehydration Solution (ORS) treatment as a simple, effective remedy for dehydration has passed away.

About

Dilip Mahalanabis (12 November 1934 – 16 October 2022) was an Indian paediatrician known for pioneering the use of oral rehydration therapy to treat diarrheal diseases.

Contribution



In 1971, as the Bangladesh Liberation War in the refugee camp in Bangaon, West Bengal, Cholera was spread taking the toll on life. The camp was under the supervision of Kolkata paediatrician Dilip Mahalanabis, and the situation was turning critical.

The camp was running out of intravenous fluid saline, the then-standard treatment for

the severe — frequently fatal — diarrhoea that cholera causes, and lacked enough trained staff to administer it.

In desperation, Mahalanabis turned to oral rehydration therapy (ORT), still not widely accepted as a diarrhoea treatment, and with the support of the Johns Hopkins University Centre for Medical Research and Training in Kolkata, began administering a precise mixture of table salt, baking soda and commercial glucose with clean drinking water.

The results were near-miraculous: Within two weeks, the death rate dropped from 30 per cent to 3.6 percent.

In 1994, he was elected a foreign member of the **Royal Swedish Academy of Sciences**.

In 2002, Dr. Mahalanabis was awarded the first **Pollin Prize** in Pediatric Research for their contributions to the discovery and implementation of oral rehydration therapy.

In 2006, he was awarded the **Prince Mahidol Prize**, for his role in the development and application of oral rehydration therapy.

About ORT

Oral rehydration therapy is an alternative to intravenous rehydration therapy for preventing and treating dehydration from diarrhea when intravenous therapy is not available or feasible. Oral rehydration therapy is calculated by the World Health Organization to have saved the lives of over 60 million persons.

CHALLENGES OF LITHIUM ION BATTERIES

GS-III Science and Technology- developments and their applications and effects in everyday life.

Context

After years of research, Lithium Ion Batteries (LIBs) have established themselves as the unique, preferred means to store power. From handheld camcorders to smartphones, laptops to electric vehicles and space stations, large power plants to home UPS devices, LIBs find a variety of applications. The small size of the batteries, light weight, affordability and the ability to sustain multiple charge cycles make LIBs a popular choice for energy storage.

Two key aspects of safety and sustainability continue to pose impediments in the growth envisaged in LIB usage. In India, reports of fatality and material loss due to fire from LIBs are on the rise.

Challenges

First, The EV sector is unique and is bracing through several demands that have an overall bearing on the safety of the vehicles. First pertains to delivering vehicles that are not just sleek, slim and light weight in design but also those that offer maximum range and performance.

Second pertains to meeting fast charging expectations. Both range and fast charging aspects require thorough understanding all the way from

the metal chemistries to the overall LIB system level.

Third is the ever evolving metal compositions that offer high performance and affordability. As batteries constitute a significant part of the EV cost, cheaper metals and components (including battery management systems) ensure viability in a hugely competitive market.

Fourth is the quality of raw materials and components which necessitate the need for high fidelity manufacturing practices.

Fifth aspect relates to the extreme temperature sensitivity of LIBs. EV designs, deployed worldwide, need highly efficient thermal management systems and fault-detection mechanisms to avoid thermal runaways similar to the incidents that have been witnessed recently.

Design of EVs is complex. Unlike traditional practices, design of EVs is integrated with that of the battery and its components. The customisations on the battery end get only more complex with new features, swappable battery options and connectivity requirements as in the case of autonomous cars. Notwithstanding all of the above, EVs also need an accelerated go-to-market approach to cater to the

sustainability goals driven by organisations and nations across the world.

According to predictions, the volume of the end-of-life LIBs is likely to increase from 7,05,000 tonnes in 2025 to about 9 million tonnes by 2040. As the long-term sustainability of depending on primary mineral sources (mines) is in question, recycling is key.

Way ahead

Measures to mitigate the environmental, social and financial impacts of LIB waste are being rolled out and on August 24, the government notified the Battery Waste Management Rules 2022 to manage a wide range of batteries that include LIBs.

The mechanism of “Extended Producer Responsibility” (EPR) increases the accountability battery manufacturers need to assume towards collection, refurbishment/recycle of batteries.

A mandated minimum percentage of recycled material in all products also opens doors for new technologies to be adopted. The need of the hour is to accelerate the development of circular economy solutions that recycle all the metals and facilitate a cradle-to-cradle (infinite loop) approach.

The ultimate goal is to meet sustainability goals and deploy technologies/best practices that reduce dependency on primary ores. Unless that is done, partial recovery of metals or export of black powder (crushed battery waste) for recovery will continue.

A strong collaboration among technologists, policy-makers and governments is required to help manage the 'EV revolution'. Unless this is done, it will be a bumpy ride, which because of sheer scale will leave a large negative impact in the journey towards a safe and sustainable future.



SECURITY

What's Inside?

1. CHIEF OF DEFENCE STAFF
2. PRACHAND
3. KAMIKAZE DRONES
4. DIRTY BOMB ATTACK

CONTOURS AND DIMENSIONS
OF CYBER ATTACKS

*GS-III role of media and social
networking sites in internal security
challenges, basics of cyber security*

CHIEF OF DEFENCE STAFF

General Anil Chauhan, PVSM, UYSM, AVSM, SM, VSM assumed office as the Chief of Defence Staff (CDS) on September 30, 2022.

General Chauhan will also be the Principal Military Advisor to the Raksha Mantri on all Tri-Service matters as well as head Department of Military Affairs as Secretary. He will also be Permanent Chairman, Chiefs of Staff Committee (COSC).

In a brief interaction with media before taking charge, General Chauhan said that it was a matter of pride for him to be nominated as CDS.

There are hopes and expectations among the three Services, government and citizens from the new CDS which, he said, he would fulfil to the best of his abilities. He added that the security challenges facing the nation will be dealt with jointly by the Services.

History:

In 1999, the Kargil Review Committee headed by Shri K Subrahmanyam, had recommended a

review of the National Security Framework for improved decision-making on defence matters. The Committee also suggested that the mechanisms and interface between the Defence Ministry and the Service Headquarters should be thoroughly studied and reorganised.

Based on the K Subrahmanyam Committee Report, a Group of Ministers (GoM) in 2001 recommended creation of the post of Chief of Defence Staff.

Many major countries of the world have created the post of the Chief of Defence Staff to bring more jointness and integration in their Armed Forces.

These include Italy, France, China, UK, USA, Canada and Japan. Despite these examples, no consensus could be reached within India in this regard.

Under the leadership of Prime Minister Narendra Modi, this transformative reform was realised and brought to action.

PRACHAND

Why in news?

Recently, the Indian Air Force formally inducted the indigenously developed multi-role Light Combat Helicopter (LCH), Prachanda which is suitable for operating in high-altitude battlefields.

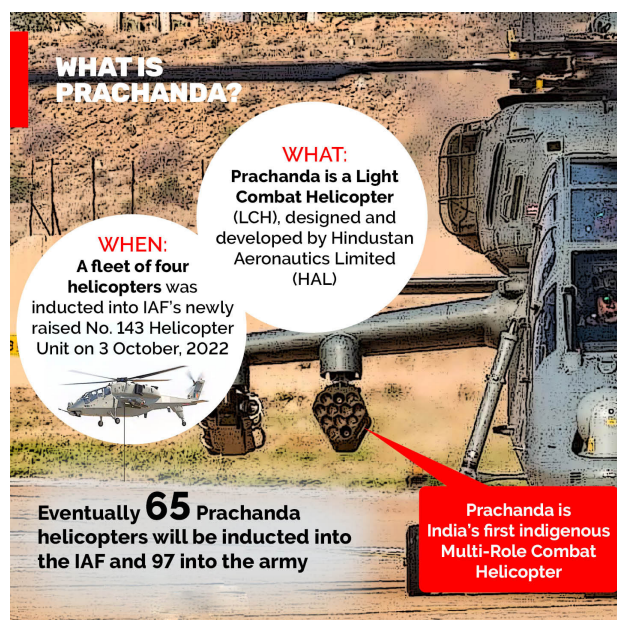
About

The LCH is the only attack helicopter in the world which can land and take off at an altitude of 5,000 meters with a considerable load of weapons and fuel.

The helicopter uses radar-absorbing material to lower radar signature and has a significantly crash-proof structure and landing gear.

A pressurised cabin offers protection from Nuclear, Biological and Chemical (NBC) contingencies.

The helicopter is equipped with a countermeasure dispensing system that protects



it from enemy radars or infrared seekers of enemy missiles.

LCH is powered by two French-origin Shakti engines manufactured by the HAL.

Significance

The LCH has the capabilities of combat roles such as destruction of enemy air defence, counter insurgency warfare, combat search and rescue, anti-tank, and counter surface force operations.

KAMIKAZE DRONES

Why in news?

Ukraine has asked its allies to supply it with more air defense systems and ammunition after Russia stepped up its use of “kamikaze drones” in its brutal assault against the country.

About

Kamikaze drones, or suicide drones, are a type of aerial weapon system. They are known as a “loitering munition” because they are capable of circling for some time in an area identified as a potential target and only striking once an enemy asset is identified.

They are small, portable and can be easily launched, but their main advantage is that they are hard to detect and can be fired from a distance.

The name “kamikaze” refers to the fact the drones are disposable. They are designed to hit behind the enemy lines and are destroyed in the attack – unlike the more traditional, larger and faster military drones that return home after dropping missiles.

Loitering weapons first emerged in the 1980s for use in the Suppression of Enemy Air Defenses (SEAD) role against surface-to-air missiles (SAMs), and were deployed for the SEAD role in a number of military forces in the 1990s.

As of 2022, loitering munitions are used by the armed forces of several countries, including: Armenia, Azerbaijan, Belarus, China, Israel, Iran, UK, US etc.

India has also developed Loiter munitions such as Nagasastra 1 which can carry an 1.5 kg explosive for a range of 15 Km



DIRTY BOMB ATTACK

Why in News?

Russia intends to raise at the United Nations Security Council its accusation that Ukraine is planning a “dirty bomb” attack.

About

Russia has warned that the use of the “dirty bomb” by Ukraine will be regarded as an act of nuclear terrorism.

A dirty bomb combines radioactive material with explosives to cause harm by spreading

radioactive material that can contaminate an area and poison the human body. It is different from a nuclear bomb which utilises radioactive materials to create an explosion.

Material used in Dirty Bomb

- Cesium-137
- RDX(Explosives)
- like Cobalt-60(High-energy gamma emitters)

Dirty bombs do not create city-flattening atomic explosions but are designed to spread toxic waste.

Security experts have worried about them mostly as a form of terrorist weapon to be used on cities to cause havoc among civilians, rather than as a tactical device for use by warring parties in conflict.

A bomb using radioactive caesium from a misplaced or stolen medical device might require the evacuation of an area of several city blocks, making it unsafe for decades.

A piece of radioactive cobalt from a food irradiation plant could, if blasted apart in a bomb in New York, contaminate a 380 square mile (1,000

square km) area and potentially make the island of Manhattan uninhabitable.

In a joint statement, the United States, Britain and France called the Russian allegations “transparently false” and warned Moscow against using them as a “pretext” for escalation.

Concerns

Immediate health impact would probably be limited, since most people in an affected area would be able to escape before experiencing lethal doses of radiation.

But the economic damage could be massive from having to evacuate urban areas or even abandon whole cities.

CONTOURS AND DIMENSIONS OF CYBER ATTACKS

GS-III Role of Media and Social Networking sites in Internal Security Challenges, Basics of cyber security

Why in news?

With the Russian invasion, Russian APTs launched coordinated attacks to disrupt critical services within Ukraine. While state-sponsored APTs have historically launched politically motivated attacks, this conflict led to the engagement of cybercriminals and individuals in cyberattacks as well.

About

What is a cyber attack?

A cyber attack is any attempt to gain unauthorized access to a computer, computing system or computer network with the intent to cause damage. Cyber attacks aim to disable, disrupt, destroy or control computer systems or to alter, block, delete, manipulate or steal the data held within these systems.

Any individual or group can launch a cyber attack from anywhere by using one or more various attack strategies.

People who carry out cyber attacks are generally regarded as cybercriminals. Often referred to as bad actors, threat actors and hackers, they include individuals who act alone, drawing on their computer skills to design and execute malicious attacks. They

can also belong to a criminal syndicate, working with other threat actors to find weaknesses or problems in the computer systems -- called vulnerabilities -- that they can exploit for criminal gain.

Government-sponsored groups of computer experts also launch cyber attacks. They're identified as nation-state attackers, and they have been accused of attacking the information technology (IT) infrastructure of other governments, as well as nongovernment entities, such as businesses, nonprofits and utilities.

Cyber attacks have various objectives such as financial gain, act of revenge or even warfare. Cyber criminals often create the software tools to use in their attacks, and they frequently share those on the so-called dark web. Cyber attacks often happen in stages, starting with hackers surveying or scanning for vulnerabilities or access points, initiating the initial compromise and then executing the full attack -- whether it's stealing valuable data, disabling the computer systems or both. In fact, most organizations take months to identify an attack underway and then contain it.

What are the most common types of cyber attacks?

Cyber attacks most commonly involve the following:

Malware is malicious software that attacks information systems. Ransomware, spyware and Trojans are examples of malware. Depending on the type of malicious code, malware could be used by hackers to steal or secretly copy sensitive data, block access to files, disrupt system operations or make systems inoperable.

Phishing occurs when hackers socially engineer email messages to entice recipients to open them. The messages trick recipients into downloading the malware within the email by either opening an attached file or embedded link. The "2022 State of the Phish" report from cybersecurity and compliance company Proofpoint found that 83% of survey respondents said their organization experienced at least one successful phishing attack in 2021, up 46% over 2020. Moreover, the survey also revealed that 78% of organizations saw an email-based ransomware attack in 2021.

SMiShing (also called SMS phishing or smishing) is an evolution of the phishing attack methodology via text (technically known as Short Message Service, or SMS). Hackers send socially engineered texts that download malware when recipients click on them. According to the Proofpoint report, 74% of organizations experienced smishing attacks in 2021, up from 61% in 2020.

Man-in-the-middle, or MitM, occur when attackers secretly insert themselves between two parties, such as individual computer users and their financial institutions. Depending on the actual attack details, this type of attack may be more specifically classified as a man-in-the-browser attack, monster-in-the-middle attacker machine-in-the-middle attack. MitM is also sometimes called an eavesdropping attack.

DDoS take place when hackers bombard an organization's servers with large volumes of simultaneous data requests, thereby making the servers unable to handle any legitimate requests.

SQL injection occurs when hackers insert malicious code into servers using the Structured Query Language programming language to get the server to reveal sensitive data.

Zero-day exploit happens when hackers first exploit a newly identified vulnerability in IT infrastructure. For example, a series of critical vulnerabilities

in a widely used piece of open source software, the Apache Log4j Project, was reported in December 2021, with the news sending security teams at organizations worldwide scrambling to address them.

Domain name system (DNS) tunneling is a sophisticated attack in which attackers establish and then use persistently available access -- or a tunnel -- into their targets' systems.

Drive-by, or drive-by download, occurs when an individual visits a website that, in turn, infects the unsuspecting individual's computer with malware.

Credential-based attacks happen when hackers steal the credentials that IT workers use to access and manage systems and then use that information to illegally access computers to steal sensitive data or otherwise disrupt an organization and its operations.

Credential stuffing takes place when attackers use compromised login credentials (such as an email and password) to gain access to other systems.

Brute-force attack in which hackers employ trial-and-error methods to crack login credentials such as usernames, passwords and encryption keys, hoping that the multiple attempts pay off with a right guess.

Grey Zone Tactics

The Gray Zone represents

a space between peaceful state rivalries and war. Within this space actors have developed hybrid strategies to extend their influence. Gray Zone doctrine leverages ambiguity to create an environment in which adversaries are unable to make strategic decisions in a timely and confident manner. Cyber Operations, because of the attribution problem, lend themselves to this kind of conflict.

The recent arrest in India, of a Russian for hacking into computers involved in the conduct of examinations for entry into the Indian Institutes of Technology (IITs), is a reflection of how cyber criminals are significantly amplifying their 'Grey Zone Warfare' tactics.

This is, perhaps, the tip of the iceberg for, as a general rule, it takes a long time for the general public to become aware of the nature and consequences of cyber attacks. At first these look like random accidents and it takes sophisticated cyber forensics to understand the contours of such attacks. It may surprise many that the IIT entrance examination should be an area for 'Grey Zone Warfare', but the real surprise should be that the perpetrators could succeed in compromising an examination software system deemed to be among the most secure across the world.

Thus, 'Grey Zone Warfare' is set to become the predominant paradigm for the remainder of the century.

This adds urgency to erecting proper defences against Grey Zone attacks.

Distorting the entry-level results of the Joint Entrance Examination is a blow to the nation's prestige, apart from creating chaos across the board, since entry into higher educational institutions and entry-level jobs in the country is driven by examinations which employ various kinds of technology.

Till now, technology was perceived as a foolproof means to end malpractices, but the recent incident calls into question the veracity of such assumptions. The extent to which the system has been compromised is terrifying to contemplate, even before the full facts are unearthed. Yet, it has grave implications for the entire spectrum of endeavours that are totally dependent on technologically-driven remote access functioning as a part of their everyday business activity.

Military as well as civil

As the 21st century advances, a new danger — the cyber threat — is becoming a hydra-headed monster. It is hardly confined to any one domain though the military is the one most often touted.

Rather, it is the civilian sphere where the cyber threat is becoming more all-pervading today and, in turn, a serious menace.

The Defense Cyber Agency (DCyA):

It is a tri-service command of the Indian Armed Forces.

The agency is tasked with handling cyber security threats.

The DCyA draws personnel from all three branches of the Armed Forces.

The head of the DCyA is an officer of two-star rank, and reports to the Chief of Defense Staff (CDS) through the Integrated Defense Staff (IDS)

Issues with DCyA

Demands for a cyber command by the Indian military ignore the widely varying nature of the cyber threat.

Best Practices to prevent Cyber attacks

Best practices include the following:

implementing **perimeter defenses**, such as firewalls, to help block attack attempts and to block access to known malicious domains;

adopting a **zero trust framework**, which requires every attempt to access an organization's network or systems -- whether it comes from an internal user or from another system -- to verify it can be trusted.

having a **patch management program** to address known software vulnerabilities that could be exploited by hackers;

maintaining a **monitoring and detection program** to identify and alert to suspicious activity;

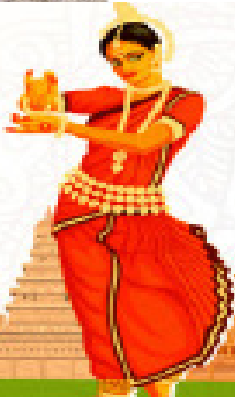
instituting a **threat hunting program**, where security teams using automation, intelligent tools and advanced analyses actively look for suspicious activity and the presence of hackers before they strike.

creating **incident response plans** to guide reaction to a breach; and

training and educating individual users about attack scenarios and how they as individuals have a role to play in protecting the organization.



HISTORY



ART & CULTURE



What's Inside?

1. UNESCO LAUNCHES LIST DOCUMENTING 50 ICONIC INDIAN HERITAGE TEXTILES
2. 100 YEARS OF SAKA PANJA SAHIB
3. MAHAKALESHWAR TEMPLE
4. HATTI COMMUNITY
5. NATIONAL MARITIME HERITAGE COMPLEX AT LOTHAL
6. MIYA MUSEUM

UNESCO LAUNCHES LIST DOCUMENTING 50 ICONIC INDIAN HERITAGE TEXTILES

UNESCO released a list of 50 exclusive and iconic heritage textile crafts of the country.

Toda embroidery and Sungadi from Tamil Nadu, Himroo weaves from Hyderabad and Bandha tie and dye weaving from Sambalpur in Odisha were some of the textiles that made the cut.

Handmade for the 21st Century: Safeguarding Traditional Indian Textile lists the histories and legends behind the textiles, describes the complicated and secret processes behind their making, mentions the causes for their dwindling popularity, and provides strategies for their preservation.

According to UNESCO, one of the major challenges to the safeguarding of Intangible Cultural Heritage in the South Asia is lack of proper inventory and documentation.

The publication, which aims to bridge this gap, brings together years of research on the 50 selected textiles.

Some of the iconic handcrafted textiles documented from north India are Khes from

Panipat, Chamba rumals from Himachal Pradesh, Thigma or wool tie and dye from Ladakh and Awadh Jamdani from Varanasi.

Finding a place From the south, Ilkal and Lambadi or Banjara embroidery from Karnataka, Sikanayakanpet Kalamkari from Thanjavur have been included.

Kunbi weaves from Goa, Mashru weaves and Patola from Gujarat, Himroo from Maharashtra and Garad-Koirial from West Bengal also find a place among the 50 iconic textiles.

In announcing the publication, UNESCO New Delhi Director, Eric Falt added: “Textile crafts represent a very significant share of the Indian cultural heritage and have dazzled the world for centuries.

Despite the pressures of industrial mass production and competition from new countries, it is essential that these iconic heritage crafts are taken stock of and promoted as contemporary treasures”.

100 YEARS OF SAKA PANJA SAHIB

Saka Panja Sahib is a heroic event that took place on October 30, 1922, at Hasan Abdal railway station close to the sacred shrine of Panja Sahib in Punjab province of Pakistan.

On this day, Sikhs from nearby Panja Sahib wanted to serve langar (community kitchen food) to the Sikh prisoners but were told by the station master at Hasan Abdal station that the train would not stop at the station. In protest, the Sikhs squatted on the railway tracks and as the train approached, the Sikhs who were determined to halt the train continued to stay, demanding their right to serve langar to the Sikh prisoners.

The train finally came to a screeching halt, but only after crushing many Sikh protesters — of whom Bhai Karam Singh and Bhai Partap Singh died after sustaining serious injuries. Since then, both Sikhs are hailed as martyrs of Saka Panja Sahib who sacrificed their lives fighting for the rights of Sikhs against the British.

MAHAKALESHWAR TEMPLE

Why in news?

Prime Minister inaugurates Mahakal Lok corridor at Mahakaleshwar temple in Ujjain

About

Mahakal Lok Corridor-

Mahakal Maharaj Mandir Parisar Vistar Yojna is a plan for the expansion, beautification, and decongestion of the Mahakaleshwar temple and its adjoining area in Ujjain district. This will include the 17 hectares of Rudrasagar lake

The more than 900-metre-long Mahakal Path (corridor), one of the largest corridors in the country, spreads around the old Rudrasagar Lake that has also been revived as part of the redevelopment project around the famous Mahakaleshwar Temple.

Two majestic gateways - Nandi Dwar and Pinaki Dwar-separated by a short distance, have been erected near the starting point of the corridor, which winds its way to the temple's entrance and offers aesthetic view along the way.

The Mahakal Path contains 108 stambhs (pillars) which depict Anand Tandav Swaroop (Dance form) of Lord Shiva. Many religious sculptures depicting the life of Lord Shiva are installed along the Mahakal Lok corridor.

Mahakaleshwar temple

Of the 12 jyotirlinga sites in India, Mahakal is the only jyotirlinga facing the south, while all the others face east.

The city of Ujjain was also one of the primary centres of learning for Hindu scriptures, called Avantika in the 6th and 7th centuries BC. Later, astronomers and mathematicians such as Brahmagupta and Bhaskaracharya made Ujjain

their home.

Also, as per the Surya Siddhanta, one of the earliest available texts on Indian astronomy dating back to the 4th century, Ujjain is geographically situated at a spot where the zero meridian of longitude and the Tropic of Cancer intersect.

In keeping with this theory, many of Ujjain temples are in some way connected to time and space, and the main Shiva temple is dedicated to Mahakal, the lord of time. In the 18th century, an observatory was built here by Maharaja Jai Singh II, known as the Vedh Shala or Jantar Mantar, comprising 13 architectural instruments to measure astronomical phenomena.

It is said that during the medieval period, Islamic rulers gave donations to priests for offering prayers here. In the 13th century, the temple complex was destroyed by Turk ruler Shams-ud-din Iltutmish during his raid on Ujjain.

The present five-storeyed structure was built by the Maratha general Ranoji Shinde in 1734, in the Bhumiya, Chalukya and Maratha styles of architecture. A century later, its marble walkways were restored by the Scindias.



HATTI COMMUNITY

The Centre is reported to be considering granting "tribal" status to the Trans-Giri region of Himachal Pradesh's Sirmaur district.

The reported proposal, if followed through, would mark a movement away from the government's earlier position on the matter.

The Hattis are a close-knit community who take their name from their traditional occupation of selling home-grown crops, vegetables, meat, and wool at small-town markets known as 'haats'.

Hatti men traditionally don a distinctive white headgear on ceremonial occasions.

Himachal Pradesh Chief Minister Jai Ram Thakur has previously said that the Hattis live in 154 panchayat areas, and that members of the community numbered 2.5 lakh in the 2011 Census.

The present population of the Hattis is estimated at around 3 lakh.

The Hatti homeland straddles the Himachal-Uttarakhand border in the basin of the Giri and Tons rivers, both tributaries of the Yamuna.

The Tons marks the border between the two states, and the Hattis living in the Trans-Giri area in today's Himachal Pradesh and Jaunsar Bawar in Uttarakhand were once part of the royal estate of Sirmour. Jaunsar Bawar was conquered by the British in 1814.

The two Hatti clans, in Trans-Giri and Jaunsar Bawar, have similar traditions, and inter-marriages are common. However, a fairly rigid caste system operates in the community the Bhat and Khash are upper castes, and the Badhois are below them, and inter-caste marriages have traditionally been discouraged.

The Hattis are governed by a traditional council called 'khumbli' which, like the 'khaps' of Haryana, decide community matters.

Requirement of 'tribal' area

In its reply in Parliament, the government laid down the requirements for such designation, and the reason why Himachal Pradesh's claim could not be considered.

It said that the Constitution provides for two types of areas: "Scheduled Areas" in terms of the Fifth Schedule of the Constitution, and "Tribal Areas" in terms of Sixth Schedule. "The "Tribal Areas" are designated in terms of Article 244(2) of the Constitution, read with Sixth Schedule.

Himachal Pradesh submitted a proposal for notifying entire Trans-Giri area of Sirmour district, Dodra Kwar Sub-Division of Shimla district, 15/20 areas of Shimla and Kullu districts as Scheduled Areas in Himachal Pradesh."

However, the government said, "for declaration of Scheduled Areas the criteria followed are: preponderance of tribal population, compactness and reasonable size of the area, a viable administrative entity such as a district, block or taluk, and economic backwardness of the area as compared to neighbouring areas.

"The proposal was examined in the Ministry and could not be considered due to want of requisite criteria, as mentioned above. Accordingly, the State Government of Himachal Pradesh was intimated that the proposal in the current form for declaration of Scheduled Areas could not be considered."

NATIONAL MARITIME HERITAGE COMPLEX AT LOTHAL

The National Maritime Heritage Complex at Lothal was reviewed by the Prime Minister recently and it will act as a center for learning and understanding India's diverse maritime history.

The project began in March 2022, and is being developed at a cost of Rs 3,500 crore. It will have several innovative features such as Lothal mini-recreation, which will recreate Harappan architecture and lifestyle through

immersive technology; besides four theme parks – Memorial theme park, Maritime and Navy theme park, Climate theme park, and Adventure and Amusement theme park.

Lothal

Lothal was one of the southernmost sites of the Indus Valley civilization, located in the Bhāl region of what is now the state of Gujarat. The port city is believed to have been built in 2,200 BC.

Lothal was a thriving trade centre in ancient times, with its trade of beads, gems and ornaments reaching West Asia and Africa. The meaning of Lothal (a combination of Loth and (s) thal) in Gujarati is “the mound of the dead”.

Incidentally, the name of the city of Mohenjodaro (also part of the Indus Valley Civilisation, now in Pakistan) means the same in Sindhi.

The National Institute of Oceanography in Goa discovered marine microfossils and salt, gypsum crystals at the site, indicating that sea water once

filled the structure and it was definitely a dockyard.

In later excavations, ASI unearthed a mound, a township, a marketplace, and the dock. Adjacent to the excavated areas stands the archaeological site museum, where some of the most prominent collections of Indus-era antiquities in India are displayed.

The Lothal site has been nominated as a UNESCO World Heritage Site, and its application is pending on the tentative list of UNESCO.

MIYA MUSEUM

Local authorities in Assam sealed a Miya Museum two days after it was inaugurated by an organisation representing migrant Muslims.

Rationale behind the move

The action was taken as a house allotted under the Prime Minister's Awas Yojana-Gramin scheme was converted into a museum in violation of the rules.

The genesis of the controversy lies in the politics of polarisation in Assam fuelled by the fear of a demographic invasion by the so-called “illegal immigrants” or “Bangladeshis”.

Some legislators and former MLAs of the BJP interpreted the museum as a cultural aggression and asked the government to pull it down.

Miya Museum

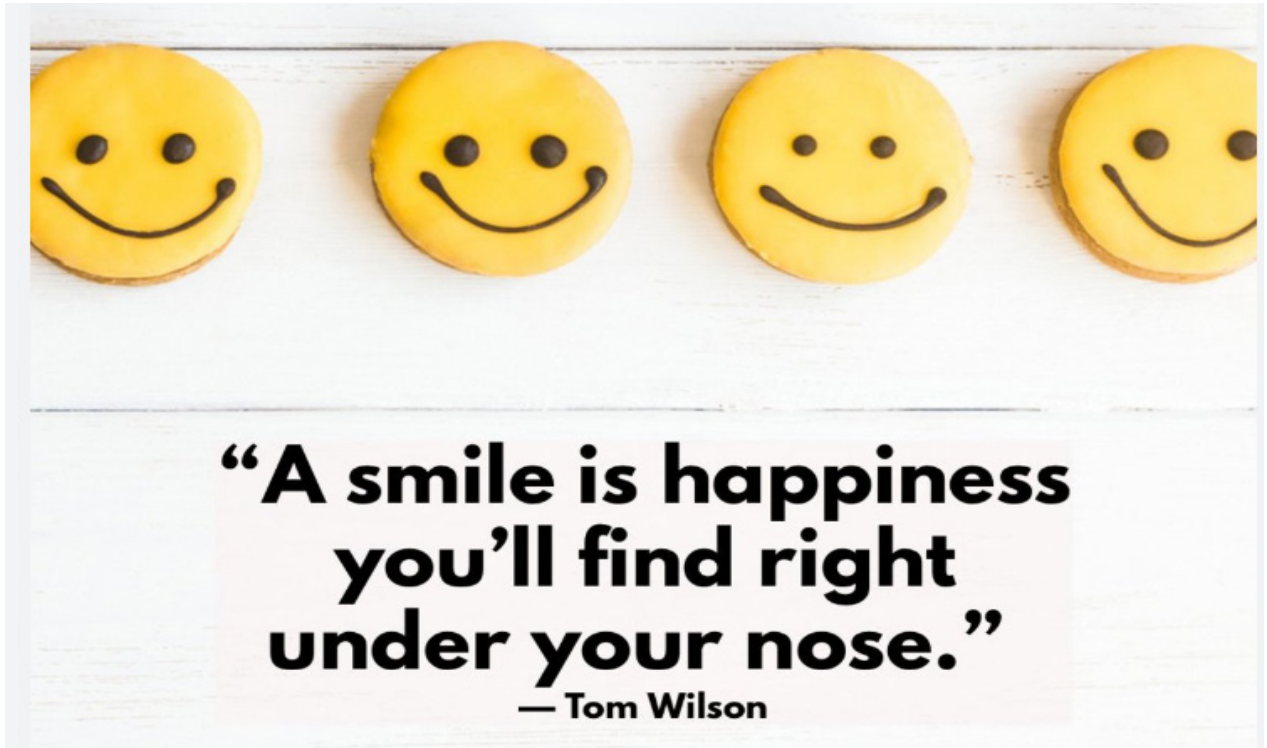
‘Miya’ - It is a pejorative term used primarily by the indigenous communities to mean Bengal or Bengali-origin Muslims who have settled down in Assam since the late 1890s, initially brought by the British for commercial farming.

The migrant Muslims form the bulk of Assam's Muslims accounting for more than 34% of the State's 3.3 crore people.

Museum: A private centre showcasing the culture and heritage of Bengal-origin or Bengali-speaking Muslims was inaugurated primarily by members of the All Assam Miya Parishad at Dapkarbhita in the Lakhimpur circle of Goalpara district.

SMILE IS THE CHOSEN VEHICLE OF ALL AMBIGUITIES

UPSC 2022 QUESTION.



“Don’t cry
because it’s
over, smile
because it
happened.”

Dr. Seuss

On a sunny day, it was such scorching heat all across the streets and there were two shops on the street of which one had the customers crowding whereas the other there were none. When I went and enquired the shop which had no customers, the shop owner was very dull and irritated and told me that as it was an annoying summer day and the customers won’t usually turn up. Well, the sun spoils my sales, he resented. But on the contrary, when I went near the shop that was crowded, the owner was actively welcoming everyone with a charming smile, greeting everyone that passed by. Well, it is the same sun that shines here too, I thought to myself.

There I understood that ‘The only difference between a good day and a bad day is one’s attitude.’ There are no ambiguities in this world more than a tired and hopeless mindset. When we talk about the smile, it does not simply mean the physical smile which is seen from the outside. Even a hypocrite and someone harboring ill feelings with deep resentment can wear a smile but this smile can hardly resolve ambiguities; Only a true and loving smile has the capacity to spread this world with well-being and thus has the potential of leading this world on the path of high values away from ambiguities of everyday life.

It is said that ‘Smile is a curve that sets things straight’. It is not a character of the weak or the gullible but smile signifies a personality of strength and courage. Let us for example consider the various aspects of a smile like a positive attitude, state of calmness, self-awareness, confidence, love, care, service to others, self-satisfaction, concern, etc.,

A smile has a positive impact on a society as well. A teacher who represents a class, if teaches with confidence and energetic attitude can have a great impact

on the students than a dull or a strict teacher. That is why Dr. A. P. J. Abdul Kalam was able to have a great impact on the masses. He was teaching with ultimate energy until he fell off due to a life-threatening heart attack. He, who was so much eager about inculcating good moral values in the minds of younger generations because he knew that values and morals which are another manifestations of smile can help not just the individual but also the society to come out of the ambiguities. According to him, “A nation’s true happiness can be felt only through a good value system.”

Such an attitude of facing every situation with a smile not just creates inner peace, but also has a larger impact on the society as well. Let us for example when have a look at the former cricket team captain M.S. Dhoni, he says that he would face every match with a ‘confidence in heart and a smile at face’, which he says that it not just helps him to prevent the anxiety, but also creates a positive rays of hope to his team mates which acts as a boost for them to face the ambiguities and uncertainties of the matches they face.

Even WHO has noted that

a positive mentally healthy mindset as the one at which one can realize his own ability and work with much productivity which can help in making the utmost contribution to the society; these contributions can be considered like the ability of a positive individual to bring everyone around him out of the ambiguities.

Knowing such significance of the state of well being and happiness in clearing out ambiguities from the lives of the people helps in making a country sustainable – UN Sustainable development solution Network is releasing World Happiness Index by considering various factors regarding the well being of an individual.

Smiling is not just a vehicle to come out of ambiguities but when one comes out of all ambiguities, we can witness an enlightened smile on our face. When we look into the life of Buddha; even after six years of intense penance and ascetism, he had many ambiguities until he was fed a bowl of rice and keera by a milkmaid. It was that instance that helped him in getting the idea of ‘Madhyamargh’ or middle path, which helped him to come out of all ambiguities

he had earlier and thus led to his enlightenment under the papal tree.

One can very well witness it from the calm smile on his face.

“Ignorance was destroyed, knowledge arouse,

Darkness was destroyed, light arouse- as happens in one who is heedful, ardent and resolute.”

Here a notion of smile (ie.,) self-understanding came out in another form as enlightment which is again expressed as a smile.

When we look into the first nuclear test of India , it is coded as ‘Operation Smiling Buddha’ because it acted as a deterrent

to war and a way to peace by eliminating almost all ambiguities that was existing between India and her neighbours.

Sailing through the sea of ambiguities will become even more easier when one detaches from the desires and by looking into the life with more confidence and selflessness. This is because even Buddha has emphasized that ‘Desire is a cause of suffering and ending desire helps in coming out of all sufferings of this world.

‘Life is a long journey between being human and humane’

So, to make this journey of life more humane everyone shall

try to spread a sense of smile in one or other form like a love, concern, being compassionate with one another thus helping oneself and others to come out of all negativities and ambiguities in life.

In short, if few seconds of smile can make a photograph to look pleasant; imagine the impact a smile and its attributes can have on a society , a country and a global scale.

By,

Ram Sindiya.C

PRACTICE QUESTIONS

1. Consider the following statements regarding "Attorney General of India"

- 1) The qualifications for the appointment of Attorney general of India is same as that of the Judge of the supreme court.
- 2) The term of the office is not fixed by the constitution

Which of the above statements are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

2. Consider the following statements regarding card on file tokenization

- 1) Tokenization is the process of replacing a card's 16-digit number with a Token which shall be unique for a combination of card, token requestor and device.
- 2) This token can be used for payments but only by the specific merchants

Which of the above statements are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

3. Consider the following statements regarding Saudi arabia

- 1) Saudi Arabia is the fourth largest trading of India
- 2) Saudi Arabia is an unitary absolute monarchy

Which of the above statements are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Explanation:

- Saudi Arabia is a unitary absolute monarchy along Islamic lines, where the King is both the head of state and government.
- Decisions are, to a large extent, made on the basis of consultation among the King, the Council of Ministers, and the country's traditional elites. Most critics regard the Saudi government as a totalitarian state
- Saudi Arabia is India's fourth largest trade partner (after USA, China and UAE) and a major source of energy as India imports around 18% of its crude oil requirement and ~22 % of its LPG requirement from the Kingdom. In FY 2021-22, bilateral trade was valued at US \$42.8 billion.

4. Consider the following statements regarding “Aravallis”

- 1) It is the oldest range of fold mountains in India
- 2) Sabarmathi river originate from the eastern slope of Aravalli mountains
- 3) Aravallis is the natural habitat of leopards.

Which of the above statements are correct?

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

5. With reference to consumption expenditure survey consider the following statements

- 1) Consumer expenditure survey conducted by Reserve bank of India
- 2) Consumer expenditure survey conducted for every three years

Select the correct answer

- a) 1 only
- b) 2 only
- c) both 1 and 2
- d) Neither 1 nor 2

6. Consider the following statements

- 1) India hosted the 14th session of Conference of Parties (COP 14) of United Nations Convention to Combat Desertification (UNCCD)

- 2) Desertification and Land Degradation Atlas of India released by ministry of rural department

Select the correct answer

- a) 1 only
- b) 2 only
- c) both 1 and 2
- d) neither 1 nor 2

7. With reference to YUVA 2.0 scheme consider the following statements

- 1) Pradhan Mantri – Mentorships Scheme for Young writers (PM-YUVA) was launched by ministry of skill development
- 2) The scheme is a mentoring programme for young and budding authors below the age of 30
- 3) Its objective is to promote the culture of reading and writing across India and showcase Indian writing at the international level.

Select the correct answer

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

8. Recently international union of geological sciences declared one cave in India as UNESCO first 100 geological sites in the world situated in which of the following state

- a) Assam
- b) Madhya Pradesh
- c) Meghalaya
- d) Gujarat

9. Ranipur wildlife sanctuary recently declared as new tiger reserve situated in which of the following state

- a) Madhya Pradesh
- b) Uttar Pradesh
- c) Bihar
- d) Chattisgarh

10. "Turtuk" was recently seen in the news, located in

- a) West bank territory
- b) Donetsk Basin
- c) Golan Heights
- d) Nubra Valley

11. Consider the following statements regarding "Alzheimer's Disease":

- 1) Alzheimer's disease is caused by the abnormal build-up of proteins in and around brain cells.
- 2) Men have a higher risk of having Alzheimer's disease than Women.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

12. With reference to Light Combat Helicopter (LCH) Prachand, consider the following statements:

- 1) Chetak and Cheetah are indigenous light combat attack helicopters.
- 2) The LCH is the only attack helicopter in the world which can land and take off at an altitude of 5,000 meters.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

13. Network Planning Group' seen in news in the context of

- a) 5G technology
- b) Connectivity infrastructure
- c) Internet penetration in rural areas
- d) Military communication

14. Trade and Development Report 2022 was published by

- a) World Trade Organisation
- b) World Economic Forum
- c) United Nation Conference on Trade and Development
- d) Economic intelligence unit

15. SAMARTH Mission is related to

- a) E- governance
- b) Coal biomass co-firing
- c) Skill development
- d) Environmental Protection in urban areas

16. What kinds of sanctions can the Human Rights Council impose on the governments if it does not comply with international human rights obligations?

- a) Economic Sanctions

- b) Restrictions on participating HRC sessions
- c) Removal of voting rights in general assembly
- d) None of the above

17. With reference to 'Click Chemistry' consider the following statements:

- 1) It is a quick reaction occurred in the presence of oxygen and water without releasing unwanted by-products.
- 2) Potassium is used as a catalyst in the click reaction.
- 3) It can help to diagnose and treat cancer in a targeted way.

Which of the statements given above is/are correct?

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

18. Hwasong-17, recently seen in the news is

- a) North Korea's Intercontinental Ballistic Missile
- b) China's unmanned spaceflight mission to its Tiangong Space Station
- c) South Korea's short-range ballistic missile
- d) China's manoeuvrable anti-ship ballistic missile

19. With reference to Vyommitra, consider the following statements:

- 1) It is a "female" robot astronaut which will fly aboard unmanned test missions ahead of the Gaganyaan Mission.
- 2) It was designed and developed by Defence Research and Development Organisation.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

20. The term "Kinetic Impaction" was seen in relation to which of these Missions?

- a) DART Mission
- b) JUNO Mission
- c) CASSINI Mission
- d) Gaganyaan Mission

21. Nord stream pipelines recently seen in news flows through which of the following seas?

- a) White sea
- b) North sea
- c) Baltic sea
- d) Adriatic sea

22. Which of the following is/are land-locked countries?

- 1) Chad
- 2) Burkina Faso
- 3) Benin
- 4) Djibouti

Select the correct answer using the code given below:

- a) 1 only
- b) 1 and 2 only
- c) 1, 2 and 3 only
- d) 3 and 4 only

23. Which of the following programming languages is associated with Cryptocoin?

- a) Scala
- b) Matlab
- c) C++
- d) None of the above

24. 38th parallel recently seen in news is associated with which of the following country?

- a) Russia
- b) Ukraine
- c) North Korea
- d) China

25. Which of the following is/are components of Forex Reserves maintained by RBI?

- 1) Foreign Currency Assets
- 2) Gold reserves
- 3) Special Drawing Rights
- 4) Reserve position with the International Monetary Fund (IMF).

Select the correct answer using the code given below:

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 1 only
- d) 1, 2, 3 and 4

26. Baghmara pitcher plant sanctuary sometimes in news situated in which of the following state

- a) Sikkim
- b) Arunachal Pradesh
- c) Meghalaya
- d) Assam

27. Hokersar wetland sometimes in news eco-tourism destination situated in which of the following state

- a) Tripura
- b) Nagaland
- c) Himachal Pradesh
- d) Jammu and Kashmir

28. He was President of All India Railwaymen's Federation, the largest labour union in the Indian Railways. He was one of founder of Congress socialist party. He won particular fame during the Quit India movement. He was

- a) Ram Manohar Lohia
- b) Jayaprakash Narayanan
- c) Minoo Masani
- d) MN Roy

29. World Economic Outlook is published by

- a) International Monetary Fund
- b) World bank
- c) World economic forum
- d) None of the above

30. With reference to the CyberKnife, consider the following statements:

- 1) The CyberKnife System is a non-invasive treatment for cancerous and non-cancerous tumors and other conditions where radiation therapy is indicated.
- 2) It can be an alternative to surgery or for patients who have inoperable or surgically complex tumors.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

31. Consider the following regarding United Nations Peacekeeping

- 1) Every peacekeeping mission is authorized by the United Nations Security Council.
- 2) India has been part of all United Nations Peacekeeping
- 3) The first UN peacekeeping mission was deployed in Korean war.

Which of the above statements in /are correct?

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

32. Abidjan Convention which is recently seen in news is related to

- a) E-governance
- b) Protection of marine and coastal environment
- c) Cybersecurity
- d) Ensuring Democratic principles

33. Which of the following is not a Jyotirlinga temple ?

- a) Somnath temple
- b) Kashi Vishwanath temple
- c) Rameshwaram temple
- d) Badrinath temple

34. Paddy tax which was collected during the Chola period is called as

- a) Kalam
- b) Kadamai
- c) Vetti
- d) Amanji

35. LOGISTICS EASE ACROSS DIFFERENT STATES (LEADS) is an indigenous data-driven index to assess logistics infrastructure, services, and human resources across all 36 States and UTs in India. Who among the following releases LEADS index ?

- a) NITI Aayog
- b) Ministry of commerce and industry
- c) Ministry of Statistics and Pro-

gramme Implementation

- d) Ministry of Heavy Industries & Public Enterprises

36. Which of the following countries are not a part of Just Energy transition partnership ?

- 1) South Africa
- 2) United States
- 3) Germany
- 4) European Union
- 5) India

Select the correct code using the option given below.

- a) 2 only
- b) 1 only
- c) 5 only
- d) 4 only

37. Consider the following statements regarding Sloth Bear

- 1) It is endemic to the Indian Subcontinent and given protection under schedule 1 of Wildlife protection act.
- 2) It is listed as vulnerable in IUCN list

Which of the statement(s) given above is/are correct?

- a) 1 only

- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

38. Living planet report 2022, is released by

- a) WWF
- b) IUCN
- c) UNFCCC
- d) None of the above

39. Which of the following are the indicators of Global Hunger Index?

- 1) Undernourishment
- 2) Child stunting
- 3) Child wasting and
- 4) Child mortality

Select the correct answer using the code given below:

- a) 1 and 2 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) 1, 2, 3 and 4

40. "The Common Framework", recently seen in news, is associated with which one of the following multilateral organisations?

- a) World Bank
- b) IMF
- c) United Nations
- d) G20

41. 'Galápagos Islands', recently seen in news, is located in

- a) Indian Ocean
- b) Atlantic Ocean
- c) Pacific Ocean
- d) North Sea

42. Recently, Union Minister for Railways inaugurated India's First Aluminum Freight Rake named - 61 BOBRNAL-HSM1. In light of this, which of the following is/are advantages of using aluminum rakes?

- 1) Consumes less energy
- 2) Reduced carbon footprint
- 3) Increased carrying capacity
- 4) Reduces imports

Select the correct answer using the code given below:

- a) 1, 2, 3 and 4 only
- b) 1, 2 and 3 only
- c) 1 and 2 only
- d) 3 only

43. Consider the following statements about NeelaKurinji:

- 1) They are endemic to Sundari forests of Eastern ghats.
- 2) Flower Bloom takes place once in 12 years as the pollination of flowers needs a longer period.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

44. Which of the following is/are space missions to mars?

- 1) HOPE
- 2) Mangalyaan
- 3) Perseverance
- 4) Tianwen - 1

Select the correct answer using the code given below:

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 2 only
- d) 1, 2, 3 and 4

45. 'Diethylene glycol' and 'Ethylene glycol' which are sometimes seen in the news is

- a) New class of efficient biofuels
- b) Chemicals used to clean oil spills
- c) Possible adulterant in medicines
- d) Medicinal extract from plants

46. Consider the following statements regarding "Booker Prize":

- 1) It is limited to the Commonwealth Nations.
- 2) It is the world's leading literary award for a single work of fiction.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

47. Which of the following animal is often referred to as the “Ghost of the Mountains”?

- a) Tiger
- b) Clouded Leopard
- c) Snow Leopard
- d) Himalayan Thar

48. Consider the following statements regarding Negotiable warehouse receipt (NWR).

- 1) NWR system allows the transfer of ownership of a commodity stored in a warehouse without having to deliver it physically.
- 2) NABARD regulates the entire operation under NWR.

Which of the above statements is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

49. With reference to International solar alliance (ISA) consider the following statements

- 1) The 5th assembly of ISA 2022 held in Paris
- 2) ISA became the first international intergovernmental organisation to be headquartered in India
- 3) The Assembly is the apex decision-making body of ISA, in which each Member Country is represented.

Select the correct answer

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

50. With reference to grievance redressal index consider the following statements

- 1) The report is released by department of personnel and training (DoPT)
- 2) UIDAI has been top performer in grievance redressal index

Select the correct answer

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Answers:

1.	C	2.	C	3.	C	4.	B	5.	D	6.	A	7.	B	8.	C	9.	B	10.	D
11.	A	12.	B	13.	B	14.	C	15.	B	16.	D	17.	C	18.	A	19.	A	20.	A
21.	C	22.	B	23.	C	24.	C	25.	D	26.	C	27.	D	28.	B	29.	A	30.	C
31.	A	32.	B	33.	D	34.	A	35.	B	36.	C	37.	C	38.	A	39.	D	40.	D
41.	C	42.	A	43.	B	44.	D	45.	C	46.	B	47.	C	48.	A	49.	C	50.	B

FACT SHEET

GENERAL STUDIES – II

POLITY

- ✦ Close to 3.15 lakh complaints & appeals under RTI Act are still pending with 26 information commissions across India => “Report Card on the Performance of Information Commissions in India, 2021-22” by Satark Nagrik Sangathan.

SOCIAL ISSUES

- ✦ According to UN Development Programme’s Human Development Report 2021-22 => Global human development measures have reduced across most countries in past 2 years -> mainly due to, weak recovery post-pandemic, Russia-Ukraine war fuelling severe energy, food & cost-of-living crisis and the crisis of climate change, pollution & biodiversity loss.
- ✦ According to the National Family Health Survey 5 of 2019 => spousal violence (both sexual & physical) in the age group 18-49 years is faced by 29.3% of women.
- ✦ As per the NCRB data (2021) => more than 709 criminal cases of exposure & abandonment of child under 12 years -> registered under Section 317 of IPC.

DIVERSITY IN WORK ENVIRONMENT

- ✦ According to a McKinsey study in 2019 => Corporations that had gender diversity were 25% more likely to have profitability figures than others.
- ✦ Companies with ethnic diversity can outperform their rivals by 36%.
- ✦ ‘India’s Best Workplaces in Diversity, Equity & Inclusion 2021’ report => diverse work teams perform better, strengthen leadership, build trust within the organization, and can ultimately increase revenue.
- ✦ Companies are lacking in inclusivity because of the absence of workers that suffer from neurodiversity. Being neurodivergent means having a brain that works differently from the average or “neurotypical” person.
- ✦ Approximately 2 million people suffer from such neurological and developmental disorders in India.
- ✦ According to a Deloitte study, around 20% of the world’s population is neurodiverse.
- ✦ In USA, 85% of people belonging to the autism spectrum are unemployed.
- ✦ Study by J.P.Morgan Chase => professionals with Autism made a smaller number of errors & were 90 - 140% more productive than other employees.

HUNGER

- ✦ Food and Agriculture Report, 2020 => Of the 821 million undernourished people in the world -> India houses 195.9 million (24% of the world's hungry).
- ✦ Prevalence of undernourishment in India is 14.8% higher than both global & Asian average.
- ✦ National Health Survey reported in 2020 => Approximately 19 crore people in the country were compelled to sleep on an empty stomach every night.
- ✦ Approximately 4500 children die every day under 5 years in India due to hunger & malnutrition -> over 3 lakh annual deaths owing to hunger of children alone.

HEALTH

✦ Non-Communicable Diseases (NCDs)

- ✦ "India: Health of the Nation's States" report by ICMR => proportion of deaths due to Non-Communicable Diseases (NCDs) in India have increased from 37.9% in 1990 to 61.8% in 2016.

✦ Congenital Heart Disease (CHD)

- ✦ Congenital Heart Disease => due to birth defects, some errors in the development of the heart -> affects the blood flow through the heart to the rest of the body.
- ✦ According to the Centers for Disease Control and Prevention, U.S. => CHD is responsible for about 28% of all congenital birth defects & is the cause of nearly 6%-10% of all infant deaths in India.
- ✦ However, according to paediatricians, timely medical interventions can help save over 75% of these children and help them lead normal lives.
- ✦ As per the Paediatric Cardiac Society of India (PCSI) => Prevalence of congenital cardiac anomalies is about 1 in every 100 live births -> approximately 2,00,000 children are born with CHD every year. However, only about 15,000 infants receive the required treatment every year.

HEALTH AND CLIMATE CHANGE

- ✦ "The Lancet Countdown on health and climate change: health at the mercy of fossil fuels" report -> prepared by experts from WHO and WMO.

✦ Findings:

- ✦ Infants (under 1 year) collectively witnessed 600 million more days of heatwaves and the elderly (over 65 years) experienced 3.1 billion more days.
- ✦ Food insecurity -> aggravated due to the increasing instances of heatwaves as increasing temperatures & extreme weather events threaten crop yields.
- ✦ Duration of the growth season for maize -> decreased by 9.3 days (compared to 1981-2010); Rice & wheat -> decreased by 1.7 days & 6 days respectively.
- ✦ Climate change -> also impacting the spread of infectious diseases such as malaria & dengue.

◆ Findings about India:

- ◆ About 3,30,000 people lost their lives in India on account of exposure to particulate matter from fossil fuel combustion in 2020.
- ◆ Heat-related deaths rose by 55% in India from 2000-2004 to 2017-2021.
- ◆ Indians lost about 16,720 crore potential labour hours due to heat exposure with income losses equivalent to 5.4% of the national GDP in 2021.
- ◆ Biomass usage (61% of household energy) & fossil fuels (20%) in 2019 => due to the high reliance on these fuels, the average household concentration of particulate matter was more than that recommended by the WHO (more than 25 times nationally & 35 times in rural households)

SANITATION

- ◆ President of India released the Swachh Survekshan 2022 awards as part of the Azadi@75 Swachh Survekshan 2022 hosted as part of the Swachh Bharat Mission.
- ◆ “Greater than 1 lakh people” category => Indore won the title of Cleanest City for the sixth year in a row -> Surat (2nd) & Navi Mumbai (3rd).
- ◆ Indore -> India’s first 7-star Garbage Free city.
- ◆ Tirupati -> received the best city award in Safai Mitra Suraksha category.
- ◆ Shivamogga in Karnataka -> fast mover city award.
- ◆ Madhya Pradesh -> Cleanest State in the category of “more than 100 Urban Local Bodies”.
- ◆ Tripura -> cleanest state award in the “less than 100 urban local bodies category”.

YOUTH

- ◆ According to the NITI Aayog’s report, India is not a favourable atmosphere for early-stage athletes. India spends only 3 paise/day/person on sports as against China spending 6.1 Rs/day/person.

INTERNATIONAL RELATIONS

- ◆ The number of fatalities among UN Peacekeeping Forces (UNPKF) in direct attacks is growing, said U.N. Undersecretary-General.
- ◆ India is among the highest contributors of troops to the UNPKF & has the highest fatality suffered by any country.
- ◆ India is the 2nd highest military & 5th highest police contributing country to the UN Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO).
- ◆ In 2007, India became the 1st country to deploy an all-women contingent to a UN Peacekeeping mission.

GENERAL STUDIES-III

ECONOMY

- ◆ Indian Rupee reached record low against dollar -> due to the further strengthening of the U.S. currency against other major currencies. This negatively impacts importers, students studying abroad & outbound travellers. Further, the Indian stocks also recorded a steep fall.
- ◆ In 2021, the Government of India approved a Production-linked incentive (PLI) scheme for semiconductors -> which provides incentives worth Rs 76,000 crores for the development of semiconductors. At present, the semiconductor industry is valued at close to \$500 to \$600 billion, globally.
- ◆ As per the All-India Quarterly Establishment-based Employment Survey (AQEES) 2022, the manufacturing sector continues to be the largest institutional employer in India by employing over 38.5% of the workers.
- ◆ World Bank has trimmed its estimate for India's growth in the current fiscal year (FY 22-23) to 6.5% -> compared with the last fiscal year's 8.7% pace.
- ◆ "Correcting Course", a report released by World Bank analyses the impact of the COVID-19 pandemic on global poverty. The number of people living in extreme poverty increased by 90 million -> implies that global poverty reached 9.3% in 2020 (from the earlier 8.4% in 2019). This is the first time in two decades that the poverty levels have increased. Inequalities across the world have also widened. Economic recovery has also remained uneven across the world.

TOURISM SECTOR

- ◆ By mid-2024, India's tourism sector will reach pre-pandemic levels => approximately \$150 billion contribution to the GDP & nearly \$30 billion in foreign exchange earnings. The estimated figure for foreign tourists is around 15 million.
- ◆ Emergency Credit Line Guarantee Scheme (ECLGS) of Indian Govt. -> increased to 5 lakh crore (from 4.5 lakh crore) -> to aid hospitality & allied sectors.

SPACE SECTOR

- ◆ According to a joint report by EY (Ernst and Young) & Indian Space Association (ISpA) => Indian space economy is set to reach USD 13 billion by 2025 -> spurred by growing private participation, latest technology & low cost of launch services.

AGRICULTURE

- ◆ Agriculture accounts for around 18 - 20% share of the GDP & about 70% of the rural population relies on agriculture/allied sectors for their livelihood.
- ◆ According to the Economic Survey 2021-22, agriculture & allied sector proved to be the most resilient to the COVID-19 shock.

- ◆ Number of agri-tech start-ups increased from 43 in 2013 to 1,300 by April 2022.
- ◆ Agritech funding stood at USD 245.2 million in 2019 which increased at a whopping 90% CAGR to USD 889 million as of 2021.

ENVIRONMENT

- ◆ As per a UN report, the “efforts remain insufficient” to arrest the global temperature increase to 1.5°C (as deliberated in Paris Agreement).
- ◆ According to the analysis of the Nationally Determined Contributions (NDCs) to cut emissions & adapt to climate impacts, even if the Nations abide by their pledges, the world is on the track for warming to 2.5°C.
- ◆ The report further adds that emissions should fall 45% by 2030 in comparison to 2010 levels to meet the goals of the Paris agreement.
- ◆ India is among the 197 countries -> promised to limit the increase of global temperatures to 1.5°C by 2030 & working on a long-term policy roadmap to achieve net zero emissions by 2070.
- ◆ Prime Minister of India during the Glasgow summit => committed that India would increase its non-fossil energy capacity to 500 GW by 2030 & meet half of its energy requirement from renewable sources.
- ◆ An independent analysis, the Climate Action Tracker categorizes actions taken by India as “highly insufficient” -> because of India’s continued support to coal industry subverts a green recovery & its stand to “phase down” coal instead of “phase out” at COP26.
- ◆ Burning of crop residue released about 149 million tonnes of CO₂, more than 9 million tonnes of CO, 0.25 million tonnes of SOX, 1.28 million tonnes of particulate matter (PM) & 0.07 million tonnes of black carbon.
- ◆ A report by NITI Aayog & CSIR => India bears the world’s highest health & economic burden due to lead poisoning, 5 mcg/dL & above -> unsafe & have adverse effects. India’s national average -> 4.9 µg/dl for children less than two years & 23 states have an average BLL beyond 5 mcg/dL.

ZOOLOGICAL DIVERSITY

- ◆ According to world biogeographic classification, India represents 2 major realms -> Palearctic & Indo-Malayan; 3 biomes -> Tropical Humid Forest, Tropical Dry Deciduous Forests & Warm Deserts/Semi-Deserts.
- ◆ Indian landmass -> classified into 10 Biogeographic Zones.
- ◆ In order to protect biodiversity, 990 Protected Areas sprawling over 5.27% of the country’s geographical area have been designated -> of which faunal communities have been thoroughly listed among 120 Protected Areas by Zoological Survey of India (ZSI).
- ◆ Altogether, 1,03,258 species have been documented in India & 2,841 species are protected under Wildlife (Protection) Act, 1972.

COASTAL AND MARINE BIODIVERSITY

- ✦ India has a long coastline of 7516.6 km on the mainland, Lakshadweep & Andaman & Nicobar Islands.
- ✦ India has the 18th largest Exclusive Economic Zone (EEZ) with a total area of 2.37 million square kilometres.
- ✦ In the Indian Ocean region, India is one of the highest marine biodiverse countries with 20,444 species.
- ✦ Among the Indian fauna, 5,632 species have been included in various categories on the 'IUCN Red List' which requires much attention for conservation.

DISASTER MANAGEMENT

- ✦ According to the Down To Earth Data Centre study => India saw extreme weather events for 242 of the first 273 days of this year.
- ✦ According to the UN Office for Disaster Risk Reduction's 2020 report, India had the 3rd highest number of natural disasters over the previous 20 years.
- ✦ National Institute of Disaster Management report => India registered 1,058 climate disaster incidents between 1995 and 2020.

1. In Mizoram, harmony and sustainability of society rather than economic wealth are the most valued objectives in life. Mizos have a word "Tlawmngaihna" -> means code of conduct -> being honest, kind, helpful to others & being selfless. In Mizo, there is a saying, "those who hoard will perish but who share will live" -> which helped them survive during the COVID pandemic too.
2. The life & struggles of trans-rights activist Gauri Sawant have inspired the upcoming web series Taali -> spent her life advocating for the rights of her community. With her own NGO 'Sakhi Char Chowgi' -> provides counselling & works for the health & employment of trans persons. She adopted a daughter & says "You don't need to have a uterus or give birth to a baby; motherhood is all about caring and loving a child." She was the first trans person to be made an election ambassador by the Election Commission of India in 2019.
3. Supreme Court & government had agreed that the Bhopal gas tragedy was "unparalleled in human history" & relief/rehabilitation may have to undergo constant review and change.
4. Mission Clean Morna River was a Citizen Driven Mass Movement to Clean River Morna in Akola District of Maharashtra. It had accumulated hyacinths & sewage waste. When the collector Astik Kumar Pandey first floated the idea, there was fear of infection. Collector's office published newspaper ads inviting participation -> turned out to be a huge success. He was awarded the Indian Express Excellence in Governance Award.
5. "Poshan Utsav" -> celebrated with the message of good nutrition particularly for young children and women so as to sensitize them on age-appropriate good health practices to address the challenges of malnutrition in the country.
6. A village in India's Maharashtra state has declared "independence" from two modern-day addictions i.e., television & mobile internet -> at least, for a couple of hours every day. A siren goes off at 7 pm every evening in Vadgaon village, Sangli district -> indication to all residents to switch off their TVs & mobile phones => an example of how to detach from modern-day urban life.
7. Decline in Vulture population is one of the key issues all around the world -> which has been addressed by many countries via conservation efforts, however still there is a need to improve the vulture tracking measures => UK based study.
8. In a bid to promote reverse shopping, sporting goods giant Decathlon has decided to reverse its name for a month as "NOLHTACED"! Reverse shopping basically means that customers can resell old or unused sporting goods back to the store, and the company will then repair the item and resell them in some form under warranty -> to promote general awareness of environment-friendly practices.
9. Justice U.U. Lalit, the CJI => said that a dedicated platform is being set up to facilitate live streaming of Supreme Court proceedings. Justice D.Y. Chandrachud => spoke about the opening up of an RTI portal for the submission of petitions online. These two initiatives indicate that various efforts are being undertaken to ensure complete transparency in the functioning of the courts in the country.

10. *India and Nepal signed a MoU to develop West Seti and Seti River (SR6) projects. China was developing the project earlier but withdrew it four years back. Nepal has a huge hydropower potential of 83,000 MW. If it can fully harness its hydropower potential it can generate revenue of 310 billion by 2030 & 1,069 billion per year by 2045 -> by exporting electricity to India.*
11. *Since the mid-1990s, environmental activist Sujit Patwardhan had been working on sustainable people-centric cities -> focusing on walking, cycling & public transport. It showcases the courage and vision to challenge the misplaced policies and perseverance to fight for the environment.*
12. *36th edition of National Games of India (2022) held in the state of Gujarat. The official motto of the games is "Celebrating unity through sports".*
13. *A joint project by WHO & Qatar on World Mental Health Day (10th October) -> initiated the installation of friendship benches to give importance to health, from mental to physical health & importance of sports in it. The ground-breaking Friendship Benches project was first initiated in Zimbabwe with the support of WHO. Other initiatives for Mental health => FIFA-WHO #REACHOUT campaign & "Are You OK?" project of Qatar.*
14. *Senior advocate in the Supreme Court of India R.Venkataramani was recently appointed as the Attorney General for India (AGI) for 3 years. Article 76 of the Indian Constitution (Part-V) -> deals with the position of AGI.*
15. *In a historic judgement, the Supreme Court has ensured that single women get equal abortion rights -> by lifting a 51-year-old ban on single women accessing abortions with pregnancies up to 24 weeks. SC opined that -> artificial distinction between married & unmarried women amounted to discrimination. 8 women die every day in the country on account of unsafe abortions. Nearly 67% unsafe abortions were carried out in 2007-2011 in India.*
16. *In 1980, the Supreme Court upheld the constitutionality of capital punishment in 'Bachan Singh v State of Punjab' on the condition that the punishment will be awarded in the "rarest of the rare" cases. It also stressed that a separate sentencing hearing would be held, where a judge would be persuaded on why the death sentence need not be awarded.*
17. *Renewable energy revolution in agriculture has begun in India with the establishment of a bioenergy plant by a private company in Punjab. It will produce Compressed Bio Gas (CBG) from paddy straw -> utilizes nearly 2.1 lakh tonnes of paddy straw annually. From the residue -> 33 tons of CBG & 600-650 tonnes of fermented organic manure/day will be produced. It can diminish nearly 1.5 lakh tonnes of CO2 emissions annually. Rice straw produced from 1 acre of land can yield an energy output of around 30% to the original output of grain -> ideal example of 'wealth from waste' approach -> promotes circular economy.*
18. *Ethiopian delegates recently visited Andhra Pradesh to study the first-of-its-kind Rythu Bharosa Kendras (RBKs) -> one-stop solution to all the needs & grievances of the farmers*

-> also sell pre-tested quality seeds, certified fertilisers and animal feed for the farmers -> buy/rent farm equipment & sell their produce at MSP price in these RBKs.

19. Recently, the WHO issued an alert about four Indian-manufactured cough syrups are linked to acute kidney injury in children & 66 deaths in African nation of Gambia. They are Promethazine Oral Solution, Kofexmalin Baby Cough Syrup, Makoff Baby Cough Syrup & Magrip N Cold Syrup.

20. Hughes India has partnered with BBNL & TCIL, as part of BharatNet -> to provide high-speed satellite connectivity to 5,000 remote gram panchayats located in North Eastern States & Galwan Valley in Eastern Ladakh.

21. Australia plans to halt the loss of any more species & end its status as the mammal extinction capital of the world. Under the plan, more than 100 threatened animals & plants (including iconic species like Koala) will be prioritized. It promises to protect 1/3rd of the continent's land mass.

22. In a unique experiment in Kerala's Ernakulam district, 'honesty shops' have been opened on 15 school campuses to help inculcate virtues among children. There is no salesman at the counters and students can drop the money for each item in the collection box kept on a table. This is part of the Student Police Cadet (SPC) project (launched in 2008) have been conceived to inculcate better civic sense among students and mould them as responsible youth who will react positively to the demands of society. It provides students with a chance to experience the virtue of honesty. It teaches valuable lessons on trust, truth and integrity to students.

23. 'Planet First Recycling,' a waste management social enterprise, decided to tackle the growing problem of waste in Ladakh. It has set up a scrap buying & selling network & organic waste composter. This model involves setting up a deposit for consumers on all packaging materials. Once the packaging material is returned, the deposit collected will be returned to the consumer -> which encourages source segregation and collection of scrap from all strata of society.

24. Popularly known as the "pond man", Kalmane Kaamegowda, a shepherd in Karnataka known for building 17 ponds in the barren hills of Kindinibetta in Mandya Taluk died due to age-related ailments. He has planted many trees and is creating a banyan grove in a Section of forest area in his village.

25. Amnesty report, 2021 that said thousands of migrant workers (mostly from India, Pakistan and Nepal) in Qatar were still being exploited while working in the construction of stadiums and other World Cup-related infrastructure. Danish Football Association (DBU) wants to minimise activity in Qatar as part of protests against Qatar's poor human rights record & 'Muted' back jersey will signify the "colour of mourning."

26. Ashish Saxena Sathidar Abhiyan -> joint initiative for empowerment of women and children through eradication of social evils in Jhabua, Madhya Pradesh. The dowry system was rampant in Jhabua district. After multiple consultations, the social leaders became mediators, reaching out to the villagers and making them aware. Began by convincing people to cap the dowry amount to Rs 50,000 or less as against the conventional Rs 2.5 lakh or above.

TERMS IN NEWS

1. *Super apps: As Elon Musk proceeded with his plan to buy Twitter, the concept of “super app” or “everything app” has come to the limelight. Super apps offer several services under a single umbrella -> such as messaging, social networking, shopping, travel, food delivery and peer-to-peer payments for users under a single platform. Ex: TataNeu, Reliance Jio, Paytm/PhonePe, WeChat app of China etc.*
2. *Agripreneurship => a branch of economic activities wherein the potential of agriculture is exploited for the generation of profit. India offers a very wide scope for agripreneurship -> due to availability of land, various reforms in agriculture & adequate steps by the government to promote start-ups in the country.*
3. *Soft power => Joseph Nye Jr. defined ‘soft power’ as “a power of attraction through culture, policies & political ideas rather than coercion” -> opposite to military’s hard power. Smaller countries are investing more in elite sports, as it is perceived that success in international sports has the potential to boost a country’s soft power -> provides pride to citizens & encourages working towards geopolitical actor. Case study => French citizens were surveyed in 2020 regarding China’s performance in the Olympics -> found that the rising medal count of China created a positive impact on its national soft power.*

RELEVANT QUOTES

1. *“Religion like all other ideas deserves criticism, satire and our fearless disrespect” Salman Rushdie.*
2. *“We owe a lot to the Indians, who taught us how to count, without which no worthwhile scientific discovery could have been made.” Albert Einstein.*
3. *“It is not possible for civilization to flow backwards while there is youth in the world. Youth may be headstrong, but it will advance its allotted length.” Helen Keller.*
4. *“The smallest minority on earth is the individual. Those who deny individual rights cannot claim to be defenders of minorities.” Ayn Rand.*
5. *“Where Women are honoured, divinity blossoms there, and wherever women are dishonoured, all action remains unfruitful.” Manusmriti.*