SIVARAJAVEL IAS ACADEMY
FOUNDER - DIRECTOR OF SMART LEADERS IAS

the CATALYST

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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/thecatalystsrv

: 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.*

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SIVARAJAVEL IAS ACADEMY
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the CATALYST

From the Editor's Desk

Dear Readers,

There was an interesting article in THE HINDU this month. It spoke of how we commemorated our victories in Indo Pakistan War and the 1971 Bangladeshi Liberation but remained muted about the defeat during Indo-China War.

While Victory is remembered, celebrated, and feted, failure is quickly neglected. It remains in our memory but we seldom try to remember them, constantly in our pursuit to put them into oblivion.

Nonetheless "Failure is a Great teacher". We do not learn from our failures if we try to hide them. An open, honest, and sometimes brutal conversation with ourselves is needed to probe what went wrong. Many don't have the courage to face tough questions. Life is but a long conversation. I would counsel aspirants to have a meaningful and honest conversation with themselves (and others) as this journey is certain to offer you certain failures more often than immediate success.

In this SEPTEMBER Issue (From Sep 1 to Sep 30, 2022, Current Affairs), we have covered a range of topics with special emphasis on Semiconductor Manufacturing, Global South, Shifting of Monsoon 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

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POLITY AND GOVERNANCE

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THE AMBIT OF FRATERNITY AND THE WAGES OF OBLIVION

GS-II Indian Constitution—, evolution, features, amendments, significant provisions & Social Justice

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REGISTERED UNRECOGNIZED POLITICAL PARTIES

Why in news?

The Election Commission of India has delisted 86 non-existent Registered Unrecognized Political Parties (RUPP) and declared additional 253 as 'Inactive RUPPs'.

About

Declared Inactive

253 RUPPs have **not responded to the letter/ notice delivered to them** and have **not contested a single election** either to the **General Assembly of a State** or the **Parliament Election** of 2019 & 2014.

As per **Section 29A of the Representation of People Act 1951**, every political party has to communicate any change in its **name, head office, office bearers, address, PAN** to the Commission without delay.

Delisted

86 RUPPs have been found to be non-existent either after a physical verification carried out by the Chief Electoral Officers of concerned States/ UTs or based on a report of undelivered letters/notices from Postal Authority sent to the registered address of concerned RUPP.

Additionally, they would not be entitled to have **benefits under the Symbols Order, 1968.**

CONDITIONS FOR RECOGNITION OF POLITICAL PARTIES	
NATIONAL PARTIES	STATE PARTY
A party is recognised as a national party if any of the following conditions is fulfilled: • If it secures 6% of valid votes polled in any four or more states at a general election to the Lok Sabha or to the legislative assembly and in addition, it wins four seats in the Lok Sabha from any state or states, or • If it wins 2% of seats in the Lok Sabha at a general election and these candidates are elected from three states, or • If it is recognised as a state party in four states.	A party is recognised as a state party in a state if any of the following conditions is fulfilled: • If it secures 6% of the valid votes polled in the state at a general election to the legislative assembly of the state concerned and in addition, it wins 2 seats in the assembly of the state concerned or • If it secures 6% of the valid votes polled in the state at a general election to the Lok Sabha from the state concerned and in addition, it wins 1 seat in the Lok Sabha from the state concerned or • If it wins 3% of seats in the legislative assembly at a general election to the legislative assembly of the state concerned or 3 seats in the assembly, whichever is more or • If it wins 1 seat in the Lok Sabha for every 25 seats or any fraction thereof allotted to the state at a general election to the Lok Sabha from the state concerned or • If it secures 8% of the total valid votes polled in the state at a General Election to the Lok Sabha from the state or to the legislative assembly of the state. This condition was added in 2011.

The phrase "political party" [was] nowhere mentioned or described in our original Constitution. The definition of a political party for the first time enters through the anti-defection law in 1985.(via 52 nd Constitutional Amendment act)

What is Registered Unrecognized Political Parties?

Either newly registered parties or those which have not secured enough percentage of votes in the assembly or general elections to become a state party, or those which have never contested elections since being registered are considered unrecognised parties. Such parties don't enjoy all the benefits extended to the recognised parties.

Recognised Political Party

A recognised political party shall **either be a National party or a State party** if it meets certain laid down conditions.

DHARAMSALA DECLARATION

Why in news?

The three-day National Conference of State Tourism Minister ended with the adoption of the "Dharamshala Declaration"

About-

The document titled Dharamshala Declaration-2020: Sustainable and Responsible Tourism asserts that India will play a pivotal role in contributing toward global tourism recovery driven mainly through domestic tourism.

It sets out long-term and short-term goals for the country in the tourism sector.

In the declaration, the Tourism Ministry has come up with a strategy and action plan to encourage more Indians to travel domestically and explore India's natural, cultural, and spiritual beauty while simultaneously reaching the goal of an 'Ek Bharat Shrestha Bharat' (interaction and mutual understanding).

In parallel, the Ministry has also been working with the Ministry of External Affairs to identify 20 Indian missions abroad with the highest tourist footfalls to India and build country-specific strategies to attract foreign tourists.

Draft National Tourism Policy 2022

The Draft National Tourism Policy 2022 is part of the vision of New India on high trajectory of growth and prosperity. The new Policy is a holistic framework for sustainable and responsible growth of tourism sector in the country.

The Policy aims at Improving framework conditions for tourism development in the country, supporting tourism industries, strengthening tourism support functions and developing tourism sub sectors.

The policy is architected around six key guiding principles, five national tourism missions and eight strategic pillars supported by an elaborate Institutional and Governance Framework

India's Tourism Sector-

The travel industry in India has considerable potential given the rich social and old custom, assorted variety in environment, views and places of characteristic allure scattered all through the country.

Today, the travel industry is India's biggest help industry, representing 6.23 percent of national GDP and giving 8.78 percent of whole work.

As indicated by World Travel and Tourism Council, India positioned third among 185 nations regarding generally GDP commitment to the travel industry and travel in 2018. India was positioned 34th in the 2019 Travel and Tourism Attractiveness Report distributed by the World Economic Forum.

An enormous number of organizations working in the administration segment, for example, aircrafts, lodgings, surface vehicle, and so forth., are expanding with the development of the travel industry

The travel industry in India made around US$ 100 billion of every 2008 and is relied upon to ascend to US$ 275.5 billion by 2021 at a yearly development pace of 9.4%

Factors enhancing growth of tourism sector - Medical tourism, dazzling sea shores, woodlands and untamed life and eco-the travel industry scenes; day off, and mountain tops Yoga, Ayurveda and normal wellbeing resorts and

slope resorts. Indian crafted works specifically, gems, floor coverings, cowhide items, ivory and metal work.

Government initiatives to boost tourism sector in India:

- Swadesh Darshan Scheme:
- National Mission on Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive (PRASHAD) Scheme:
- 'Ek Bharat Shreshtha Bharat':
- Dekho Apna Desh initiative:
- Heritage Project:
- Destination North East-2020

ABORTION RIGHTS FOR SINGLE WOMEN: SC RULING

Recently, the Supreme Court has allowed all women in the country, regardless of marital status, can undergo an abortion up to 24 weeks into pregnancy to access safe and legal abortion care.

SC's Ruling

Ruled over an Old Law: It has ruled over a 51-year-old abortion law (The Medical Termination of Pregnancy Act of 1971) which bars unmarried women from terminating pregnancies which are up to 24-weeks old.

The Medical Termination of Pregnancy Act of 1971 and its Rules of 2003 prohibit unmarried women who are between 20 weeks to 24 weeks pregnant to abort with the help of registered medical practitioners.

The latest amendment to the MTP Act was made in 2021.

Right to Choose under Article 21:

Court held that the rights of reproductive autonomy, dignity and privacy under Article 21 of the Constitution gives an unmarried woman the right of choice as to whether or not to bear a child on a similar footing as that of a married woman.

Right to Equality under Article 14:

Prohibiting single or unmarried pregnant women with pregnancies between 20 and 24 weeks from accessing abortion while allowing married women with the same term of pregnancy to access the care was violative of the right to equality before law and equal protection (Article 14).

A single woman may have suffered the same "change in material circumstances" as a married pregnant woman. She may have been abandoned or without a job or been a victim of violence during her pregnancy.

Not Constitutionally Sustainable

Artificial distinction between married and unmarried women is not constitutionally sustainable. The benefits of law extend equally to single and married women.

Extended the Ambit of Reproductive Rights

The term Reproductive Right is not restricted to having or not having children.

Reproductive rights' of women included a "constellation of rights, entitlements and freedoms for women".

Reproductive rights include the right to access education and information about contraception and sexual health, right to choose safe and legal

abortion and right to reproductive health care.

Views on Marital Rape

For the sole purpose of the MTP Act, the meaning of rape must include marital rape to marshal a woman's right to reproductive and decisional autonomy.

Medical Termination of Pregnancy (MTP) Act, 1971

The act allowed pregnancy termination by a medical practitioner in two stages:

A single doctor's opinion was necessary for abortions up to 12 weeks after conception.

For pregnancies between 12 to 20 weeks old, the opinion of two doctors was required to determine if the continuance of the pregnancy would involve a risk to the life of the pregnant woman or of grave injury to her physical or mental health or if there is a substantial risk that if the child were born, it would suffer from such physical or mental abnormalities as to be seriously "handicapped" before agreeing to terminate the woman's pregnancy.

Recent Amendments

In 2021, Parliament amended the law to allow for abortions based on the advice of one doctor for pregnancies up to 20 weeks.

The modified law needs the opinion of two doctors for pregnancies between 20 and 24 weeks.

Further, for pregnancies between 20 and 24 weeks, rules specified seven categories of women who would be eligible for seeking termination under section 3B of rules prescribed under the MTP Act,

1. Survivors of sexual assault or rape or incest,
2. Minors,
3. Change of marital status during the ongoing pregnancy (widowhood and divorce),
4. Women with physical disabilities (major disability as per criteria laid down under the Rights of Persons with Disabilities Act, 2016)
5. Mentally ill women including mental retardation,
6. The foetal malformation that has a substantial risk of being incompatible with life or if the child is born it may suffer from such physical or mental abnormalities to be seriously handicapped, and
7. Women with pregnancy in humanitarian settings or disasters or emergencies may be declared by the Government.

THE AMBIT OF FRATERNITY AND THE WAGES OF OBLIVION

GS-II Indian Constitution—Evolution, features, amendments, significant provisions & Social Justice

Context

It is often forgotten that 'fraternity' is among the basic values inscribed in the Preamble of the Constitution of India

'These principles of liberty equality and fraternity are not to be treated as separate items in a trinity. They form a union of trinity in the sense that to divorce one from the other is to defeat the very purpose of democracy,' said B.R. Ambedkar in the Constituent Assembly, in 1949.

It is often forgotten that 'fraternity assuring the dignity of the individual and the unity and integrity of the Nation' is, along with Justice, Liberty and Equality, among the basic values inscribed in the Preamble of the Constitution of India whose first line asserts, 'We, the People of India' have solemnly resolved to 'secure' to all the citizens of India.

The responsibility of the individual citizen

Article 51A (e) on Fundamental Duties: It makes it the duty of every citizen of India 'to promote harmony and the spirit of common among all the people of India, transcending religious, linguistic and regional or sectional diversities.

Fraternity: The idea of fraternity is based on the view that people have responsibilities to each other.

French Revolution in the following terms: 'Do not do to others what you would not want them to do to you; do constantly to others the good which you would wish to receive from them.

B.R. Ambedkar provided its rationale with remarkable foresight: 'We must begin by acknowledging the fact there is a complete absence of two things in Indian society. One of these is equality' and as a result of it we would enter into 'a life of contradictions' on January 26, 1950.

Inequalities in Society

Categories: Economic, Regional, Caste, Religious

Socially, politically and economically excluded: It includes Dalits, Adivasis, women and religious minorities.

Uneven economic development and progress: Resulting in uneven levels of education, employment, social cohesion and contentment.

Recent studies on religious minorities who constitute around 20% of India's population have traced discrimination relating to them to perceptions that relate to the very origins of thinking that brought about the partition of August 1947.

Conditions Precedent for the Successful Working of Democracy - by Ambedkar

1. Absence of glaring inequalities
2. Presence of an opposition
3. Equality of law and administration
4. Observance of constitutional morality
5. Avoidance of tyranny of majority over minority
6. A functioning of moral order in society
7. Public conscience ingredient of citizenship that can be evaded or neglected at the cost of the concept itself.

Way Forward

A candid assessment of the state of the Republic makes us cogitate on evidence of regional diversity, assertion of linguistic identity and emergence of diverging political orientations.

Article 51A(e) of the Constitution does not differentiate between citizens and makes it an all-encompassing duty.

Its ambit therefore is universal; its observance, by the same logic, has to begin at the base of the ladder of citizenship rather than the top but does not spare the leadership from the obligation to promote and practice it.

INTERNATIONAL RELATIONS

What's Inside?

1. UNSC REFORMS
2. FIRST COUNTRY IN SOUTHERN AFRICA TO ELIMINATE TRACHOMA - MALAWI

INDIA AND AUSTRALIA, FROM DIVERGENCE TO CONVERGENCE

GS-II IR Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

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THE GLOBAL SOUTH'S ASSERTION IN GEOPOLITICS

GS-II Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

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UNSC REFORMS

Why in news?

In the address to the 77th Session of the United Nations General Assembly, the Indian External Affairs Minister highlighed the anachrony and ineffectiveness in the current architecture of the UNSC.

About UNSC

The United Nations Security Council was established by the UN Charter in 1945.

It is one of the 6 principal organs of the United Nations.

UNSC has 15 members: 5 permanent members (P5) and 10 non-permanent members elected for 2-year terms.

The 5 permanent members are: United States, Russian Federation, France, China and the United Kingdom.

Issues with UNSC

As the Security Council is the most powerful organization within the UN.Criticism of the Security Council centres on the following issues:

(1) SecurityCouncil membership does not reflect today's world; developing countries are underrepresented,and there are no permanent members from either Africa or LatinAmerica;

(2) five permanent members enjoy veto power and frequently abuse theirprivileges;

(3) there is a lack of transparency and efficiency in the SecurityCouncil's decision-making process. Although the Security Council has improved its decision-making, transparency, and efficiency over the past decade, there has been no progress on the enlargement of the Security Council

(4) As the principal organ of international peacekeeping and conflict resolution, the UNSC is responsible for keeping peace and managing conflict. Its decisions (referred to as resolutions) are binding on all member countries, unlike the General Assembly's.

This means that any state's sovereignty can be encroached upon if necessary by taking action, such as imposing sanctions.

FIRST COUNTRY IN SOUTHERN AFRICA TO ELIMINATE TRACHOMA - MALAWI

Malawi has become the first country in southern Africa to eliminate trachoma as per the World Health Organization (WHO) report. This makes Malawi the fourth country in WHO's Africa region to achieve this milestone after Ghana, Gambia and Togo.

It is the world's leading infectious cause of blindness and is one of the conditions known as neglected tropical diseases. It is a public health problem in 44 countries and is responsible for the blindness or visual impairment of about 1.9 million people.

Trachoma (truh-KOH-muh) is a bacterial infection that affects eyes. It's caused by the bacterium Chlamydia trachomatis. Trachoma is contagious, spreading through contact with the eyes, eyelids, and nose or throat secretions of infected people. It can also be passed on by handling infected items, such as handkerchiefs. Trachoma may cause mild itching and irritation of your eyes and eyelids; Swollen eyelids and pus draining from the eyes.

INDIA AND AUSTRALIA, FROM DIVERGENCE TO CONVERGENCE

GS-II IR Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

The fifth round of Track 1.5 Australia-India Leadership Dialogue held in New Delhi, bringing together 50 of the best and brightest leaders from Australia and India including Ministers, business leaders and academics for an invitation-only forum.

The leaders at the dialogue will reflect on the past, but recommend more concrete steps to foster the relationship and ways to create a more habitable and sustainable planet.

Addressing Australia-India bilateral relations in the wider context of the Indo-Pacific region, the Dialogue provides a forum for consensus-building that paves the way to agreements on formal outcomes.

A gradual change in India-Australia relations and commons

India and Australia used to celebrate each other's problems rather than successes.

Apart from being two English-speaking, multicultural, federal democracies that believe in and respect the rule of law.

Both have a strategic interest in ensuring a balance in the Indo-Pacific and in ensuring that the region is not dominated by any one hegemonic power. In addition, Indians are today the largest source of skilled migrants in Australia.

Australia-India Economic Cooperation and Trade Agreement (ECTA): The economic relationship, already robust, could potentially be transformed if the promise of the new Australia-India Economic Cooperation and Trade Agreement (ECTA) is realized.

Importance of India-Australia Leadership Dialogue

The Australia-India Leadership Dialogue is critical because ideas matter in a relationship as much transactions and negotiations do. These can provide the space and the ambience that can infuse new ideas to generate a new energy into the relationship.

The Leadership Dialogue is also important because ultimately, people and real connections matter. Technology and the cyberworld can blind us into believing that face-to-face conversations are outdated.

As the premier forum for informal diplomacy between Australia and India, backed by Australian-founded tech company Atlassian, outcomes that grow the relationship through emerging technology are high on the agenda.

Australia wants to find alternative markets to China and diversify supply chains for its critical minerals.

As a country with reserves of about 21 out of the 49 minerals identified in India's critical minerals strategy. Australia is well placed to serve India's national interests required for India's carbon reduction programme.

Significance of Indo-Pacific region for India

The Indo-Pacific is a multipolar region that accounts for over half of global GDP and population. Maritime regions have also become important storage areas for essential resources such as fish stocks, minerals, and offshore oil and gas.

The Indo-Pacific area accounts for approximately 60% of world GDP, making it the most important contributor to global growth.

Many of the world's most important choke points for global trade are located in this region, including the Straits of Malacca, which are crucial for global economic growth.

Way Forward

While this is the first Dialogue since 2019, two nations have only grown closer together through enhancing shared framework for regional security, promoting business and commercial opportunities and strengthening people to people links, bilaterally and multilaterally.

As India marks 75 years of Independence and surpasses the United Kingdom as the fifth largest global economy, the momentum around this fifth Australia-India Leaderships Dialogue and the bilateral fruit it may bear should not be underestimated.

Appropriate diplomatic maneuvering and economic and military assertion is vital for the implementation of India's interests in the Indi-Pacific region along with leveraging space as a building block for a multipolar world order.

India's view is to work with other like-minded countries in the Indo-Pacific region to cooperatively manage a rules-based multipolar regional order and prevent any single power from dominating the region or its waterways.

THE GLOBAL SOUTH'S ASSERTION IN GEOPOLITICS

GS-II Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

The Global South has new agency in a changing world, with several countries finding that neutrality and strategic autonomy have become a viable option. The international system is witnessing geopolitical changes and a push for competitive great power hegemony.

Present geopolitical scenario

USA– The United States wants to maintain its primacy in the international system.

The US's national security documents mention its strategic interest. It wants to curb China's rise, weaken Russia's capabilities, maintain good relations with Europe. It also advocates for building satellite alliances with countries which conform to U.S. interests and values.

China

China has emerged as an economic power. It wants to challenge US primacy through building counter institutions like AIIB.

Russia-Russia with its military capability has the capacity to challenge the USA in global politics. Russia aggression against Ukraine is a watershed moment in geopolitics.

It is used by the USA to maintain its primacy in global affairs. Europe is now firmly behind the USA. The increasing Sino-Russia strategic partnership without limits is a threat to the west.

Global south

The countries of the south especially India and China are being blamed for failing sanctions against Russia.

Southern countries want a quick and peaceful solution to the Ukraine conflict. They oppose the sanctions against Russia.

They are advocating neutrality. Their reason for neutrality is their dependence on Russia for oil and energy needs. They also have memories of colonialism and recent interventions such as Iraq and Afghanistan.

Steps taken by major powers to maintain their global status

China is expanding military footprints in Asian countries. It is following expansionary policy in the neighbouhood. It is also violating the maritime zone in South China Sea and other water bodies.

The US response against neutrality has been to pressurise the southern countries that are not following the sanction regime. Recently the US Congress passed a bill to punish

African countries that engage with Russia.

Strategy of Southern countries to maintain neutrality

African Foreign Minister, in a press Conference with U.S. Secretary of State said no African country could be bullied and described this U.S. Bill as offensive legislation. She called for diplomacy.

China is waiving debt owed by 17 African countries as India did in 2003.

Stronger countries of the Global South such as India have used their leverage to negotiate with multiple sides. India increased oil purchases from Russia.

It has a military Logistics Exchange Memorandum of Agreement (LEMOA) with the U.S. At the same time, it has developed the International North-South Transport Corridor connecting Russia and India via central Asia and Iran with three sanctioned states.

It participates in military exercises such as the U.S.-led RIMPAC and Russian led Vostok exercises.

The South's choices are extending slowly to geoeconomics. The fear of the U.S. strategy of freezing dollar reserves has made the South cautious. This is leading the South to gradually find ways of bypassing the dollar in bilateral trade by using local currencies. They are using currency swap arrangements.

Conclusion

Multilateral institutions, ranging from BRICS (Brazil, Russia, India, China and South Africa) and the African Union, to ASEAN, and the Community of Latin American and Caribbean States, have given it new confidence.

Several countries including India, Brazil, South Africa, Indonesia and Malaysia have become economic powerhouses, albeit with their own inequalities and domestic problems. In these circumstances, neutrality and strategic autonomy have become a viable though not a normative option.

The Global South has made a statement on its development, for better terms for trade for which it needs strategic autonomy.

If the Global South were to voice collective concerns on existential threats from climate change, ecological devastation, inequalities and increasing militarisation, and work in plural inclusive ways, it could make the world a better place for itself.

SOCIETY & SOCIAL JUSTICE

What's Inside?

CONVERSION THERAPY

GS-I Indian Society, Social empowerment& GS-II Welfare schemes for vulnerable sections of the population by the Centre and States

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7. NATIONAL LIST OF ESSENTIAL MEDICINES.

PRADHAN MANTRI TB MUKT BHARAT ABHIYAN

Recently, the President of India, Smt. Droupadi Murmu launched the Pradhan Mantri TB Mukt Bharat Abhiyaan, to speed up the country's fight against tuberculosis (TB) and achieve the target set by the Prime Minister of eliminating the disease by 2025.

About the scheme

It's an initiative of the Ministry of Health and Family Welfare (MOHFW) to accelerate the country's progress towards TB elimination by 2025.

It aims to,

Provide additional patient support to improve treatment outcomes of TB patients.

Augment community involvement in meeting India's commitment to end TB by 2025.

Leverage Corporate Social Responsibility (CSR) activities.

Components

Ni-kshay Mitra Initiative: It is to ensure additional diagnostic, nutritional, and vocational support to those on TB treatment.

Ni-kshay Mitra (Donor) are those who can support by adopting health facilities (for individual donor), blocks/urban wards/districts/states for accelerating response against TB to complement government efforts.

Ni-kshay Digital Portal: It will provide a platform for community support for persons with TB.

About Tuberculosis

Tuberculosis (TB) is an infectious disease caused by ***Mycobacterium tuberculosis***.

It commonly affects the lungs, but can also affect other parts of the body.

It is a ***treatable and curable disease.***

TB is spread from person to person through the air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air.

Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever and night sweats.

Bacille Calmette-Guérin (BCG) is a vaccine for TB disease.

A total of 1.5 million people died from TB and an estimated 10 million people fell ill with tuberculosis (TB) worldwide in 2020.

India has the world's highest tuberculosis (TB) burden, with an estimated 26 lakh people contracting the disease and approximately 4 lakh people dying from the disease every year.

Challenges for India

Poor primary health-care infrastructure in rural areas of many states; unregulated private health care leading to widespread irrational use of first-line and second-line anti-TB drugs; poverty; lack of political will; and, above all, corrupt administration.

Other related Initiatives Regarding Tuberculosis

Global Efforts:

The WHO has launched a joint initiative "Find. Treat. All. #EndTB" with the Global Fund and Stop TB Partnership. It also releases the Global Tuberculosis Report.

India's Efforts:

India's National TB Elimination Programme is strengthened to meet the goal of ending the TB epidemic by 2025 from the country, five years ahead of the Sustainable Development Goals (SDG) for 2030.

National Strategic Plan (NSP) for Tuberculosis Elimination (2017-2025), The Nikshay Ecosystem (National TB information system), Nikshay Poshan Yojana (provides Rs 500 support through direct benefit transfer to the patients), TB Harega Desh Jeetega Campaign.

Currently, two vaccines VPM (Vaccine Projekt Management) 1002 and MIP (Mycobacterium Indicus Pranii) have been developed and identified for TB,

and are under Phase-3 clinical trial.

The government has also focused on utilising technology and creating digital health IDs for TB patients under the Ayushman Bharat Digital Health Mission to ensure proper diagnostics and treatment are available.

PM SHRI SCHOOLS INITIATIVE

On the occasion of National Teachers' Day, Prime Minister announced a new initiative named **PM SHRI Schools (PM ScHools for Rising India).**

About the scheme

It is a new centrally sponsored scheme and will showcase the components of the National Education Policy, 2020.

A Centrally Sponsored Scheme is one where the cost of implementation is likely to be split in the 60:40 ratio among the Union government and the states/Union Territories.

In Northeastern states, Himachal Pradesh, Uttarakhand, Jammu and Kashmir and UTs without legislatures, the Centre's contribution can go up to 90 per cent.

For instance, the mid-day meal scheme (PM Poshan) or the PM Awas Yojana.

Under it, as many as 14,500 schools across states and Union Territories will be redeveloped to reflect the key features of the NEP, 2020.

The NEP envisages a curricular structure and teaching style divided into various stages – foundational, preparatory, middle and secondary.

PM SHRI schools will be an upgrade of existing schools run by the Centre, states, UTs and local bodies. The PM SHRI schools can either be KVs, JNVs, state government schools or even those run by municipal corporations.

Significance

The aim of these schools will not only be qualitative teaching, learning and cognitive development but also to create holistic and well-rounded individuals equipped with key 21st-century skills.

These schools will be equipped with modern infrastructure including labs, smart classrooms & other modern skills.

The pedagogy adopted in these schools will be more experiential, holistic, integrated, play/toy-based, inquiry-driven, and discovery-oriented.

ADDITION OF TRIBES TO ST LIST

Recently, government has approved the inclusion of certain communities in the lists of Scheduled Tribes in Chhattisgarh, Tamil Nadu, Karnataka, Himachal Pradesh and Uttar Pradesh, fulfilling long-pending demands from these states.

Process of Inclusion in the ST List

The process begins with the recommendation from the respective State governments, which are then sent to the Tribal Affairs Ministry, which reviews and sends them to the Registrar General of India for approval.

This is followed by the National Commission for Scheduled Tribes' approval before the list is sent to the Cabinet for a final decision.

About the Newly Added Tribes

Hatti Tribe (Himachal Pradesh): A close-knit community who got their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called 'haat' in towns.

Narikoravan and Kurivikkaran (Tamil Nadu): They are nomadic tribes; they have prided themselves on their traditional occupations of hunting and gathering.

Binjhia (Chhattisgarh): They are non-vegetarians and agriculture is the mainstay of their economy. They do not eat beef and pork but consume alcoholic drinks including the handia (rice beer).

Gond Community (Uttar Pradesh): This includes the five subcategories of the Gond community (Dhuria, Nayak, Ojha, Pathari, and Rajgond).

'Betta-Kuruba' (Karnataka): The ST status granted to the Betta-Kuruba community as a synonym of Kadu Kuruba of Karnataka.

Benefits of Inclusion in the ST List

It will enable members of the communities listed in the list of Scheduled Tribes to derive benefits meant for STs under the existing schemes of the government.

It includes post-matric scholarship, overseas scholarship and the national fellowship, besides education, concessional loans from the National Scheduled Tribes Finance and Development Corporation, and hostels for students.

They are also entitled to the benefits of reservation in services and admission to educational institutions as per the government policy.

WOMEN IN ENGINEERING, SCIENCE & TECHNOLOGY (WEST)

Why in news?

On the occasion of teacher's day, the Indian Science Technology and Engineering facilities Map (I-STEM) launched an initiative to strengthen the efforts of scientifically inclined women. It is a special drive for supporting Women in Engineering, Science & Technology (WEST).

About- I-STEM

Indian Science, Technology and Engineering facilities Map (I-STEM) is a dynamic and **interactive national portal**, which hosts various scientific programs, initiated by office of the Principal Scientific Adviser, Govt. of India.

The main objective of having this portal (developed using public fund) is **to provide support to needy researchers** in different ways and strengthen the R&D ecosystem to fulfil the necessity of people of the country.

The supports planned through these programs through this unique portal are designed in such a way that every researcher inculcate the **concept of the Aatma Nirbhar Bharat** in their mind, nature, and behaviour and work with full dedication to optimize the usage of the resources established across the country, using taxpayer's money i.e. public fund.

WEST - Women in Engineering, Science & Technology

The WEST programme will cater to women with a STEM background and empower them **to contribute to the science, technology, and innovation ecosystem**.

Through the WEST initiative, I-STEM shall provide a separate platform to scientifically inclined women researchers, scientists, and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering.

Women may join the WEST program and explore opportunities to become stakeholders in various domains and pursue careers in R&D at various levels: technicians, technologists, scientists, and entrepreneurs. Opportunities range from operating scientific equipment and maintaining them, to designing and manufacturing them.

The **Skill Development programmes** under the WEST initiative will provide training for women with S&T backgrounds to brush up on their abilities

This initiative will also help bring women back into S&T domains **after a career break.**

Under the WEST initiative, the current support being provided to S&T startups by women entrepreneurs by I-STEM will be enhanced.

The access to R&D facilities and R&D software platforms (COMSOL, MATLAB, LABVIEW, AUTOCAD) available through the I-STEM portal will form a strong support network for women entrepreneurs in S&T.

Other Science and Technology programmes for women

KIRAN - Knowledge Involvement in Research Advancement through Nurturing embraces women-exclusive schemes of the Department of Science & Technology (DST) with the mandate to bring gender parity in S&T through gender mainstreaming.

CURIE - The Department of Science and Technology has started a special programme "**Consolidation of University Research for Innovation and Excellence in Women Universities** (CURIE)" in the year 2008-09 to support women universities for enhancing their R&D infrastructure. The main objective of the CURIE programme is **to train and create world class women scientists** in all areas of Basic Sciences & Technology who would be able to carry out cutting-edge research in their respective fields in due course

S&T For Women Scheme- This scheme is focused on women as specific target group to promote research, development and adaptation of technology to improve the quality of life, workings conditions for women.and to provide newer opportunities for gainful employment of women especially in rural areas and also to increase the contribution of women scientists to technology based development

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC)

Why in news?

The National Assessment and Accreditation Council courted controversy recently over the ratings of Maharaja Sayajirao University of Baroda, which changed from A to A+.

National Assessment and Accreditation Council
An Autonomous Institution of the University Grants Commission
राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद्
विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

About-

The NAAC, an autonomous body under the University Grants Commission (UGC),

It conducts assessment and accreditation of Higher Educational Institutions (HEI) such as colleges, universities or other recognised institutions to derive an understanding of the 'Quality Status' of the institution.

NAAC evaluates the institutions for its conformance to the standards of quality in terms of its performance related to the educational processes and outcomes, curriculum coverage, teaching-learning processes, faculty, research, infrastructure, learning resources, organisation, governance, financial well being and student services.

Under the rules, only higher education institutions that are at least six years old, or from where at least two batches of students have graduated, can apply.

The accreditation is valid for five years. Aspiring institutes need to be recognised by the UGC and have regular students enrolled in their full-time teaching and research programmes.

There are only 19 universities and 121 colleges that have been reviewed by the NAAC four times, with a gap of five years between each grading.

NAAC explored the possibility of a new system of Provisional Accreditation for Colleges (PAC) under which even one-year-old institutions could apply for accreditation. The provisional certificates would be valid for two years, it suggested.

Benefits of Accreditation

Institution to know its strengths, weaknesses, and opportunities through an informed review process

Identification of internal areas of planning and resource allocation

Collegiality on the campus

Funding agencies look for objective data for performance funding

Institutions to initiate innovative and modern methods of pedagogy

New sense of direction and identity for institutions

The society look for reliable information on quality education offered

Employers look for reliable information on the quality of education offered to the prospective recruits

Intra and inter-institutional interactions

Grievance Redressal

The NAAC views the process of assessment and accreditation as **an exercise in partnership**, done jointly by the NAAC and the institution being assessed. Every stage of the process is marked by **transparency**.

The institution is consulted at various stages of the process – eliminating conflict of interest with the peers, planning the visit schedule, sharing the draft peer team report before the team leaves the campus etc.

In spite of this **participatory approach**, there may be institutions that might have grievances to be addressed. Therefore, to provide a review mechanism for institutions who are aggrieved about the process or its outcome or any other issues related thereof, the NAAC has evolved Grievance Redressal Guidelines.

SPARK PROGRAM

Why in News?

Recently, the **Central Council for Research in Ayurvedic Sciences (CCRAS)** has taken a unique initiative to **support the research efforts** of bright young minds of the Country by developing the Studentship Program for Ayurveda Research Ken (SPARK) for **Ayurveda students** studying in recognised Ayurveda colleges.

About

Initiative

By Central Council for Research in Ayurvedic Sciences (CCRAS).

Aim

SPARK aims to **support the research ideas of young undergraduate students enrolled in Ayurveda Colleges** across India.

Application process

The application process for SPARK will be **completely online.**

Interested candidates will be required to **submit their research proposals through the SPARK Portal.**

The proposals will be **evaluated by eminent experts and reviewers.**

The selected fellows will be offered a **financial support of Rs.50, 000 under the fellowship.**

Significance

Scientific research: It will support the innovative ideas of young students and promote the culture of evidence based scientific research in the field of Traditional Medicine.

Research ideas: SPARK program is primarily developed to help students develop acumen for research and to further support and incentivise their research ideas.

Central Council for Research in Ayurvedic Sciences (CCRAS)

- CCRAS is an **autonomous body of the Ministry of AYUSH.**
- **It is an apex body in India** for the formulation, coordination, development and promotion of research on scientific lines in **Ayurveda and Sowa-Rigpa system of medicine.**
- CCRAS has **developed and implemented a wide range of schemes and programs to serve the citizens.**
- The Council has accelerated quality research activity in the domains of Ayurveda and allied sciences.
- The Council has not only **developed popular formulations such as Ayush-64**, it has as many as 18 formulations and technologies.
- The Council is currently working on research and development projects in **collaboration** with leading research institutions in **Romania, Germany, Israel, USA, Canada and the World Health Organisation (WHO).**

NATIONAL LIST OF ESSENTIAL MEDICINES.

About-

The **"essential medicines"** are those that satisfy the priority health care needs, based on efficacy, safety, quality and total cost of the treatment.

The primary purpose of NLEM is to promote rational use of medicines considering the three important aspects i.e., cost, safety and efficacy.

It also helps in optimum utilization of healthcare resources and budget; drug procurement policies, health insurance; improving prescribing habits; medical education and training for UG/PG; and drafting pharmaceutical policies.

In NLEM, the medicines are categorized based on level of healthcare system as-
P- Primary; S- Secondary and T- Tertiary.

The prices of essential medicines are regulated by the **National Pharmaceutical Pricing Authority.**

In India, it was framed on the lines of the Essential Medicines List (EML) released by the WHO.

Revision Process of NLEM

The concept of NLEM is based on the premise that a limited list of carefully selected medicines will improve quality of health care, provide cost-effective health care and better management of medicines.

The NLEM is **a dynamic document** and is revised on a regular basis considering the changing public health priorities as well as advancement in pharmaceutical knowledge.

If medicine with better efficacy or favourable safety profile and better cost-effectiveness is now available, then it is removed from NLEM.

The National List of Essential Medicines was first formulated in 1996 and it was revised thrice earlier in 2003, 2011, and 2015.

The independent Standing National Committee on Medicines (SNCM) was constituted by Union Health Ministry in 2018. The Committee after detailed consultation with experts and stakeholders has revised the NLEM, 2015 and submitted its report on NLEM, 2022 to the Ministry of Health & Family Welfare.

The Government of India has accepted the recommendations of the Committee and adopted the list.. The process of creation of NLEM depends on the feedback backed by scientific sources from stakeholders and inclusion/exclusion principle followed.

Inclusion and deletion into the list

For inclusion in NLEM, the drugs have to be useful in treating diseases which are a public health problem in India. They have to be licensed/ approved by the Drugs Controller General (DCGI), have proven efficacy, a safety profile based on scientific evidence, comparatively cost effective, and aligned with the current treatment guidelines. They have to be recommended under the **National Health Programs of India.** When more than one medicine is available from the same therapeutic class, a prototype that is the best suited medicine of that class is included. Besides this, the price of the total treatment is considered and not the unit price of a medicine. Fixed dose combinations are usually not included.

A drug is deleted from the list if it gets banned in India. Also, it is removed if reports of concerns about drug safety emerge.

National Pharmaceutical Pricing Authority

The National Pharmaceutical Pricing Authority was set up as an attached office of the Department of Chemicals and Petrochemicals (now Department of Pharmaceuticals since July, 2008) on 29th August 1997

Functions

- To implement and enforce the provisions of the **Drugs (Prices Control) Order** in accordance with the powers delegated to it.
- To monitor the availability of drugs, identify shortages, if any, and take remedial steps.
- To collect/ maintain data on production, exports and imports, market share of individual companies, the profitability of companies etc, for bulk drugs and formulations.
- To undertake and/ or sponsor relevant studies in respect of the pricing of drugs/ pharmaceuticals.
- To render advice to the Central Government on changes/ revisions in drug policy
- To help the Central Government in parliamentary matters relating to the drug pricing

CONVERSION THERAPY

GS-I Indian Society, Social empowerment& GS-II Welfare schemes for vulnerable sections of the population by the Centre and States

Why in news?

In a significant and welcome move, another layer of discrimination against the LGBTQIA+ community is being removed with the National Medical Commission (NMC) declaring conversion therapy a "professional misconduct" and empowering State Medical Councils to take disciplinary action if the guideline is breached.

Conversion Therapy

Conversion therapy is the pseudoscientific practice of attempting to change an individual's sexual orientation, gender identity, or gender expression to align with heterosexual and cisgender norms.

In contrast to evidence-based medicine and clinical guidance, such practices typically view homosexuality and gender variance as unnatural or unhealthy. There is a scientific consensus that conversion therapy is ineffective at changing a person's sexual orientation or gender identity and that it frequently causes significant, long-term psychological harm in individuals who undergo it.

Common methods of conversion therapy are counseling, visualization, social skills training, psychoanalytic therapy, and spiritual interventions. Other methods that have been used include ice-pick lobotomies, chemical castration with hormonal treatment; aversive treatments, such as "the application of electric shock to the hands and/or genitals"; "nausea-inducing drugs administered with the presentation of homoerotic stimuli", masturbatory reconditioning or hypnosis.

This can lead to trauma, manifesting in depression, anxiety, drug use, and even suicide.

Human Rights Violation

In 2020 the International Rehabilitation Council for Torture Victims released an official statement that conversion therapy is torture

The conversion therapy violates the prohibition against degrading treatment under Article 3 of the European Convention on Human Rights

India's Status on conversion Therapy

In India, homosexuality was decriminalized in the Navtej Singh Johar case in 2018. However, the general perception towards the LGBTQIA+ community in the country has not been progressive.

The Madras High Court in its June 2021 judgement banned the practice of 'conversion therapy' in India, bringing protective measures for LGBTQIA+ individuals in the country.

To protect the right to dignity, life, privacy, and freedom of choice of the couple by the virtue of the Indian constitution, the high court in **S. Sushma v. Commissioner of Police** ordered the prohibition of the practice of conversion therapy and 'any attempts to medically cure or change the sexual orientation of LGBTIQA+ people to heterosexual, or the gender

identity of transgender people to cisgender'.

Furthermore, the court recommended certain guidelines, ensuring LGBTQIA+ individual's privacy and constitutional rights are protected.

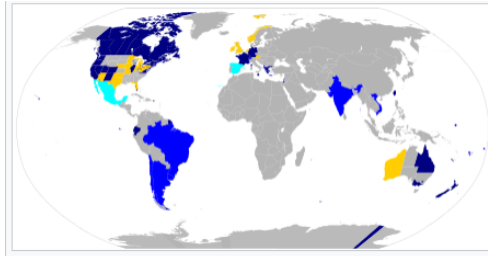
Despite the High Court ruling, there is **presently no legislation in India** that expressly prohibits the practice of conversion therapy. Even though the **Mental Health Care Act of 2017** explicitly states that no medical treatment can be undertaken without the patient's consent, there is a high probability that victims will give their consent to medical practitioners owing to an implicit assumption they have institutionalized concerning their so-called 'abnormalities'.

On July 8, 2022, the court gave an order to the National Medical Commission directing it to "issue necessary official notification by enlisting 'Conversion Therapy' as a professional misconduct." The NMC issued the directive to State Medical Councils on August 25.

Therefore, medical practitioners continue to pursue the life-threatening practice of conversion therapy. Although the Mental Health Care Act can be invoked to provide limited protective measures to the LGBTQIA+ community, a separate law is essential to entirely eradicate this abhorrent practice. The enactment of strict legislation would constitute a positive right in support of the community and provide equal opportunities to live a life with dignity.

Legal Status of conversion therapy around the world

An increasing number of jurisdictions around the world have passed laws against conversion therapy. Conversion therapy may constitute fraud and has been described by experts as torture, cruel, inhuman, or degrading treatment, and contrary to human rights norms.



Map of jurisdictions that have bans on sexual orientation and gender identity change efforts with minors.

- Criminal prohibition against conversion therapy on the basis of sexual orientation and gender identity
- Only medical professionals are banned from performing conversion therapy
- Conversion therapy is banned only in some subnational jurisdictions
- Ban on conversion therapy pending or proposed
- No ban on conversion therapy

Other issues of LGBTQ community

Family: The problem of sexual orientation and gender identity leads to fighting and family disruption.Lack of communication and misunderstanding between parents and their LGBTQ children increases family conflict.

Discrimination at Work Place: LGBTQ suffers from the socio-economic inequalities in large part due to discrimination in the workplace.

Health Issues:

Criminalisation of homosexuality leads to discrimination and results in LGBTQ people getting poor or inadequate access to services within the health system. It also creates barriers to both the availability and the ability to access HIV prevention, testing and treatment services.

Sexual Orientation vs. Gender Identity vs. Transgender

Sexual orientation is about who a person is attracted to and who a person feel drawn to romantically, emotionally, and sexually. It's different than gender identity. Gender identity isn't about who the person is attracted to, but about who the person IS — male, female, genderqueer, etc.

This means that being transgender (feeling like your assigned sex is very different from the gender you identify with) isn't the same thing as being gay, lesbian, or bisexual. Sexual orientation is about who you want to be with. Gender identity is about who you are.

The term queer can include a variety of sexual identities and gender identities that are anything other than straight and cisgender.

LGBTQIA+ is an abbreviation for lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more. These terms are used to describe a person's sexual orientation or gender identity

Isolation and Drug Abuse:

They gradually develop low self-esteem and low self-confidence and become isolated from friends and family.These people mostly get addicted to drugs, alcohol, and tobacco to get themselves relieved of stress and rejection and discrimination.

Way Forward

The schools and colleges must effect changes in curricula for a better understanding of the community.

Gender-neutral restrooms should be compulsory in educational institutes and other places. Parents too need to be sensitised, because the first point of misunderstanding and abuse often begins at home, with teenagers being forced to opt for "conversion" therapies.

Health professionals point out that even adults opting for sex reassignment surgeries need to get proper guidance like therapy pre and post operation; for an ordinary citizen, the cost too can be prohibitive.

Economic Development & Agriculture

What's Inside?

DAIRY SECTOR IN INDIA:
"THE MILKY WAY"

GS-III Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, economics of animal-rearing.

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NATIONAL LOGISTICS POLICY

GS-III Infrastructure: Energy, Ports, Roads, Airports, Railways etc. Investment models.

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1. **FINANCIAL INTERMEDIARY FUND (FIF)**
2. **PCA FRAMEWORK**
3. **HUMAN DEVELOPMENT REPORT 2021**
4. **PM- PRANAM SCHEME**
5. **SWACHH TOYCATHON**
6. **FRONT OF THE PACK LABELLING SYSTEM – FSSAI**
7. **DRAFT FOOD SAFETY AND STANDARDS (LABELLING AND DISPLAY) REGULATIONS:**

FINANCIAL INTERMEDIARY FUND (FIF)

To counter financial obstacles, weak infrastructure, scarcity of healthcare, etc, the ***World Bank Board of Directors has approved setting up a Financial Intermediary Fund (FIF) for Pandemic Prevention, Preparedness, and Response (PPR).***

About the Fund

FIF is aimed to address critical gaps through investments and technical support at the national, regional, and global levels.

The fund will provide a dedicated stream of additional, long-term financing to strengthen PPR capabilities in low- and middle-income countries.

At the heart of each FIF is a type of trust fund for which the ***World Bank serves as trustee***.

Structure of PPR FIF

It will have four main elements:

1. Governing board - the decision-making body of the FIF that sets the overall work program and makes funding decisions;
2. A secretariat performing administrative functions, including support to the governing board in the delivery of its responsibilities,
3. Financial trustee served by the World Bank, and
4. The FIF implementing entities to carry out the FIF's work program at the country, regional and global levels.

Need for a FIF PPR

Pandemic preparedness and response are quintessential "global public goods". Despite these facts, investment in pandemic preparedness and response has been insufficient.

The frequency of pandemic events has increased in the past decades and the global pandemic response has typically followed cycles of panic followed by neglect.

How the new fund will help?

Investing now will save lives and resources for the years to come.

The fund will provide long-term financing to low or middle-income countries to bridge the gaps that they face during a pandemic.

It will help focus and sustain much-needed high-level attention on strengthening health systems.

Building capacity in zoonotic disease surveillance, emergency communication, management, laboratories, community engagement, critical health workforce, etc.

PCA FRAMEWORK

Why in News ?

RBI removes Central Bank of India from PCA framework after more than 5 yrs.

About

RBI had placed Central Bank under PCA in June 2017 due to high net NPAs and negative return on assets. The Central Bank was the last of the public sector lenders to come out of PCA. Indian Overseas Bank and UCO Bank were removed from the framework last September.

According to the assessed figures of the bank for the year ended March 31, 2022, the lender is not in breach of the PCA parameters.

Its net **NPAs** stood at 3.93 per cent at end of June 2022, down from 10.20 per cent in March 2017. The **capital adequacy ratio** was 13.33 per cent at the end of June 2022, up from 10.95 per cent in March 2017. The bank has maintained that it was complying with the parameters under the PCA framework of the RBI for five quarters.

Reserve Bank of India removed the Central Bank of India from the Prompt Corrective Action (PCA) framework on complying with parameters like net non-performing assets (net NPAs) and capital ratios.

While removal paves way for normal functioning for business growth, the Central

bank of India would still be subject to certain conditions and continuous monitoring.

Prompt Corrective Action framework

PCA is a framework under which banks with weak financial metrics are put under watch by the RBI.

The RBI introduced the PCA framework in 2002 as a structured early-intervention mechanism for banks that become undercapitalised due to poor asset quality, or vulnerable due to loss of profitability.

The RBI has specified certain regulatory trigger points, as a part of PCA Framework, in terms of ***three parameters, i.e., Capital to Risk Weighted Assets Ratio (CRAR), net Non-Performing Assets (NPA) and Return on Assets (RoA)***

What is a Non Performing Asset?

It is a loan or advance for which the principal or interest payment remains overdue for a period of 90 days.Banks are required to classify NPAs further into Substandard, Doubtful and Loss assets.

What is Capital Adequacy Ratio?

The CAR is a measure of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures.CAR is the measurement ratio that assesses the ability of banks to absorb losses.

The Capital Adequacy Ratio, also known as capital-to-risk weighted assets ratio (CRAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world.

What is Return of Asset (RoE)?

Return on assets is a profitability ratio that provides how much profit a company is able to generate from its assets.

ROA is shown as a percentage, and the higher the number, the more efficient a company's management is at managing its balance sheet to generate profits.

Companies with a low ROA usually have more assets involved in generating profit, while companies with a high ROA have fewer assets.ROA is best when comparing similar companies; an asset-intensive company's lower ROA might appear alarming compared to an unrelated company's higher ROA with fewer assets and similar profit.

HUMAN DEVELOPMENT REPORT 2021

Why in news?

Human Development Report 2021-2022 was recently released by the United Nations Development Programme (UNDP).India ranks 132 out of 191 countries in the Human Development Index (HDI) 2021, after registering a decline in its score over two consecutive years for the first time in three decades.

About-

Human Development

Human development – or the human development approach – is about expanding the richness of human life, rather than simply the richness of the economy in which human beings live. It is an approach that is focused on people and their opportunities and choices.

The human development approach, developed by the economist **Mahbub Ul Haq**, is anchored in the Nobel laureate **Amartya Sen's work** on human capabilities, often framed in terms of whether people are able to "be" and "do" desirable things

in life

Human Development Report

The Human Development Report (HDR) is an **annual** Human Development Index report published by the **Human Development Report Office of the United Nations Development Programme (UNDP)**.

The reports are ensured of editorial independence by the United Nations General Assembly.

Human Development Index

The Human Development Index (HDI) is a statistic composite index of **life expectancy, education (mean years of schooling completed and expected years of schooling upon entering the education system), and per capita income indicators,** which is used to rank countries on human development.

The other indices that form the part of the Report are:

1. Inequality-adjusted Human Development Index (IHDI),
2. Gender Development Index (GDI),
3. Gender Inequality Index (GII) and
4. Multidimensional Poverty Index (MPI).

Key Highlights of the Report

European states were among the best overall performers, with as many as 8 in the top 10 of the list. These are Switzerland (1; 0.962), Norway (2; 0.961), Iceland (3; 0.959), Denmark (6; 0.948), Sweden (7; 0.947), Ireland (8; 0.945), Germany (9; 0.942) and Netherlands (10; 0.941).

The world over, nine out of 10 countries have slipped in their human development performance due to multiple crises such as COVID-19, the war in Ukraine and environmental challenges, indicating that human development globally has stalled for the first time in 32 years

A large contributor to the HDI's recent decline is a global drop in life expectancy, down from 72.8 years in 2019 to 71.4 years in 2021.

The COVID-19 pandemic has also exacerbated gender inequality, which increased 6.7% globally.

At 73 and with an index value of 0.782, **Sri Lanka emerged as the best performer** in the Indian sub-continent. The island nation was followed by China (79 and 0.768), Bhutan (127 and 0.666), Bangladesh (129 and 0.661), India, Nepal (143 and 0.602) and Pakistan (161 and 0.544).

India's Position-

India's HDI score of 0.633 places it in the **medium human development category**, lower than its value of 0.645 in 2018,indicating a reversal in progress.India's HDI value stood at 0.633 during 2021, was lower than the world average of 0.732.

Like global trends, in India's case, the ***drop in HDI from 0.645 in 2018 to 0.633 in 2021*** can be attributed to falling life expectancy at birth — **70.7 years to 67.2 years.**

India's expected years of schooling stand at 11.9 years

The mean years of schooling are at 6.7 years.

The GNI per capita level is $6,590.

India has, however, shown a ***slight improvement in its Gender Inequality Index*** value in the latest report as compared to the 2020 index (0.490 vs 0.493), after gender inequality worsened between 2019 and 2020 (0.486 vs 0.493)

UNDP

The United Nations Development Programme (UNDP) is a United Nations agency tasked with helping countries eliminate poverty and achieve sustainable economic growth and human development.

Headquartered in New York City, it is the largest UN development aid agency, with offices in 170 countries.

UNDP is based on the merging of the United Nations Expanded Programme of Technical Assistance, created in 1949, and the United Nations Special Fund, established in 1958. UNDP, as we know it now, was established in 1966 by the General Assembly of the United Nations.

PM- PRANAM SCHEME

Why in news?

The Union government plans to introduce a new scheme – PM PRANAM, which stands for PM Promotion of Alternate Nutrients for Agriculture Management Yojana.

About-

Promotion of Alternate Nutrients for Agriculture Management Yojana is being planed to be introduced in order to reduce the use of chemical fertilisers by incentivising states

The scheme will not have a separate budget and will be financed by the "savings of existing fertiliser subsidy" under schemes run by the Department of fertilisers.

Further, 50% subsidy savings will be passed on as a grant to the state that saves the money, sources said, and that 70% of the grant provided under the scheme can be used for asset creation related to technological adoption of alternate fertilisers and alternate fertiliser production units at village, block and district levels.

Need for the scheme

Due to **increased demand for fertiliser** in the country over the past 5 years, the overall expenditure by the government on subsidy has also increased.

The total requirement of four fertilisers — Urea, DAP (Di-ammonium Phosphate), MOP (Muriate of potash), NPKS (Nitrogen, Phosphorus and Potassium) — increased by 21% between 2017-2018 and 2021-2022,

In light of the increased demand, the government has also been **increasing the subsidies** it provides for chemical fertilisers.

PM PRANAM, which seeks to reduce the use of chemical fertiliser, will likely **reduce the burden on the exchequer**. The proposed scheme is also in line with the government's focus on **promoting the balanced use of fertilisers** or alternative fertilisers in the last few years.

SWACHH TOYCATHON

Why in news?

The Ministry of Housing and Urban Affairs (MoHUA) launched Swachh Toycathon under the Swachh Amrit Mahotsav

About

Swachh Toycathon is a competition being undertaken by Ministry of Housing and Urban Affairs under Swachh Bharat Mission-Urban (SBM-u 2.0) with the aim of 'Rethinking Indian toy industry'

The national competition for individuals from all ages as well as groups and start-ups, aims to bring forth innovation and circularity in design and packaging of games and toys. The competition seeks entries of designs of toys and play-zones using waste and recycled material, prototypes of eco-friendly toys and packaging, and other innovative ideas rethinking the toy industry.

The Center for Creative Learning, IIT Gandhinagar, is MoHUA's knowledge partner for the initiative. They will be providing support on aspects of pedagogy and creativity

India's toy industry

The invention of toys in India took place during the Indus Valley Civilization, approximately 8,000 years ago. The original toys comprised

whistle-shaped parrots, toy monkeys with long hands to slide down a rope or stick and miniature

farm carts. All these toys were made from natural materials such as bamboo sticks, hay, and natural clay like soil, rocks, and fibre cloth. However, today, the advent of progressive technology and mechanism has stimulated companies to produce fresh and inventive toys. Soon, owing to the new revolution of 'Local se Vocal', India is anticipated to become the global hub by 2025-2030.

The Indian toy sector is expanding on the shoulder of a growing young population, rising disposable incomes, and a slew of innovations for the junior population base. The industry stands on the cusp of significant opportunities in every toy segment such as electronic toys, puzzles, construction and building toys, dolls, ride-ons, sports and outdoor play toys, infant/pre-school toys, and activity toys.

Indian Toys Industry is estimated to be $1.5 bn making up 0.5% of global market share. The toy manufacturers in India are mostly located in NCR, Maharashtra, Karnataka, Tamil Nadu and clusters across central Indian states. The sector is fragmented with 90% of the market being unorganized and 4,000 toy industry units from the MSME sector.

The toys industry in India has the potential to grow to $2-3 bn by 2024. The Indian toy industry is only 0.5% of the global industry size indicating a large potential growth opportunity. The domestic toy demand is forecasted to grow at 10-15% against the global average of 5%.

National Action Plan for Toys (NAPT) 2020 was introduced to promote the Indian toy industry including traditional handicrafts and handmade toys with the objective of establishing India as a global Toy hub. Department for Promotion of Industry and Internal Trade (DPIIT) along with 14 ministries of Central Government is currently implementing various aspects of the NAPT.

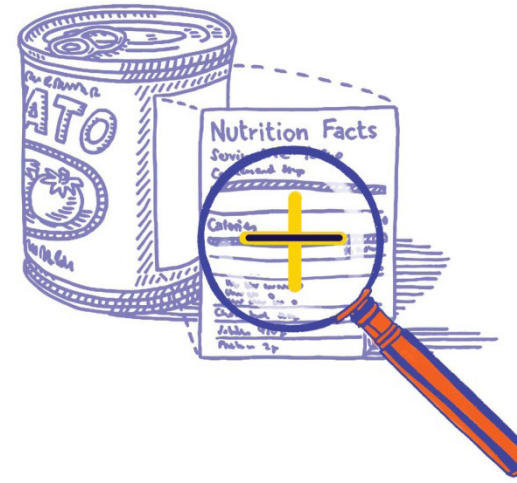
FRONT OF THE PACK LABELLING SYSTEM – FSSAI

The Food Safety and Standards Authority of India (FSSAI), in 2018, released the Draft Food Safety And Standards (Labelling And Display) Regulation. However, even after so many expert panel recommendations and regulations, India still does not have a clear labelling or Front-of-pack (FoP) Labelling System, which can warn consumers about harmful levels of fat, salt and sugar in processed foods.

Front-of-pack (FoP) Labelling System has long been listed as one of the global best practices to nudge consumers into healthy food choices. It works just the way cigarette packets are labelled with images to discourage consumption.

As India is experiencing a dietary shift, with people increasingly consuming more processed and ultra-processed foods and a burgeoning market, these factors prompt the need for FoP labelling for India. It will play a handy role in fighting increasing obesity and many non-communicable diseases.

The World Health Organization (WHO) defines FoP labels as nutrition labelling systems that are presented on the front of food packages in the principal field of vision; and present simple, often graphic information on the nutrient content



or nutritional quality of products. To complement the more detailed nutrient declarations provided on the back of food packages. The Codex Alimentarius

Commission, an international food standards body established jointly by WHO and the Food and Agriculture organization (FAO), mentions that "FoP labelling is designed to assist in interpreting nutrient declarations".

DRAFT FOOD SAFETY AND STANDARDS (LABELLING AND DISPLAY) REGULATIONS:

The rule mandates colour-coded labels on food items. The draft regulation has been brought to encourage consumers to make healthier food choices and inform them about what the product actually contains.

The front of all packaged food items will have to display the total number of calories, saturated and trans fats, salt, and added sugar content as well as the proportion of the daily energy needs fulfilled by the food item. FSSAI has also changed the symbol of vegetarian food from a green circle to a green triangle to help color blind people distinguish it from the brown circle denoting non-vegetarian food. According to the proposed regulation, if the total amounts of calories, fats, trans-fats, sugar, and sodium per serving exceed the stipulated limits, it would be indicated in red colour.

DAIRY SECTOR IN INDIA: "THE MILKY WAY"

GS-III Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, economics of animal-rearing.

Recently, the Prime Minister inaugurated the International Dairy Federation World Dairy Summit (IDF WDS) 2022. The last such dairy summit was held in India in 1974.

Theme: Dairy for Nutrition and Livelihood.

Significance of the Dairy Sector in India

The concept of 'pashu dhan' and occupations associated with milk has been an important part of the 1,000-year-old Indian culture.

India is ranked first in milk production contributing 23% of global milk production.

The top 5 milk-producing states: Uttar Pradesh (14.9%), Rajasthan (14.6%), Madhya Pradesh (8.6%,), Gujarat (7.6%,) and Andhra Pradesh (7.0%).

Milk-producing animals or 'milch animals' provide great support to them, especially during drought and flood. Further, dairying is not a seasonal occupation in nature, like agriculture.

The milk and associated products have immensely helped India in reducing malnutrition and undernourishment levels in the country.

Dairy sector gives impetus to the rural economy and is also a major source of employment for more than 8 crore dairy farmers in the country.

Total value of dairy production in the country is about Rs 8.5 lakh crore which is more than the combined value of paddy and wheat production.

Operation Flood (also called as White Revolution) converted India from a milk importer to the world's largest producer.

Female population comprises around 70% of the sector's workforce. Therefore, the dairy sector's development automatically augments women's empowerment.

It provides cow dung which is used as an organic manure for the agricultural sector. Further, the sector provides raw materials to manufacture

processed foods. For instance, Whey protein powder is an extract from the watery portion of milk that separates from the curds during the cheese-making process.

Challenges Faced by Sector

Maintaining quality and quantity due to its perishable nature, the requirement of more complex supply chain operations and logistics to ensure freshness and safety is the fundamental challenge.

The sector also witnesses adulteration practices and overuse of antibiotics to boost production.

Milk producers are highly susceptible to even minor shocks. For instance, small changes in the employment and income of consumers can leave a significant impact on milk demand.

The majority of cattle raisers are unorganised and this nature further inhibits the creation of political clout to advocate for their rights.

There is no official and periodical estimate of the cost of milk production. Even though, the value of milk produced outweighs the combined value of the output of wheat and rice in India.

There is no MSP (Minimum Support Price) for milk. Further, dairy cooperatives are not a preferred choice for landless or small farmers.

The cooperatives adopt a fat-based pricing policy which is 20 to 30 % less than the price in the open market.

Traditional cow and buffalo milk is shunned by some consumers due to the belief that the carbon footprint of plant-based milk products like 'Soy Milk' or 'Almond milk' is much lesser than that of traditional dairy products.

Government Initiatives for the dairy sector in India

"Dairy Sahakar" scheme with a total investment of Rs 5000 crore will be implemented by National Cooperative Development Corporation to realize the vision, "from cooperation to prosperity".

Rashtriya Gokul Mission was launched in 2014 which aims to develop and conserve indigenous breeds, enhancement of milk production and distribution of disease-free high genetic merit bulls for natural service.

National Animal Disease Control Programme (NADCP) is a flagship scheme to vaccinate 100% of cattle, buffalo, sheep, goat and pig populations for Foot & Mouth Disease and 100% of bovine female calves for brucellosis within 2024.

Nationwide Artificial Insemination program targets to augment annual milk productivity from 1,860 kg/per animal to 3,000 kg/per animal upon its completion.

National Livestock Mission launched in 2014-15. It broadly covers all the activities required to ensure quantitative and qualitative improvement in livestock production systems and capacity building of all stakeholders. Ex: Reducing the gap in demand and availability of feed and fodder, ensuring higher productivity in a sustainable and environmentally friendly manner and enhancing livelihood opportunities.

The Dairy Processing & Infrastructure Development Fund (DIDF) in 2017, aims to modernize the milk processing plants and create additional infrastructure for processing more milk.

The dairy farmers have been included in the Kisan Credit Card (KCC) programme. It provides adequate and timely credit support from the banking system to the farmers for their cultivation and other needs.

Similarly, dairying was brought under MGNREGA to compensate farmers for the income loss due to Covid-19.

Dairy Entrepreneurship Development Scheme (DEDS) for generating self-employment opportunities in the dairy sector.

Pashu-Aadhaar is a unique ID on a digital platform for traceability for the animals.

Our scientists have developed an indigenous vaccine named Lumpi-ProVac. Ind for lumpy skin disease.

Suggestions

The government should support start-ups that come up with a solution-oriented approach.

Ex: Country Delight is a Haryana-based dairy-tech company that is providing quality milk at consumers' doorstep after quality tests at optimum pricing.

The dairy farmers must be given a stable market and remunerative price for the milk. For the price, a greater weightage should be accorded to the quantity of milk than its fat content.

The government should focus on a hub and spoke model. The main farm (hub) should have all integrated facilities for milking, feed production, and milk processing. The connected farms (spokes) should have a basic infrastructure for milking and cattle management.

Conclusion

The current situation demands sustainable development of the dairy sector. This development should be in line with the environmental, nutritional, and socio-economic demands of the country. Government should take robust steps in order to make dairy farming more lucrative for the small and marginalized farmers.

NATIONAL LOGISTICS POLICY

GS-III Infrastructure: Energy, Ports, Roads, Airports, Railways etc. Investment models.

On the 17th of September, Prime Minister Narendra Modi celebrated his 72nd birthday and on this occasion along with welcoming eight cheetahs being brought from Namibia to India, he also launched National Logistics Policy.

Commerce and Industry Minister Piyush Goyal said that the main motive of the policy is to promote the seamless movement of goods and enhancing the competitiveness of the industry across the nation.

It will focus on some key areas like process re-engineering, digitisation and multi-modal transport, according to The Economic Times. Addressing the members of the Board of Trade, Goyal said, "On September 17, the prime minister is going to release the country's logistics policy."

National Logistics Policy 2022

This policy will focus on some key areas such as process re-engineering, digitisation, and multi-modal transport.

It is a crucial move as high logistics cost impacts the competitiveness of domestic goods in the international market.

"The need for a national logistics policy was felt since the logistics cost in India is high as compared to other developed economies.

It is imperative to reduce the logistics cost in India for improving the competitiveness of Indian goods both in domestic as well as export markets," an official statement stated.

Reduced logistics cost aims to improve efficiency cutting across various sectors of the economy, enabling value addition and enterprise.

It said that the policy is an effort to address issues of high cost and inefficiency by laying down an overarching interdisciplinary, cross-sectoral and multijurisdictional framework for the development of the entire logistics ecosystem.

What is National Logistics Policy

For the very first time, it was introduced in 2020 when Finance Minister Nirmala Sitharaman mentioned it in her Budget speech. According to the government, it is an effort to introduce an integrated and tech-enabled approach to logistics operations which will be effective in the whole process and will be helpful in reducing logistics costs in the country from the current levels of 13-14 per cent of GDP.

With an exhaustive action plan, it was introduced with significant elements including integrated digital logistics systems; a unified logistics interface platform; ease of logistics; standardisation of physical assets and

benchmarking service quality standards, state engagement, human resource development and capacity building, export-import logistics, sectoral plans for efficient logistics, and facilitation of the development of logistics parks.

It has been an issue for the country for a long time as the logistics cost in India is high against 9-10 per cent in the US and Europe and 11 per cent in Japan and with no single body to manage the logistic sector, it becomes difficult to run the whole process smoothly. It is the responsibility of many different ministries, including road transport, shipping, railways, civil aviation, ports and commerce and industry, and finance to manage the same.

This whole logistic chain includes more than 20 government agencies, 40 PGAs (Partner Government Agencies), 37 export promotion councils, 500 certifications, over 10,000 commodities, and USD 160 billion market size. It also involves 200 shipping agencies, 36 logistics services, 129 ICDs (Inland Container Depots), 168 CFSs (Container Freight Stations), 50 IT ecosystems, banks and insurance agencies.

The sector provides employment to more than 22 million people and enhancing it will boost a 10 per cent decrease in indirect logistics cost leading to the growth of 5 to 8 per cent in exports, as per the statement of the ministry. As per estimates, the worth of Indian logistics market is over $200 billion.

4 Major Steps Under National Logistics Policy

Integration of Digital System (IDS):

30 different systems of seven different departments will be integrated digitally including the road transport, railway, customs, aviation, foreign trade and commerce ministries.

It will improve shorter cargo movement.

Unified Logistics Interface Platform (ULIP):

It will also lead to smooth cargo movement.

Ease of Logistics (ELOG):

A new policy will be implemented to simplify the rules and ease the logistics business.

System Improvement Group (SIG):

Monitoring all logistics-related projects regularly and tackling all obstacles.

Further, the policy aim to develop skills among youth and create employment opportunities.

"ONE WATER APPROACH" – THE PRESSING PRIORITY

GS-III Conservation, environmental pollution and degradation, environmental impact assessment.

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SHALLOW WATER MINING

GS-I Distribution of key natural resources across the world

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SHIFTING MONSOON PATTERNS

GS-I Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc., geographical features

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What's Inside?

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THE CHITAL OR THE SPOTTED DEER

Why in news ?

The Madhya Pradesh Forest Department has denied reports that chital from Rajasthan are being ferried to the Kuno National Park (KNP) in Madhya Pradesh for the newly acquired cheetahs to prey on them.

About Chital deer

IUCN status - Least Concern.

State animal of Telangana.

In India Chital is very widely distributed from the base of Himalayas to the steaming forests of the south except in the north east.

The chital is found in large numbers in dense deciduous or semi evergreen forests and open grasslands. The highest numbers of chital are found in the forests of India, where they feed upon tall grass and shrubs.

About Kuno National Park

Kuno National Park is a national park in MP established in 1981 as a wildlife sanctuary. In 2018, it was given the status of a national park. It is part of the Khathiar-Gir dry deciduous forests.

KunoPalpur Wildlife Sanctuary is underway to become India's second home for the Asiatic lion.

India and Namibia signed a Memorandum of Understanding (MoU) recently to reintroduce the African cheetah in India.

SOUTH RED-EARED SLIDER TURTLE

Why in news?

The experts have expresses that the presence of invasive and non-native south red-eared slider turtles would lead to the extinction of native species of their own kind

About

The red-eared slider or red-eared terrapin (Trachemys scripta elegans) is a subspecies of the pond slider (Trachemys scripta), a semiaquatic turtle belonging to the family Emydidae.

Red-eared slider young look practically identical regardless of their sex, making distinguishing them difficult.(Sexual Dimorphism)

The red-eared slider are native to south-eastern USA and Mexico, but have found their way across the globe including India through trade of exotic animals. The populations are observed in every continent except Antarctica and at least 73 countries,

It is the most invasive turtle.It is the most commonly traded turtle in the world.

It is widely found in urban wetlands, such as — Sukhna lake in Chandigarh, temple ponds of Guwahati, lakes of Bengaluru, Sanjay Gandhi national park in Mumbai, Yamuna river in Delhi — among other water bodies

In India, keeping indigenous turtles as pets is prohibited under the wildlife protection act. But the foreign breeds are not restricted and are kept as pets in many families across India

growth and make room for new scutes to grow through underneathIn contrast, tortoises don't shed anything from their shells. Their keratin is constantly growing without shedding, pushing up old growth to give the shell a layered look

Tortoises are primarily herbivores, with their diet varying depending on specific species and age. They tend to have a wide diet, slowly covering large distances, grazing on leaves, weeds, grasses, fruit, and vegetables as they come across them.

Alien Invasive Species

- Invasive species, also called introduced species, alien species, or exotic species, any nonnative species that significantly modifies or disrupts the ecosystems it colonizes.
- Such species may arrive in new areas through natural migration, but they are often introduced by the activities of other species.
- Human activities, such as those involved in global commerce and the pet trade, are considered to be the most common ways invasive plants, animals, microbes, and other organisms are transported to new habitats.

Examples of invasive species-

Cassia uniflora, Chromolaena odorata, Eichhornia crassipes, Lantana camara, Parthenium hysterophorus, Prosopis juliflora

Turtle vs Tortoise

Tortoises are generally land creatures- living in a variety of habitats, from deserts to wet tropical forests. Unlike most sea turtles, which take to land only when they are laying eggs, tortoises don't have much to do with water other than drinking it and occasionally bathing in it

Turtles shed their scutes to remove old

Turtles are omnivores, eating a similar variety of plants to tortoises, and supplementing this with protein sources ranging from worms and insects to jellyfish and small fish.

Other Important Turtles-

Olive ridley turtle, Green turtles, Hawksbill Turtle,Leatherback turtle, Loggerhead turtle

INTERNATIONAL DAY OF CLEAN AIR FOR BLUE SKIES

Why in news?

Recently, the Ministry of Environment, Forest and Climate Change (MoEF&C) organized 3rd International Day of Clean Air for blue skies as **'Swachh Vayu Diwas ("Swachh Vayu Neel Gagan")** 'today to raise awareness and facilitate actions to improve air quality under National Clean Air Programme (NCAP).

History of International Day of Clean Air for blue skies-

During its 74th session, the United Nations General Assembly adopted a resolution to hold an International Day of Clean Air for Blue Skies on December 19, 2019.

The resolution also encouraged the United

Nations Environment Programme (UNEP) to facilitate the day's observance in collaboration with other relevant stakeholders.

In the lead-up to the passing of the resolution, **the Climate and Clean Air Coalition** collaborated with UNEP and the Republic of Korea to advocate for the day.

The **'Air We Share'** was the focal theme for the 2022 edition(3rd).

It emphasises the need for collective accountability and action by understanding that the existence of air pollution stretches across national boundaries.

Aims -

Raise public awareness at all levels—individual, community, corporate and government—that clean air is important for health, productivity, the economy and the environment.

Demonstrate the close link of air quality to other environmental/developmental challenges such as – most and foremost – climate change and the global Sustainable Development Goals.

Promote and facilitate solutions that improve air quality by sharing actionable knowledge best practices, innovations, and success stories.

National Clean Air Programme

National Clean Air Programme aims at improving air quality by **reducing Particulate Matter concentrations by 20-30%** in 131 cities in the country.

It includes 123 Non-Attainment Cities (NAC) which exceed the National Ambient Air Quality Standards (NAAQS) for 5 consecutive years and 42 Million Plus Population Cities/Urban Agglomerations.

131 cities of the country have developed **City Action Plans and Micro Action Plans** to address various sources contributing to poor air quality such as vehicles, road dust, construction, industries, thermal power plants, burning of waste, Construction and Demolition Waste, etc.

Reporting and monitoring of physical and financial progress of action plans is done through PRANA portal (Portal for Regulation of Air Pollution in Non-attainment Cities).

DHOLES

Why in news?

Dholes in Northeast India are facing risk of extermination

About-

Dholes or 'Asiatic Wild Dogs', scientifically termed as Cuon alpinus, is a wild carnivorous animal belonging to the Canidae family, found in **Central, South, East, and Southeast Asia**.

It is a **diurnal pack hunter** which preferentially targets medium- and large-sized ungulates. In tropical forests, the dhole competes with the tiger (Panthera tigris) and the leopard (Panthera pardus), targeting somewhat different prey species, but still with substantial dietary overlap

The dhole or Asiatic Wild Dog (Cuon alpinus) is found in three clusters across India namely the **Western and Eastern Ghats, central Indian landscape and North East India.**The dhole occurs in most of India south of the Ganges, particularly in the Central Indian Highlands and the Western and Eastern Ghats. It is also present in Arunachal Pradesh, Assam, Meghalaya, and West Bengal and in the Indo-Gangetic Plain's Terai region. Dhole populations in the Himalayas and northwest India are fragmented

India's north-eastern region has only recently been extensively examined for mammalian diversity due to its extensive forest cover.Meanwhile, the

Dampa Tiger Reserve in Mizoram supports a population of the dhole, which is recognized as a tiger competitor and sometimes incorrectly stigmatized for the near-absence of the large cat. It is considered as an important refuge for dholes in north-east India.

In 2014, the first breeding center for dholes was constructed at Indira Gandhi Zoological Park.

One of the primary reasons for the decline in the distributional range has been a decrease in the natural prey availability due to hunting, poaching and competition with livestock.

Protection Status

IUCN Red List of Endangered Species,

Protected under Schedule 2 of the **Wildlife Protection Act 1972**

Appendix 2 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

ARAVALLI JUNGLE SAFARI PARK

Why in news?

The Haryana government will set up an Aravalli foundation to develop the safari park in the forested regions of Gurugram and Nuh and the proposed park will have 10 types of open enclosures or zones for different animals and birds

About

The world-renowned **Kruger National Park** is South Africa's largest wildlife sanctuary with nearly 2 million ha (4.9 million acres) of unrivalled wilderness and wildlife land, and home to, not only the Big Five, but more species of large mammals than any other African game reserve.

Currently, outside of Africa, Sharjah has the largest curated safari park, covering around 2,000 acres, and the Aravalli park will be five times the size of the Sharjah park

The 10,000 acres earmarked for the safari are in a patch of the Aravalis that has degraded over the years due to development around it. The land is protected under the sections 4 and 5 of the Punjab Land Preservation Act (PLPA), and the terrain is typical of the Aravali hills - undulating, with varied soil depth and scrub vegetation, poor moisture retention and prone to water stress.

The jungle safari park will have 10 zones, including a large herbarium, aviary/bird park, four enclosures for big cats, a large area for herbivores, an area for exotic animals and birds, an underwater world, nature trails, visitors, tourism zones, and botanical gardens, among other features.

Tigers, lions and leopards have their own enclosures. The animals would be fed here just like zoos. So, there is no question of prey base.

The jungle safari project will not only boost tourism in the state but also provide ample employment opportunities to the local people

The locals of Bhondsi, Ghamroj, Alipur, Tikli and Aklimpur, Naurangpur and Bar Gujjar villages in Gurugram and Kota Khandewla, Gangani, Mohamadpur Ahir, Kharak, Jalalpur, Bhango and Chalka villages in Nuh will benefit from the project

As there is no national park in the Aravallis and the jungle safari project will help protect the critical leopard population in the Aravalli forests and also the wildlife corridor from Asola Bhatti wildlife sanctuary in Delhi to Sariska wildlife sanctuary in Rajasthan

Aravallis

The Aravallis of Northwestern India, one of the oldest fold mountains of the world, now form residual mountains with an elevation of 300m. to 900m. They stretch for a distance of 800 km. from Himmatnagar in Gujarat to Delhi, spanning Haryana, Rajasthan, Gujarat, and Delhi, the 692 kilometre (km).

The mountains are divided into two, main ranges – ***the Sambhar Sirohi Range and the Sambhar Khetri Range in Rajasthan***, where their extension is about 560 km.

GLOBAL REGISTRY OF FOSSIL FUELS

The Global Registry of Fossil Fuels is the "first-ever fully transparent" public database that tracks fossil fuels across the world. It was launched by the ***Carbon Tracker and Global Energy Monitor.***

It is the first-of-its-kind database for tracking the world's fossil fuel production, reserves and emissions. It includes data from over 50,000 oil, gas and coal fields in 89 countries. That covers 75% of global reserves, production and emissions. This registry is available for public use.

The United States and Russia have enough fossil fuel still underground untapped to exhaust the world's remaining carbon budget. That's the remaining carbon the world can afford to emit before a certain amount of warming occurs, in this case, 1.5 degrees Celsius. These reserves would generate 3.5 trillion tonnes of greenhouse gas emissions which is more than all of the emissions produced since the Industrial Revolution. Of the 50,000 fields included, the most potent source of emissions is the Ghawar oil field in Saudi Arabia, which churns out some 525 million tonnes of carbon emissions each year.

AVALANCHE MONITORING RADAR

Recently, the ***Indian Army and the Defence Geoinformatics and Research Establishment (DGRE) have jointly installed the Avalanche Monitoring Radar, first of its kind in India, in north Sikkim.***

This radar has the capability to detect avalanches ***within three second***s of their triggering and will assist in saving valuable life of troops and civilians as also vehicles in super high altitude areas. It can ***scan the targeted slope for avalanche release and track its path and its size*** in case it is triggered. ***It can see through snow, fog as well as in the night, making it an all weather solution and covers an area of two sq/km.***

The radar is also linked to an alarm system enabling automatic control and warning measures in case an avalanche is triggered. The radar uses a series of short microwave pulses which are scattered at the target and can detect an avalanche in less than three seconds.

JAL DOOT APP

Ministry of Rural Development has developed "JALDOOT App" that will be used across the country to capture the water level of selected wells in a village.

The Jaldoot app will enable Gram Rojgar Sahayak (GRS) to measure the water level of selected wells twice a year (pre-monsoon and post-monsoon). In every village, adequate number of measurement locations (2-3) shall need to be selected. These will be representative of the ground water level in that village.

The app will facilitate panchayats with robust data, which can be further used for better planning of works.

The ground water data could be utilised as part of the Gram Panchayat Development Plan (GPDP) and Mahatma Gandhi NREGA planning Further, the data can also be used for different kinds of research and other purposes.

The country has taken many steps for improvement of water management both in the rural and urban areas, through watershed development, afforestation, water body development and renovation, rainwater harvesting and so on.

However, withdrawal of ground water, as also utilization of surface water sources has reached critical levels in many parts of the country, resulting in significant depletion of water levels causing distress to the community, including farmers.

Therefore measurement and observation of the levels of water tables across the country has become necessary.

VIZHINJAM PORT

Why in news

The week-long ongoing protests against the construction of the Adani Group's Vizhinjam International Transhipment Deepwater **Multipurpose Seaport in Kerala's capital Thiruvananthapuram** with fisherfolk laying siege to the port from the sea and land.

The fishing community under the leadership of the Catholic Archdiocese of Thiruvananthapuram has said the protests will continue until all their demands are met.

At talks between Fisheries Minister V Abdurahiman and representatives of the archdiocese on August 19, the government agreed to most of thefisherfolk's demands, but no breakthrough was achieved.

The **biggest demand** of the protesters is that the construction of the Rs 7,525-crore deepwater port and container transhipment terminal at Vizhinjam on the outskirts of Thiruvananthapuram should be stopped and a ***proper environmental impact study*** should be carried out.

The community has also put forward six other demands: (i) rehabilitation of families who lost their homes to sea erosion, (ii) effective steps to mitigate coastal erosion, (iii) financial assistance to fisherfolk on days weather warnings are issued, (iv) compensation to families of those who lose their lives in fishing accidents, (v) subsidised kerosene, and (vi) a mechanism to dredge the Muthalappozhi fishing harbour in Anchuthengu in Thiruvananthapuram district.

The government ***has conceded all demands except providing a kerosene subsidy***, and halting ***the construction of the port.***

It has agreed to find accommodation for relocated families before Onam (which begins at the end of this month).

The fisherfolk also fear that the proximity of the port to the fishing harbour will impact the tranquillity of the sea and fishing. There are apprehensions that the proposed shipping channel will lead to loss of livelihoods. Delays; contested studies

As per the initial agreement, the project was supposed to be operational by 2019. The Adani Group cited several reasons for the delay, from the 2017 Ockhi cyclone to the Covid-19 pandemic.

The company also faced a shortage of granite boulders to build the 3.1-km breakwater, only 1 km of which has been built so far.

State Minister for Ports Ahammad Devarkovil said last year that the project was now expected to be completed by 2023.

In 2019, the National Institute of Ocean Technology, Chennai, said in its Annual Shoreline Monitoring report that erosion spots such as Valliyathura, Shangumugham, and Punthura had remained unchanged since the construction of the port began in 2015.

The 2021 edition of the study noted erosion at Pulluvila (500 m), Mullur (290 m), Kochuveli (250 m), Punthura (150 m), Cheriyathura (120 m), Shangumugham (100m), and Valliyathura (50m), but concluded that the port activity had less impact than high wave activities and cyclones in the Arabian Sea.

NARMADA CANAL - LARGEST LINED IRRIGATION CANAL IN THE WORLD

Narmada Canal: **Narmada Canal is a contour canal** which is located in the state of Gujarat in India and is the ***largest lined irrigation canal in the world to date.***

The source of the Narmada Canal is the **Sardar Sarovar Dam** which is built on the Narmada River. It is also the **second largest canal in India after the Indira Gandhi Canal.**

Latest News related to Sardar Sarovar Project

Prime Minister Narendra Modi on Sunday 28th August 2022 inaugurated the Kutch branch canal which is a part of the Sardar Sarovar Dam Project.

As per the reports, it is the longest branch canal in the world.

The Kutch Branch canal is around 357 km long. It is built at a cost of 6493 crores.

Narmada Canal - Capacity

The Narmada Canal has a maximum capacity of 40000 cusecs and the minimum capacity of 2500 cusecs.

It starts from the ***Sardar Sarovar Dam in Gujarat and extends up to the districts of Barmer and Jhalore of Rajasthan.***

Narmada Canal - States Covered

Narmada Canal covers the states of Gujarat and Rajasthan with the maximum part in Gujarat. 458 km in Gujarat and 74 km in Rajasthan.

Narmada Canal - Branches

There are 42 branches of the Narmada Canal and the longest of the branches is the Kutch Branch Canal which is around 357.18 km long.

The Narmada Canal enters Rajasthan near Shilu, in the Sanchor tehsil of the Jalore district. In Rajasthan, it has 9 major distributaries.

Narmada Canal in Rajasthan services an area of 1477 sq. km and covers around 124 villages.

The water from this canal was designed to be used for providing drinking water to around 1336 villages.

In Gujarat, the Narmada Canal provides irrigation water to around 3125 villages spread across 17 districts.

Unique Features of Narmada Canal

The following are the unique features of the Narmada Canal which make it different from other projects:

The water for irrigation purposes is delivered to the farmer groups and not individuals, this is facilitated by Water Users Association or WUA.

PLACES IN NEWS

Vembanad Lake

Vembanad lake, is shrinking and its unique biodiversity is under threat of ecological decay despite it being declared as a **Ramsar site** 20 years ago.

The lake is a source of livelihood for farmers of **Kuttanad and the fisherfolk community**, which continues to undergo ecological degradation due to pollution and unauthorised constructions on its banks, with experts calling for "committed efforts" to save its wetland ecosystem.

Features of the Lake

This is the largest lake in Kerala and the longest Lake in India.

Vembanad Lake is also known as Vembanad Kayal, Vembanad Kol, Punnamada Lake (in Kuttanad) and Kochi Lake (in Kochi).

It is bound by Alappuzha, Kottayam and Ernakulam.

The lake has its source in four rivers,

Meenachil, Achankovil, Pampa and Manimala.

It is separated from the Arabian Sea by a narrow barrier island and **is a popular backwater stretch in Kerala.**

Vallam Kali (i.e Nehru Trophy Boat Race) is a Snake Boat Race held every year in the month of August in Vembanad Lake.

It is the second-largest Ramsar site in India only after the Sundarbans in West Bengal.

The Government of India has identified the Vembanad wetland under the National Wetlands Conservation Programme.

The Kumarakom Bird Sanctuary is located on the east coast of the lake.

In 2019, Willingdon Island, a seaport located in the city of Kochi, was carved out of Vembanad Lake.

Manasbal Lake

After a gap of 33 years, Manasbal Lake is once again open for training drills after raging militancy forced the Navy to abandon it.

About

It is located in central Kashmir's Safapora area in Ganderbal district.

It's a freshwater lake with picturesque hills and pristine waters. The Mughal Garden, called the Jaroka Bagh, (meaning bay window) built by Nur Jahan overlooks the lake.

This lake is a good place for birdwatching. The main flora includes macrophytes and phytoplankton. The main fauna includes zooplankton, benthos and fish.

Training in the area was suspended during the inception of militancy in 1989 and thereby abandoned by the Navy. The NCC has been working in J&K since 1965.

Major issues include, Eutrophication (nutrient-induced increase in phytoplankton productivity) and pollution.

Other lakes in Kashmir: Dal Lake, Wular Lake, Tarsar-Marsar Lakes

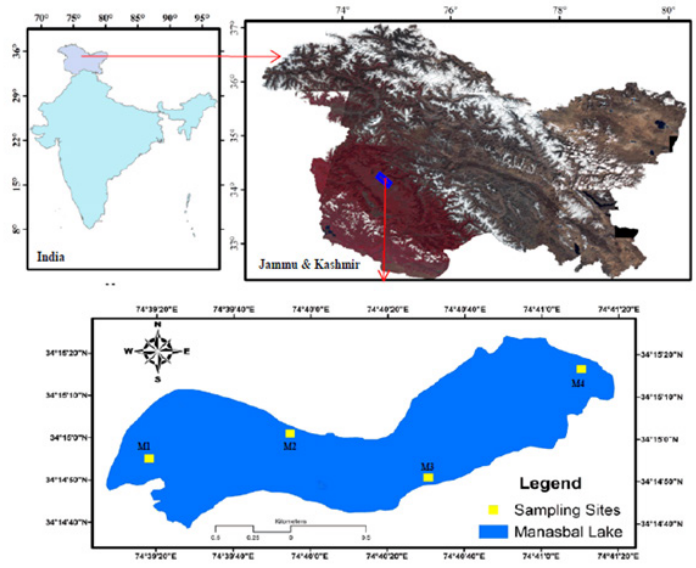


Figure 1: Location map of the area showing study sites.

"ONE WATER APPROACH" – THE PRESSING PRIORITY

GS-III Conservation, environmental pollution and degradation, environmental impact assessment.

About One Water Approach

One Water Approach also referred to as Integrated Water Resources Management (IWRM) is the recognition that all water has value, regardless of its source i.e., from the water resources in our ecosystems to our drinking water, wastewater and stormwater.

It is an integrated planning and implementation approach by including all stakeholders to manage finite water resources for long-term resilience and reliability meeting both community and ecosystem needs.

It respects and responds to the natural ecosystem, geology, and hydrology of an area; and the water-related investments should provide economic, environmental, and societal returns.

Objectives

- Reliable, secure and clean water supplies,
- Aquifer recharge,
- Flood protection,
- Minimizing environmental pollution,
- Efficient use and reuse of natural resources,
- Resilience to climate,
- Long-term sustainability,
- Equity, affordability and accessibility to safe drinking water, and
- Economic growth and prosperity.

Conventional Water Management	One Water Approach
1) Drinking water, wastewater and stormwater are managed separately.	1) All the water systems, regardless of their source, are managed in a connected way and given equal worth.
1) One-way route from supply to use, treatment and disposal.	2) Water is recycled and reused several times.
2) Use of Stormwater not considered.	3) Stormwater is utilised as a valuable resource to fight against water scarcity, recharge groundwater and support natural vegetation.
3) Grey infrastructure in conventional water management.	4) Mix of grey and green infrastructure that form a hybrid system.
4) Collaboration is need-based.	5) Active collaborations with all stakeholders, including communities.

Need/Significance

According to UN estimates, by 2050, 4 billion people may be seriously affected by water shortages, leading to multiple conflicts over water sharing among the countries.

At the global level, 31 countries are already facing a shortage of water and by 2025, there will be 48 countries facing serious water shortages.

Apart from water scarcity, there are other challenges such as recognising, measuring and expressing water's worth and its incorporation into decision-making.

Differences in regional water availability, pricing and affordability, the seasonal and inter-annual variation in supply, water quality and quantity, and unreliability of the resource

poses great challenges.

Aged infrastructure, supply-centric management, polluted waterbodies, agricultural and industrial expansion following changes in consumption and production patterns, a changing climate and disproportionate distribution of the water also push for new water techniques.

Note:

Grey infrastructure refers to structures such as dams, seawalls, roads, pipes or water treatment plants.

Green infrastructure refers to natural systems including forests, floodplains, wetlands and soils that provide additional benefits for human well-being, such as flood protection and climate regulation.

Case study

Singapore is working towards becoming a zero-waste nation by reducing the consumption of water/materials and reusing/recycling them to give them a second lease on life. It has been following the One Water Approach for decades.

Los Angeles has formulated a "One Water LA 2040 Plan" through a "Three-legged stool approach" that ensures water quality improvement, water supply augmentation and flood risk mitigation, using recycling and reuse.

Way Forward

Failure to value water in all its forms is considered a prime cause of the mismanagement of water, according to the UN World Water Development Report 2021.

Therefore, shifting the attention from a single-minded and linear water management to a multi-dimensional integrated water management approach, that is, the 'One Water' approach, for a comprehensive, resilient and sustainable management of water resources.

SHALLOW WATER MINING

GS-I Distribution of key natural resources across the world

Why in news?

A new research by University of Helsinki, Finland published on September 13 in the journal Trends in Ecology and Evolution argue that shallow-water mining needs more rigorous environmental evaluation before it can be declared safe and sustainable.

About-

Shallow water mining-

Mining metals such as gold, cobalt and copper from depths of 200 metres (m) below the sea is also known as shallow-water mining

Shallow-water mining is not strictly defined by depth, but rather, shallow-water operations are usually considered to be those occurring on the continental shelf with easier access to the coast, as opposed to deep-sea operations that target less accessible resources and require specialised technology

The principal varieties of shallow-water minerals include:

1. Mineral-rich sands;
2. Polymetallic nodules and phosphorites; and
3. Placer deposits, consisting of metallic minerals or gemstones, such as tin, gold, or diamonds.

Examples-

Shallow-water mining projects are already underway in Namibia and Indonesia, and projects have been proposed in Mexico, New Zealand, and Sweden.

Findings of the research

Despite representing only a fraction of the global ocean, continental shelves (shallow water) support high species diversity, habitat heterogeneity, and biological productivity

Shallow water mining was not a sustainable substitute for deep-sea mining, where valuable minerals needed to build batteries critical for clean energy transition are mined from ocean depths greater than 200 m.

There is interest in shallow-water mining as it is considered a relatively low-risk

and low-cost option to satisfy the demand for metals and minerals. Also, technology for shallow-water mining already exists.

Deep-sea mining has not been implemented yet due to concerns over the environmental impacts of mining activities.

Impacts on marine life

Shallow-water mining involves removing sediment-bearing minerals, which offer refuge to seafloor organisms. This could trigger local extinctions and changes in species composition.

Also, ploughing the seafloor releases plumes, which could impact water quality. Other issues could be the release of harmful substances from the sediment and disturbance from noise and light.

As shallow-water ecosystems are already under stress due to pollution, and the impacts of climate change, even seemingly small-scale mining activities can drastically affect marine ecosystems, especially at local scales.

"There is not enough rigorous scientific information available concerning the biology, ecology and connectivity of deep-sea species and ecosystems, or all the ecosystem services they provide,"Without this information, one could not understand the potential risks of the mining activity for deep-ocean biodiversity, ecosystems and human well-being.

Shallow-water mining exerts additional pressures on vulnerable coastal ecosystems which are already burdened with cumulative impacts from human activities and the effects of climate change, making them less resilient to new human activities. Despite faster recovery times of shallow-water ecosystems compared with vulnerable and slow-growing deep-sea communities, the overall environmental footprint of mining will be significant also in shallow areas.

Way Forward

The shallow-water mining activities should not be considered the "silver bullet to resolve the growing global need for metals" until the environmental and socioeconomic impacts are thoroughly investigated. Meanwhile, nations have not agreed on whether deep-sea mining should be permitted amid environmental concerns at the recently concluded 27th session of the Assembly of the International Seabed Authority.

There must be experimentations and studies to determine the impact of the shallow water mining and further policy decisions have to be made to ensure sustainable development.

SHIFTING MONSOON PATTERNS

GS-I Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc., geographical features

Why in news?

Monsoon rainfall in India has been surplus by around 7% this year though with extreme inequity.

How has the monsoon been this year?

Monsoon rainfall in India has been surplus by around 7% this year though with **extreme inequity.**

Central and southern India saw a **sharp surge** in rainfall. Rains in Central India were surplus by 20% and in southern India by 25%, with the last month seeing several instances of flooding in Kerala, Karnataka and Madhya Pradesh.

On the other hand, large parts of **U. P., Bihar, Odisha** have seen **large deficits**.

The east and **northeast of India** have reported a **17% shortfall** and the **northwest 2%.**

Reasons for the inequity in monsoon

In April, the IMD had forecast 'normal' rains over India but by May-end indicated it to be above normal. Central India and the southern peninsula were expected to get 6% more than their historical average but what we have seen are rains far in excess of this.

Reasons-

These heavy rains are premised on a La Nina, the converse phenomenon of the El Nino

It is characterised by cooler than normal sea surface temperatures in the central Pacific.

Monsoon withdrawal

The monsoon is a sea-breeze that has consistently landed in the Indian sub-continent for thousands of years. It enters mainland India between the last week of May and the first week of June — though June 1 is its official onset date over Kerala. The IMD only counts the rainfall between June 1 and September 30 as monsoon rainfall. This doesn't mean that the monsoon system ceases to pour rain over India from October 1.

In fact, monsoon-related rain can continue well into the first fortnight of October and only really retreats from India by late October. It is then replaced by the retreating, or northeast monsoon in November which is the key source of rainfall for several parts of Tamil Nadu, Andhra Pradesh and north interior Karnataka.

More technically, withdrawal is a cessation of rainfall activity over northwest India for five straight days, an anticyclone establishing itself in the lower troposphere and a marked reduction in moisture content.

When does the monsoon withdraw?

The monsoon begins its withdrawal from the last State it reaches, which is Rajasthan. Around September 15, cyclonic systems from the Arabian Sea and the Bay of Bengal that fuel the monsoon from June-September are replaced by an 'anti-cyclone' circulation which means dry, windless conditions start to prevail over western and northern India.

A day after the IMD announced the withdrawal, torrential rains began in several parts of north India.

Triple La nina-

While, El Ninos are linked to reduced rains over India, La Ninas indicate surplus rainfall. India is seeing an extended spell of the La Nina, called a 'triple dip' La Nina which is a phenomenon lasting across three winter seasons in the northern hemisphere. This is only the third time since 1950 that a triple dip La Nina has been observed. This, in part, is why for the third year in a row, India is seeing surplus rain in September, a month that usually marks the retreat of the monsoon.

Shifting monsoon patterns

Recent Evidences

Since 2019, monsoon in India has returned surpluses

(10%), barring a slight dip last year.

In 2020, India saw 9% more rain with August registering 27% more rain and September 4% more than its usual quota.

The rainfall over the country as a whole, in 2021, was 1% less than normal though rainfall in September was a remarkable 35% above what is usual.

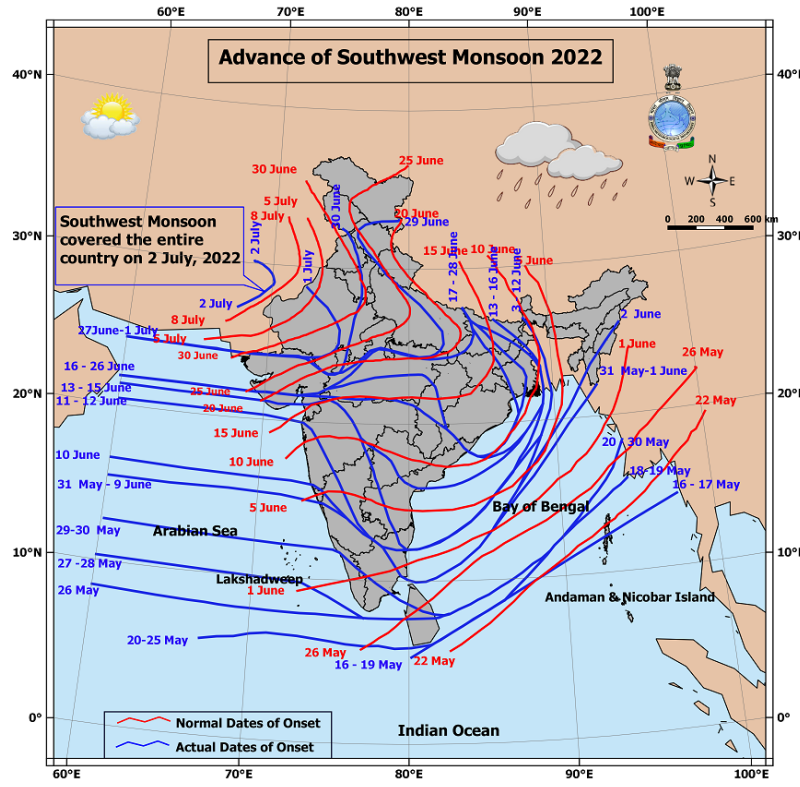
This year the monsoon is already in surplus by about 6% and a vigorous September is likely to see India post yet another year of surplus rain.

Three years of above-normal rain in a block of four years is unprecedented in more than a century of IMD's record keeping, data suggests.

Factors Responsible for the Changing Indian Monsoon Patterns

Climate Change: As the climate warms, increasing water vapour transport from the ocean into land increases. This triggers changes in large-scale circulations, which influence the strength and extent of the overall monsoon circulation.

Atmospheric Teleconnections: Due to rising temperatures, there has been an increase in the occurrence of atmospheric teleconnections such as ENSO, Indian Ocean Dipole (IOD) and Madden-Julian Oscillation (MJO), which are directly impacting the monsoonal circulations.



Way forward

Agriculture:

India's hundreds of millions of rice producers and consumers are being affected negatively by these unprecedented changes which are also raising concerns over food security.

Short-term actions & solutions:

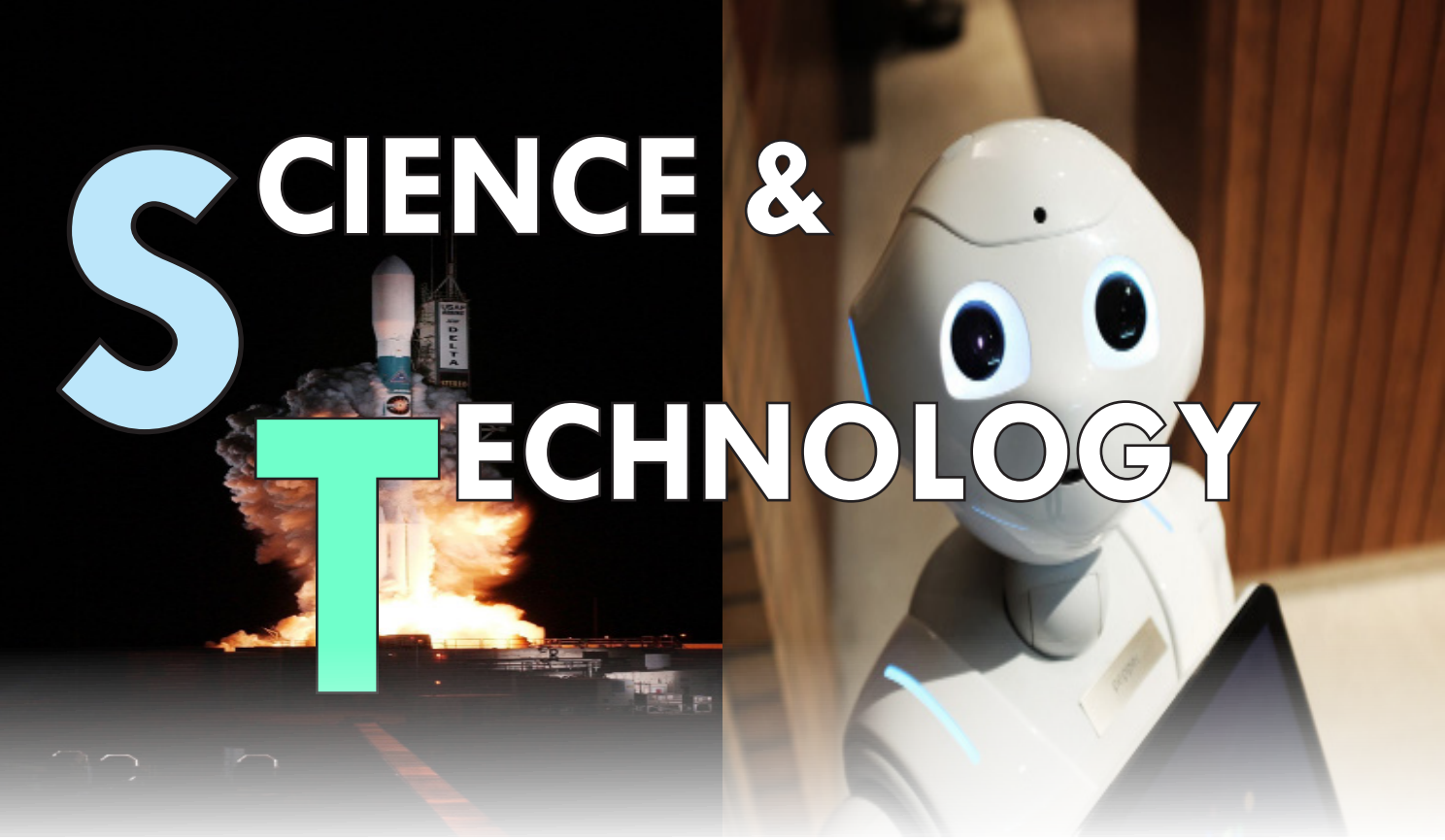
In UP, the Agriculture Meteorology division has advised carrying out the transplantation of rice and suggested the use of short-duration rice varieties. Experts have encouraged the cultivation of red gram. Farmers are also recommended to opt for inter-cropping.

For farmers in Jharkhand, the Agrimet has suggested adopting measures to conserve moisture in the soil. No sowing is advised until there is 50 to 60mm rainfall and sufficient moisture for at least three consecutive days.

Short-duration rice, millet, maize, and arhar.

Limiting warming:

The current atmospheric carbon dioxide (CO_2) concentrations are higher than at any time in the last two million years. To align with a 1.5°C target of limiting warming, global CO_2 emissions must reach net zero around 2050, with global GHG emissions reaching net-zero 15-20 years later.



SCIENCE & TECHNOLOGY

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GS-III Indian Economy and issue--Science and Technology-developments and their applications, Awareness in the fields of IT, Space, Computers, robotics, Nano-technology

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INDIA'S FIRST INTRA-NASAL CORONA VACCINE

The Drugs Controller General of India (DCGI) has approved the country's first intra-nasal Covid-19 vaccine **Bharat Biotech's iNCOVACC for restricted emergency use in those aged above 18 years**. It's only the second vaccine in the world, after CanSino Biologics' vaccine in China, to get regulatory approval.

About iNCOVACC

The vaccine has been developed by Bharat Biotech with technology in-licensed from Washington University-St Louis. The vaccine is stable at 2-8°C.

iNCOVACC is a chimpanzee adenovirus vectored recombinant nasal vaccine that has been specifically formulated to allow intra-nasal delivery through nasal drops.

The nasal delivery system has been designed and developed to be cost-effective in low- and middle-income countries.

Mode of working of the nasal vaccine

The vaccine is given nasally, it triggers an immune response in the mucosal membrane.

Intra-nasal Covid-19 vaccines may produce local antibodies in the upper respiratory tract which may provide the potential to reduce infection and transmission.

Therefore, it can stop the virus from replicating at its entry and spreading to the lungs and other parts of the body.

The intra-nasal vaccine stimulates a broad immune response – neutralizing IgG, mucosal IgA, and T Cell responses.

Immune responses at the site of infection (in the nasal mucosa) are essential for blocking both infection and transmission of Covid-19.

It will do away with the need for needles, syringes and trained personnel currently required for all the Covid-19 vaccines available.

FUNGAL OUTBREAK THREATENS TRICOLOURED BAT WITH EXTINCTION

US officials have announced recently to list the tricoloured bat as 'endangered.' A fungal disease that attacks while bats are hibernating has brought the tricolored bat to the brink of extinction.

About

The tricolored bat, formerly known as the eastern pipistrelle, is one of the smallest bats in North America.

Its common name "tricolored bat" derives from the coloration of the hairs on its back, which have three distinct color bands.

Tricolored bats are a hibernating species and have the longest hibernation period of any bat species in their range.

When not hunkering down for the winter, they may be found in a wide variety of habitats to roost and forage.

When feeding, these bats can catch insects in the air as often as every 2 seconds and increase their body mass by 25 percent in only half an hour.

CLONED WILD ARCTIC WOLF

Why in News?

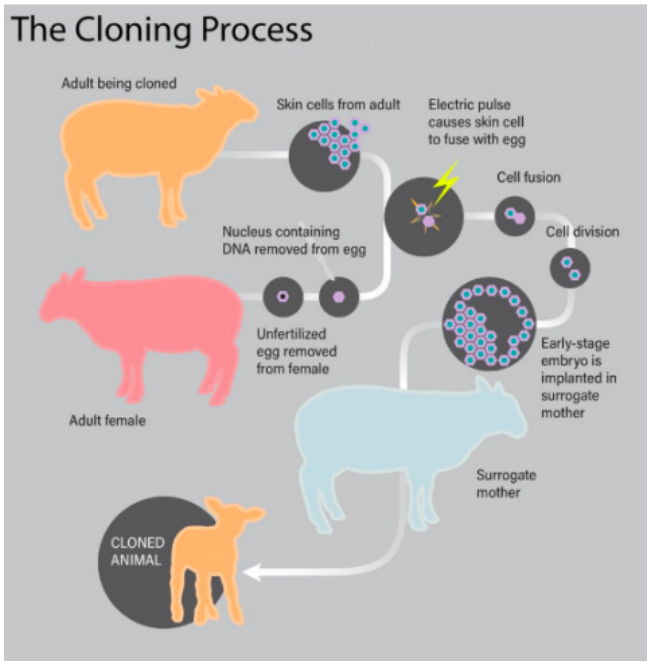
A wild Arctic wolf was successfully cloned for the first time in the world by a Beijing-based gene firm.

About

Scientists in China create world's first cloned wild Arctic wolf 'Maya'.

The successful cloning of the species which is native to the High Arctic tundra of Canada's Queen Elizabeth Islands, is considered a milestone achievement in conserving rare and endangered species through technology.

According to the company, the **donor cell** of the wolf came from the skin sample of a **wild female Arctic wolf** and its oocyte was taken from a **female dog**. According to the Global Times report, Maya's surrogate mother was a beagle, a dog breed. The dog was selected as the surrogate as it shares genetic ancestry with ancient wolves and hence, ensures success in cloning.



According to the company, the process began with constructing 137 new embryos from enucleated (process of removing the nucleus from a cell) oocytes and somatic cells followed by the transfer of 85 embryos to the uteri of seven beagles, of which one was born as a healthy wolf.

What is cloning?

Cloning, the process of creating copies of living organisms, including cells, tissues, etc, was first used to create an animal in 1996 by a Scottish scientist. The animal, a sheep named Dolly, was made using an udder cell from an adult sheep.

Types of cloning

There are three different types of artificial cloning: gene cloning, reproductive cloning and therapeutic cloning.

Gene cloning produces copies of genes or segments of DNA.

Reproductive cloning produces copies of whole animals.

Therapeutic cloning produces embryonic stem cells for experiments aimed at creating tissues to replace injured or diseased tissues.

Natural clones, also known as identical twins, occur in humans and other mammals. These twins are produced when a fertilized egg splits, creating two or more embryos that carry almost identical DNA. Identical twins have nearly the same genetic makeup as each other, but they are genetically different from either parent.

DART (DOUBLE ASTEROID REDIRECTION TEST)

Why in News?

NASA's DART (Double Asteroid Redirection Test) has successfully crashed into the asteroid Dimorphos.

About

DART is developed and led for NASA by the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Maryland.

DART is the the first-ever mission that will demonstrate the planetary defense technique known as **kinetic impact**. This method will have DART deliberately collide with a target asteroid—which poses no threat to Earth— in order to change its speed and path.

DART's target is a binary asteroid system consisting of **Didymos** (Greek for "twin"), about a half-mile across, and its smaller companion called **Dimorphos** (Greek for "two forms"), about 530 feet across.

DART will use an autonomous targeting system to aim itself at Dimorphos. The spacecraft, roughly the size of a small car, strike the smaller body at about 4 miles per second.

Telescopes on Earth will observe the asteroid system and measure the change in Dimorphos' orbit around Didymos. A ride-along CubeSat named LICIACube, built by the Italian Space Agency, will separate from DART before impact to observe the collision.

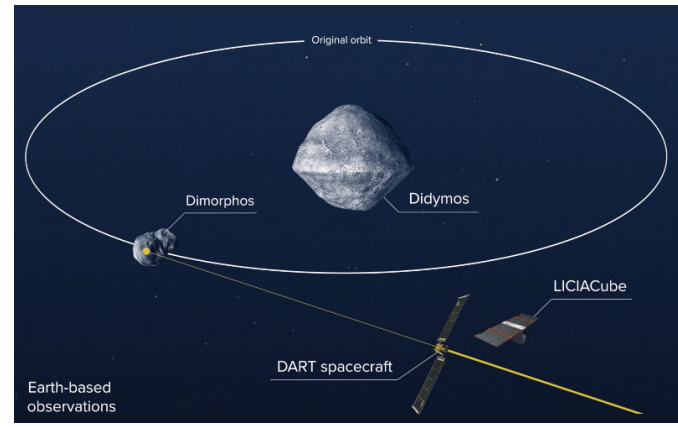
DART is a low-cost spacecraft.It has two solar arrays and uses hydrazine propellant for maneuvering the spacecraft.It also carries about 10 kg of xenon which will be used to demonstrate the agency's new thrusters called **NASA Evolutionary Xenon Thruster–Commercial (NEXT-C)** in space.

NEXT-C gridded ion thruster system provides a combination of performance and spacecraft integration capabilities that make it uniquely suited for deep space robotic missions.

The spacecraft carries a high-resolution imager called **Didymos Reconnaissance and Asteroid Camera for Optical Navigation (DRACO)**.Images from DRACO will be sent to Earth in real-time and will help study the impact site and surface of Dimorphos (the target asteroid).

Asteroid

An asteroid is a minor planet of the inner Solar System. Sizes and shapes of asteroids vary significantly, ranging from 1-meter rocks to a dwarf planet almost 1000 km in diameter; they are rocky, metallic or icy bodies with no atmosphere.



Of the roughly one million known asteroids the greatest number are located between the orbits of Mars and Jupiter, approximately 2 to 4 AU from the Sun, in the main asteroid belt.

Asteroids are generally classified to be of three types: **C-type, M-type, and S-type.** These were named after and are generally identified with **carbonaceous, metallic, and silicaceous compositions, respectively.**

The sizes of asteroids varies greatly; the largest, Ceres, is almost 1,000 km (600 mi) across and qualifies as a dwarf planet.

Near-Earth asteroids can threaten all life on the planet; an asteroid impact event resulted in the Cretaceous–Paleogene extinction. Different asteroid deflection strategies have been proposed.

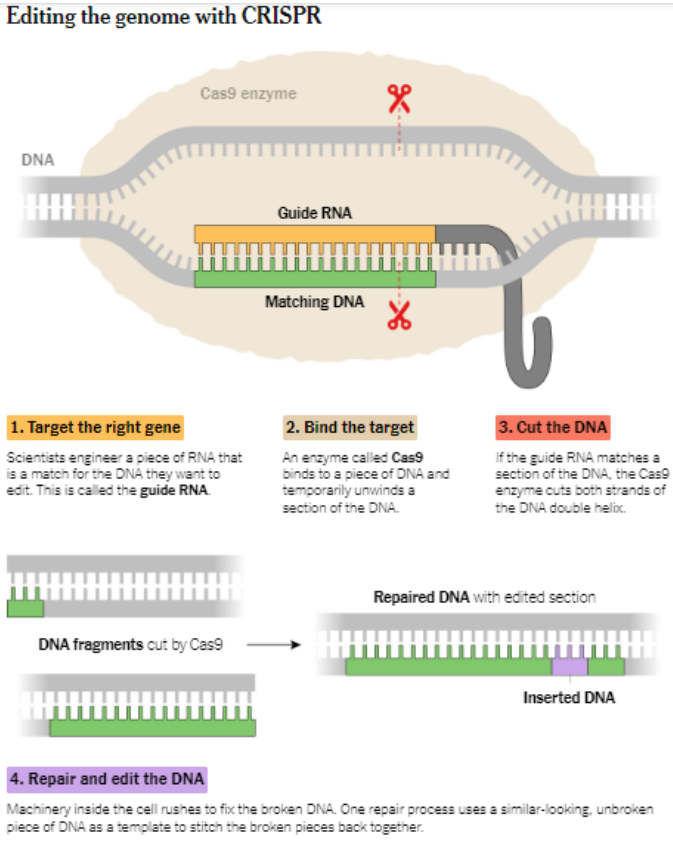
CRISPR-CAS9

Why in news?

India approved a 5-year project to develop Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) to cure sickle cell anaemia in 2021.Sickle cell anaemia is the first disease that is being targeted for CRISPR-based therapy in India. Further this is the 10th year of the introduction of CRISPR-Cas9 technology

About

CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats.



CRISPR-CAS9 is a technology that allows scientists to essentially cut-and-paste DNA, raising hope of genetic fixes for disease. However, there are also concerns about its safety and ethics.

CRISPR is a dynamic, versatile tool that allows us to target nearly any genomic location and potentially repair broken genes. It can remove, add, or alter specific DNA sequences in the genome of higher organisms.

Unusual but repeated DNA structures that scientists had been observing for some time were given a name. This name assigned was **"Clustered regularly interspaced short palindromic repeats" or CRISPR.**

In 2012, scientists discovered that CRISPR is a key part of the "immune system". For instance, when a virus enters a bacterium, it fights back by cutting up the virus's DNA.

This kills the virus but the bacterium stores some of the DNA. The next time there is an invasion, the bacterium produces an enzyme called Cas9 which matches the stored fingerprints with that of the invaders. If it matches, Cas9 can snip the invading DNA.

The **CRISPR-Cas9 gene-editing tool thus has two components. They are:**

a short RNA sequence that can bind to a specific target of the DNA and

the Cas9 enzyme which acts like molecular scissors to cut the DNA.

CRISPR sequences were originally identified in the **Escherichia coli (*E. coli*)** genome. CRISPR-associated protein (Cas) is an endonuclease that cuts foreign DNA, allowing integration into the host genome

To edit a gene of interest, the short RNA sequence that perfectly matches with the DNA sequence that has to be edited is introduced. Once it binds to the DNA, the Cas9 enzyme cuts the DNA at the targeted location where the RNA sequence is bound.

Once the DNA is cut, the natural DNA repair mechanism is utilized to add or remove genetic material or make changes to the DNA.

Applications of CRISPR-Cas9

Disease modelling

Disease animal models have been essential resources in advancing the biomedicine field. With the help of genome editing technologies, many applicable models with specific mutations that could mimic clinical phenotypes have been generated.

Cancer models

With the help of genome editing tools, numerous studies have been carried out through modifying key genes for generating accurate and specific cancer models. Cancer models are the most effective ways to study mutational functions which result in cancer.

Productivity improvement

The continuous decrease in the availability of land and water for agriculture, uncertain weather conditions, and a growing population are signals for the urgent need for an alternative approach in the country.

In this scenario, scientists are optimistic about the possibilities of genome editing for enhancing crop productivity to overcome the shortcomings of traditional transgenic methods like irregular breeding cycles, lack of precision in intended trait selection, and uncertainty in getting desirable mutations.

Uses

Genome editing technologies are not only used for generating disease animal models but also destined to enter the therapeutic area. There are plentiful means for genome editing based therapy:

1. Inactivation or correction of harmful mutations
2. Introduction of protective mutations
3. Insertion of therapeutic exogenous genes
4. Destruction of viral DNA

The ethical dilemma

Because of CRISPR's power to induce dramatic changes in an individual, scientists, have been warning of the potential for misuse of the technology.

In 2018, a Chinese researcher disclosed that he had altered the genes of a human embryo to prevent the infection of HIV. This was the first documented case of creating a 'designer baby', and it caused widespread concern in the scientific community.

Preventive interventions to obtain special traits is not something that scientists currently want the technology to be used for. Also, because the changes were made in the embryo itself, the new acquired traits were likely to be passed to future generations.

Though the technology is fairly accurate, it is not 100 per cent precise, and could induce a few errors as well, making changes in other genes. This has the possibility of being inherited by successive generations

FLEX FUEL CAR

Why in News ?

India's first 'flex fuel' car, a Toyota sedan that can **run on one or multiple fuel types** and developed as part of a new pilot aimed at deleveraging the country's dependence on imported fossil fuels for transportation, is set for an unveiling later this month.

About

A flex fuel, or flexible fuel, vehicle has an internal combustion engine (ICE), but unlike a regular petrol or diesel vehicle, this can run on more than one type of fuel, or even a mixture of fuels.

The most common versions use a blend of petrol and ethanol or methanol, but these engines are also ***equipped to run on 100 per cent petrol or ethanol as well.***

This is made possible by equipping the engine with a fuel mix sensor and an engine control module (ECM) programming that senses and automatically adjusts for any ratio of designated fuels.

What makes Flex Fuel cars different from petrol cars?

According to the US Department of Energy, most of the parts of the Flexible fuel vehicles are similar to that of petrol-only vehicles.

The FFVs contain mainly an internal combustion engine and can operate on petrol or its blend with ethanol up to 83%.

What makes these vehicles different from petrol-only vehicles is a set of certain ethanol-compatible components fitted in them.

There are modifications done to the fuel pump and fuel injection system. To accommodate the higher oxygen content of ethanol, FFVs are also calibrated with Engine Control Module.

It monitors and controls the fuel mixture, ignition timing, and emissions system.

Along with this, the module also keeps a track of the operation of the vehicle and ensures the safety of the engine from overuse.

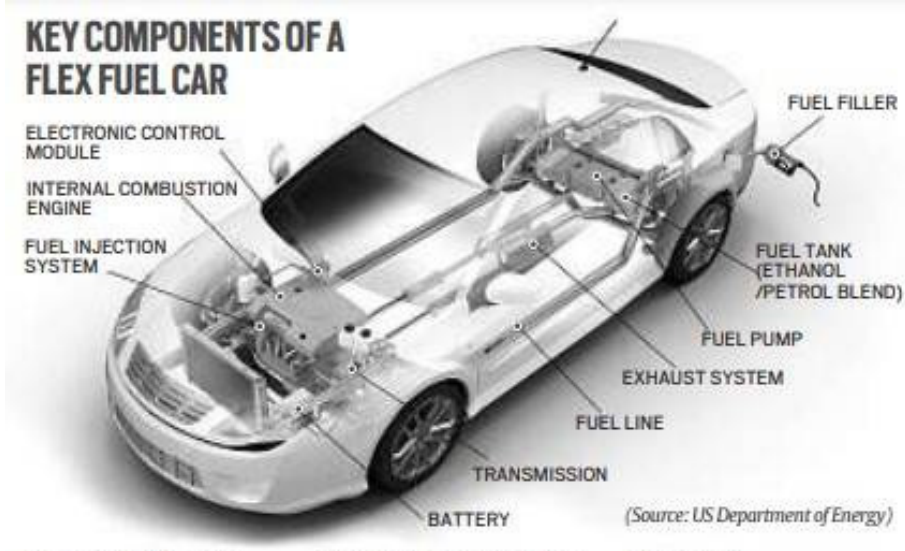
It is also responsible for detecting and troubleshoots problems.

Pros and cons

The most important benefit is that the use of ethanol blending ***sharply lowers harmful pollutants*** such as carbon monoxide, sulphur, and carbon and nitrogen oxides. Another obvious benefit is that blending will ***help cutback on oil imports for fueling vehicles.***

But there are problems: a flex fuel car typically takes a ***small hit on fuel efficiency*** when using ethanol for motive power, ranging from between 4 per cent and 8 per cent.

So, while fuel economy is generally lower with increased levels of ethanol (engines are optimised for petrol), on the flip side, many flex fuel vehicles have improved acceleration performance when operating on higher ethanol blends.



BATTERY: The battery provides electricity to start the engine and power vehicle electronics/ accessories

ELECTRONIC CONTROL MODULE (ECM): The ECM controls the fuel mixture, ignition timing, and emissions system; monitors the operation of the vehicle

EXHAUST SYSTEM: The exhaust system directs the exhaust gases from the engine out through the tailpipe. A three-way catalyst is designed to reduce engine-out emissions within the exhaust system

FUEL FILLER: A nozzle from a fuel dispenser attaches to the receptacle on the vehicle to fill the tank

FUEL INJECTION SYSTEM: This system introduces fuel into the engine's combustion chambers for ignition

FUEL LINE: A metal tube or flexible hose that transfers fuel from the tank to the engine's fuel injection system

FUEL PUMP: A pump that transfers fuel from the tank to the engine's fuel injection system via the fuel line

FUEL TANK (ETHANOL/PETROL BLEND): Stores fuel on board the vehicle to power the engine

INTERNAL COMBUSTION ENGINE: Fuel is injected into either the intake manifold or the combustion chamber, where it is combined with air, and the air/fuel mixture is ignited by the spark from a spark plug

TRANSMISSION: The transmission transfers mechanical power from the engine and/or electric traction motor to drive the wheels

HYDROGEN AT AMBIENT TEMPERATURE

Why in news

A new study provides us with another promising step in producing hydrogen at cheap prices, provided you can make use of existing supplies of post-consumer aluminum and gallium

About-

For years, researchers have tried to find efficient and cost-effective ways to harness the extreme reactivity of aluminum to generate clean hydrogen fuel. A new study shows that an easily produced composite of gallium and aluminum creates aluminum nanoparticles that react rapidly with water at room temperature to yield large amounts of hydrogen.

The process yields large amounts of hydrogen, and it all **works at room temperature.**

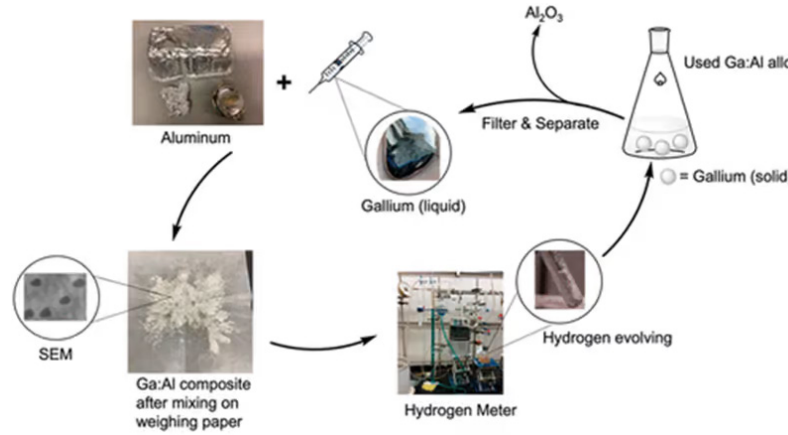
That removes one of the big barriers to hydrogen fuel production: the large amounts of power required to produce it using existing methods.

This technique works with any kind of water, too, including wastewater and ocean water.

Aluminium is an excellent candidate material for this purpose because the highly reactive metal easily reacts with the oxygen molecules in water to release hydrogen gas. But the pure form of the metal is so reactive that it instantly reacts with air to create a coating of aluminium oxide on its surface, meaning it cannot react with water.

That is where gallium comes in. Gallium is liquid at slightly above room temperature and it removes the aluminium oxide coating that forms on the bare metal, allowing it to be in direct contact with the water and react with it. The reaction of aluminium and gallium with water to produce hydrogen gas is already common scientific knowledge but the new technology features innovations that bring it closer to practical applications.

The researchers found that a 3:1 ratio of



gallium and aluminium in the composite was the optimum ratio for the highest hydrogen production

Gallium is expensive. But it can be fully recovered at the end of the process, and used with fresh aluminum to create more of this remarkable hydrogen-producing alloy. Indeed, the creation of the alloy is extremely easy in and of itself; one simply mixes the gallium together manually with aluminum, including used foil or cans, in the correct ratio.

$$2Al + 6H2O = 2Al(OH)3 + 3H2$$

INFLATABLE AERODYNAMIC DECELERATOR (IAD)

Why in news?

ISRO successfully demonstrates new technology with Inflatable Aerodynamic Decelerator (IAD) – a game changer with multiple applications for future missions.

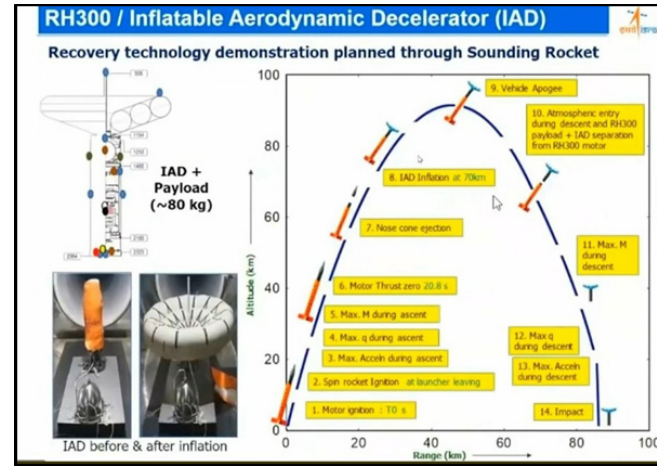
About-

Inflatable Aerodynamic Decelerator is a technique used for **an atmospheric entry** payload. An inflatable envelope and an inflatant (anything that inflates the envelope, like air or helium) make up the inflatable aerodynamic decelerator.

IAD is designed **to increase drag upon entering the atmosphere** of any planetary body, like Earth, Mars, or even Moon.

Its shape is maintained by a closed, gas-pressured body and the inflatant gas is also generated internally. Some versions also use ram air or both.

Some space agencies, including NASA, have already successfully tested advanced versions of the technology, including the supersonic and hypersonic variants. However, for near future missions of ISRO, the current version that it tested is perfect.



Thumba Equatorial Rocket Launching Station.

ISRO's IAD

The IAD is designed, developed and successfully test-flown by ISRO's Vikram Sarabhai Space Centre (VSSC).

The IAD was successfully test flown in **Rohini-300 (RH300 Mk II)** sounding rocket from

Significance

The IAD has huge potential in a variety of space applications like recovery of spent stages of rocket, for landing payloads on to Mars or Venus and in making space habitat for human space flight missions.

Sounding Rocket

A sounding rocket or rocketsonde, sometimes called a research rocket or a suborbital rocket, is an instrument-carrying rocket designed to take measurements and perform scientific experiments during its sub-orbital flight. The rockets are used to launch instruments from 48 to 145 km (30 to 90 miles) above the surface of the Earth, the altitude generally between weather balloons and satellites; the maximum altitude for balloons is about 40 km (25 miles) and the minimum for satellites is approximately 121 km (75 miles)

RAINBOW CLOUDS

Why in news?

The pictures of an unusually-shaped rainbow cloud that appeared over China were widely shared on social media. The cloud in question resembles a pileus cloud, and the phenomenon of bright colours appearing on a cloud is called cloud iridescence.

Pileus cloud

A pileus cloud is usually **formed over a cumulus or cumulonimbus cloud**. It is formed when the base cloud pushes a moist current of air upwards and the water vapour from the current condenses to somewhat resemble wave-like crests, or umbrellas.

A pileus cloud is **transient in nature** and lasts barely for a few minutes, making it difficult, and at the same time, exciting, to spot.

As such, they are usually **indicators of severe weathe**r, and a pileus often foreshadows transformation into a cumulonimbus cloud, as it indicates a strong updraft within the cloud.

Pilei can also form above mountains, ash clouds, and pyrocumulus clouds from erupting volcanoes.

Pilei form above some mushroom clouds of high-yield nuclear detonations

Cloud iridescence

Cloud iridescence or Irisation is an optical phenomenon that mostly occurs in wave-like clouds, including pileus and Altocumulus lenticularis.

Iridescence in clouds means **the appearance of colours on clouds**, which can either be in the form of parallel bands like in a rainbow, or mingled in patches.

In ancient Greek mythology, Iris is the goddess of rainbow. "Irisation", the phenomenon of rainbow-like colours in clouds, is derived from her name.

Causes of cloud iridescence

In pileus clouds, small water droplets or ice crystals, usually of a similar size, diffract the

sunlight falling on them. The thinness of the cloud ensures more exposure to sunlight for each water droplet or ice crystal.

To ensure its wave crest-like appearance, water droplets or ice crystals in these clouds are always moving – droplets form at one side of the cloud and evaporate from the other end – and hence these clouds remain small and thin since the droplets have no way of combining and growing in size.

Irisation is also caused by diffraction within 10 degrees from the sun. Beyond ten degrees and up till about 40 degrees, interference of light is the main cause of iridescence.

Photometeor

A photometeor is an optical phenomenon produced by the reflection, refraction, diffraction or interference of light from the Sun or the Moon.

The most common examples include halos, rainbows, fogbows, cloud iridescences (or irisation), glories, Bishop's rings, coronas, crepuscular rays, sun dogs, light pillars, mirages, scintillations, and green flashes.

INTEGRATED CRYOGENIC ENGINE MANUFACTURING FACILITY (ICMF)

Why in news?

The President of India inaugurated the integrated cryogenic engine manufacturing facility (ICMF) at HAL, Bengaluru.

About

ICMF is established in Bengaluru by HAL to realise the cryogenic and semi-cryogenic engines required for the Indian space programme with a project cost of Rs. 208 crores .

ICMF caters to manufacture and assembly of the engines under one roof. The facilities house many indigenous fabrication equipment, machinery, and surface treatment utilities.

ICMF inauguration is one of the major initiatives toward Atmanirbhar Bharat (self-reliant India) and it would contribute to building a stronger India by 2047 through the next 25 years of Amrit kal.

India is the sixth country in the world to have

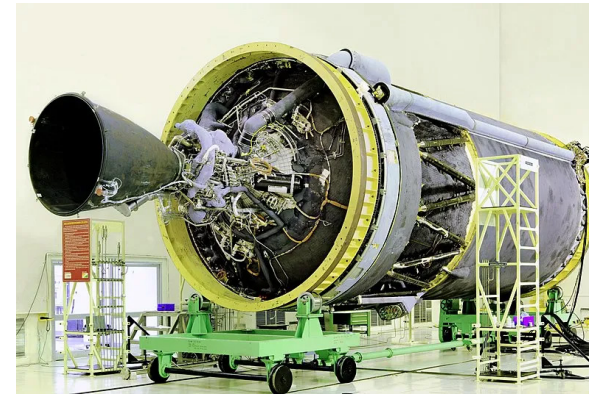
Cryogenic Engine Manufacturing capabilities. Due to the complex nature of the cryogenic engine, till date only few countries USA, France, Japan, China and Russia have mastered the cryogenic technology. On January 5, 2014 India successfully flew GSLV-D5 with a cryogenic engine (made by ISRO through private industries) and became the sixth country in developing cryogenic engines

Cryogenic engines

A cryogenic engine/ cryogenic stage is the last stage of space launch vehicles which makes use of Cryogenics. Cryogenics is the study of the production and behaviour of materials at extremely low temperatures (below -150 degree Centigrade) to lift and place the heavier objects in space.

Cryogenic engine makes use of Liquid Oxygen (LOX) and Liquid Hydrogen (LH2) as propellants which liquefy at -183 deg C and -253 deg C respectively.

In 1994, ISRO started a project called Cryogenic Upper Stage Project to develop India's own cryogenic engine with the aim of ending its reliance on foreign cryogenic engines. The **CE-7.5** is India's first cryogenic engine.



GSLV-D5 - launched on January 5, 2014 - was the first successful flight of the GSLV using the indigenous cryogenic engine, the CE-7.5. The engine CE-7.5 can generate a maximum thrust of 75 kilo Newton.

QUICK REACTION SURFACE TO AIR MISSILE (QRSAM) SYSTEM

India has successfully completed six flight-tests of the Quick Reaction Surface-to-Air Missile (QRSAM) system from the Integrated Test Range in Chandipur off the Odisha coast. The system is now ready for induction into the Army.

QRSAM is a canister-based system, which means that it is stored and operated from specially designed compartments. The system is capable of detecting and tracking targets on the move and engaging targets with short halts.

Range and mobility:

It is a short-range surface-to-air missile (SAM) system, primarily designed and developed by DRDO to provide a protective shield to moving armoured columns of the Army from enemy aerial attacks. The entire weapon system has been configured on a mobile and manoeuvrable platform and is capable of providing air defence on the move. It has been designed for induction into the Army and has a range of 25 to 30 km.

Functioning:

The QRSAM weapon ensemble, which functions on the move, consists of a fully automated command and control system. It also consists of two radars - Active Array Battery Surveillance Radar and Active Array Battery Multifunction Radar - with one launcher. Both radars have 360-degree coverage with "search on move" and "track on move" capabilities. The system is compact, uses a single stage solid propelled missile and has a mid-course inertial navigation system with two-way data link and terminal active seeker developed indigenously by DRDO.

LUMPY SKIN DISEASE IN INDIA

Lumpy Skin Disease (LSD) is a ***viral disease that predominantly affects cattle***. First identified in an outbreak in Zambia in 1929, the disease is caused by the LSD virus (LSDV), a poxvirus of the genus capripox virus. ***Smallpox and monkey pox viruses are also a part of the same family.*** The LSDV shares antigenic similarities with the sheep pox virus (SPPV) and the goat pox virus (GTPV) or is similar in the immune response to those viruses.

It is not a zoonotic virus, meaning the disease cannot spread to humans. It is a contagious vector-borne disease spread by vectors like mosquitoes, some biting flies, and ticks and usually affects host animals like cows and water buffaloes. Infected animals shed the virus through oral and nasal secretions which may contaminate common feeding and water troughs.

Thus, the disease can either spread through direct contact with the vectors or through contaminated fodder and water. Studies have also shown that it can spread through animal semen during artificial insemination.

LSD affects the lymph nodes of the infected animal, causing the nodes to enlarge and appear like lumps on the skin, which is where it derives its name from. The cutaneous nodules appear on the infected cattle's head, neck, limbs, udder, genitalia, and perineum. The nodules may later turn into ulcers and eventually develop scabs over the skin. The other symptoms include high fever, sharp drop in milk yield, discharge from the eyes and nose, salivation, loss of appetite, depression, damaged hides, wasting of animals, infertility and abortions.

The incubation period or the time between infection and symptoms is about 28 days according to the FAO, and 4 to 14 days according to some other estimates. The morbidity of the disease varies between two to 45% and mortality or rate of date is less than 10%. However, the reported mortality of the current outbreak in India is up to 15%, particularly in cases being reported in the western part (Rajasthan) of the country.

Lumpy has infected over 16 lakh cattle in 197 districts as of September 11. Of the nearly 75,000 cattle that the disease has killed, more than 50,000 deaths, mostly cows, have been reported from Rajasthan. The Union Ministry of Fisheries, Animal Husbandry and Dairying informed that the 'Goat Pox Vaccine' is very effective against LSD. It is being used across affected States to contain the spread.

NEURODIVERSITY AT THE WORKPLACE

According to a study, organizations embracing neurodiversity enjoy a competitive edge in several areas such as efficiency, creativity and culture.

What is Neurodiversity?

Neurodiversity in the workplace refers to including people with neurodivergent conditions such as attention-deficit/hyperactivity disorder, autism spectrum disorders, dyslexia, dyspraxia, dyscalculia and Asperger's Syndrome.

Harvard Health Publishing defines neurodiversity as a notion that every person interacts and experiences their surroundings differently; there is no right way of thinking, learning, or/and behaving. These differences should not be construed as defects or disorders.

Importance of Neurodiversity

According to a recent report, nearly 2 million people in India suffer from this neurological and developmental disorder and are therefore identified as autistic.

Another study by Deloitte estimates that nearly 20% of the world is neurodiverse.

In the U.S., it is estimated that 85% of people on the autism spectrum are unemployed compared with 4.2% of the overall population.

Hence, there is an urgency to create a work environment that welcomes neurodiverse individuals.

How can we foster neurodiversity in the workplace?

Stigma, a lack of awareness, and a lack of appropriate infrastructure (such as office setup or staffing structures) can cause the exclusion of people with neurodevelopmental differences.

Understanding and embracing neurodiversity in communities, schools, healthcare settings and workplaces can improve inclusivity for all people.

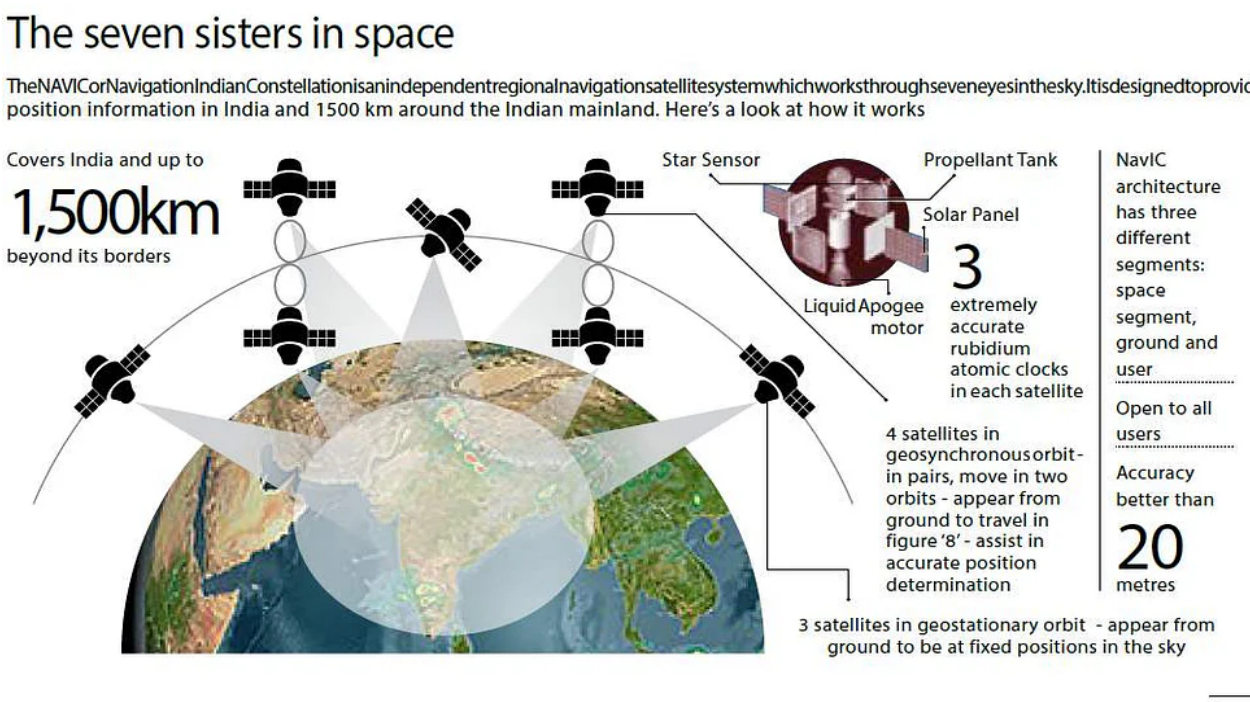
WHAT IS NAVIC?

NavIC or Navigation with Indian Constellation is a navigation system developed by the Indian Space Research Organisation (ISRO).

It covers India and a region extending 1500 km around it.

Though it was approved in 2006 it only became operational in 2018.

According to ISRO, NavIC provides more accurate domestic navigation, and its use would benefit the economy.



However, as of now, its use is limited to public vehicle tracking, providing emergency warning alerts to fishermen, and tracking and providing information related to natural disasters.

Difference between NavIc and GPS

GPS as it uses a satellite that does not have a fixed location and covers an area across the globe.

Whereas NavIc has a stationary satellite and covers only India and a few other regions near it.

According to reports, NavIc has the ability to reach an accuracy of about 5-10 meters whereas GPS is usually deemed to have an accuracy of about 20 meters which gives NavIc better accuracy in the region.

Why is the Indian government pushing for NavIC compatibility in smartphones?

In line with the Prime Minister's idea of Atma Nirbhar Bharat, having an Indian navigation system in smartphones will reduce the usage of GPS, a foreign system.

Also, depending on GPS will not give the Indian government complete autonomy over navigation in our region.

Relying on systems like GPS might also compromise India's strategic defence moves and there are chances of further exposing civilian data.

DARK SKY RESERVE?

A Dark Sky Reserve is public or private land with a distinguished nocturnal environment and starry nights that has been developed responsibly to prevent light pollution.

According to the International Dark Sky Association (IDSA) website, these reserves "consist of a core area meeting minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core."

These reserves, it said, are formed through a "partnership of multiple land managers who have recognized the value of the natural nighttime environment through regulations and long-term planning".

How does a site become a 'Dark Sky Reserve'?

Individuals or groups can nominate a site for certification to the International Dark Sky Association (IDSA).

There are five designated categories, namely International Dark Sky parks, communities, reserves, sanctuaries and Urban Night Sky Places.

The certification process is similar to that of a site being awarded the UNESCO World Heritage Site tag or getting recognised as a Biosphere Reserve.

Between 2001 and January 2022, there have been 195 sites recognised as International Dark Sky Places globally, the IDSA said.

The IDSA considers a piece of land suitable for dark sky place only if it is either publicly or privately owned; is accessible to the public partially or entirely during the year; the land is legally protected for scientific, natural, educational, cultural, heritage and/or public enjoyment purposes; the core area of the land provides an exceptional dark sky resource relative to the communities and cities that surround it and the land offers prescribed night sky brightness either for a reserve, park or sanctuary.

India is still in the process of filing its nomination to IDSA.

Who is developing India's first Dark Sky Reserve?

The Ladakh Union Territory administration is leading the efforts in establishing the country's first Dark Sky Reserve.

To be situated at a height of 4,500 metres above sea level, the Hanle Dark Sky Reserve (HDSR) will come up within the Changthang Wildlife Sanctuary

The Department of Science and Technology and experts from the Indian Institute of Astrophysics (IIA), Bengaluru, are providing scientific and technological support in developing this first-of-its-kind facility.

The IIA already manages the Indian Astronomical Observatory (IAO) complex at Hanle, Ladakh.

Here, scientists have been carrying out astronomical observations using the existing gamma ray, an infrared and an optical telescope to study exoplanets, galaxies and stars through the pristine skies of Hanle.

The formal decision to set up this Dark Sky Reserve was made through a Memorandum of Understanding (MoU) signed between officials from the IIA, Bengaluru, the Ladakh UT and the Ladakh Autonomous Hill Development Council in June this year.

Why was Ladakh chosen for the project?

Ladakh is a unique cold desert located about 3,000 metres above sea level with high mountainous terrains.

Long and harsh winters with minimum temperatures dropping to minus 40 degrees Celcius make large parts of the UT highly inhabitable.

This aridity, limited vegetation, high elevation and large areas with sparse populations – all make it the perfect setting for long-term astronomical observatories and dark sky places.

But the primary objective of the proposed Dark Sky Reserve is to promote astronomy tourism in a sustainable and environment-friendly manner. Scientific methods will be used here to preserve the night sky from ever-increasing light pollution.

With metros, cities and peripheral areas experiencing light pollution and remaining constantly lit up, there are diminishing areas that offer a view of clear skies on cloudless nights, experts have noted.

ANTI – RADIATION PILLS

Potassium iodide (KI) tablets, or anti-radiation pills, are known to provide some protection in cases of radiation exposure. They contain non-radioactive iodine and can help block absorption, and subsequent concentration, of radioactive iodine in the thyroid gland. While it can protect the thyroid against radioactive iodine, it cannot protect other organs against radiation contamination.

How do these pills work?

After a radiation leak, radioactive iodine floats through the air and then contaminates food, water and soil. While radioactive iodine deposited during external exposure can be removed using warm water and soap, according to the World Health Organisation, the bigger risk is inhaling it. "Internal exposure, or irradiation, occurs when radioactive iodine enters the body and accumulates in the thyroid gland," says the WHO.

The thyroid gland, which uses iodine to produce hormones to regulate the body's metabolism, has no way of telling radioactive from non-radioactive iodine. Potassium iodide (KI) tablets rely on this to achieve 'thyroid blocking'. KI pills taken a few hours before or soon after radiation exposure ensure that non-radioactive iodine in the medicine is absorbed quickly to make the thyroid "full".

"Because KI contains so much non-radioactive iodine, the thyroid becomes full and cannot absorb any more iodine – either stable or radioactive – for the next 24 hours," says the US Centre for Disease Control and Prevention. But KI pills are preventive only and cannot reverse any damage done by radiation to the thyroid gland. Once thyroid gland absorbs radioactive iodine, those exposed are at a high risk of developing thyroid cancer.

Anti-radiation pills do not provide 100% protection. "The effectiveness of KI also depends on how much radioactive iodine gets into the body and how quickly it is absorbed in the body," says the CDC. Also, the pills are not meant for everybody. They are recommended for people under 40 years of age. Pregnant and breastfeeding women are also advised to take them.

DEVELOPMENT OF SEMICONDUCTOR AND DISPLAY MANUFACTURING ECOSYSTEM

GS-III Indian Economy and issue--Science and Technology- developments and their applications, Awareness in the fields of IT, Space, Computers, robotics, Nano-technology

In a bid to make India's $10 billion chip-making initiative more attractive to investors, the Centre recently approved changes to the scheme for the development of a semiconductor and display manufacturing ecosystem in the country.

About Semiconductors

Semiconductors are the thumbnail-sized building blocks of almost every modern electronic device from smartphones to connected devices in the Internet of Things (IoT). They help give computational power to devices.

The basic component of a semiconductor chip is a sliver of silicon, which is etched with billions of microscopic transistors and projected to specific minerals and gases, forming patterns to control the flow of current while following different computational instructions.

The most-advanced semiconductor technology nodes available today are the 3 nanometre (nm) and the 5nm ones.

Semiconductors **having higher nanometre value are applied in automobiles, consumer electronics and so on, while those with lower values are used in devices such as smartphones and laptop**s.

At Global level

The chip-making industry is a highly-concentrated one, with the big players being Taiwan, South Korea and the U.S. among others. In fact, according to a New York Times estimate, ***90% of 5nm (nanometre) chips are mass-produced in Taiwan, by the Taiwan Semiconductor Manufacturing Company (TSMC).***

Therefore, the global chip shortage, U.S.-China tensions over Taiwan, and the supply chain blockages owing to the Russia-Ukraine conflict have led major economies to enter the chip-making sector with a renewed push.

Key changes announced to India's chip-making scheme

According to the older scheme, the Union government would offer funding of:

1. 30% of the project cost for 45nm to 65nm chip production
2. 40% for 28nm to 45nm
3. 50% for chips 28nm or below

According to the changes introduced the ***modified scheme would provide a uniform 50% fiscal support for all nodes irrespective of their type.***

Further, the changes also include the provision of 50% of capital expenditure for other steps of the process such as chip design and ATMP.

The new changes introduced to the scheme also ***focus more on the production of the 45nm chip, which is said to be less time-consuming*** and cost-effective with respect to production.

Additionally, target technologies under the scheme will include discrete semiconductor fabs. ***Discrete semiconductors are used for devices performing basic electronic functions***.

Challenges associated with the scheme

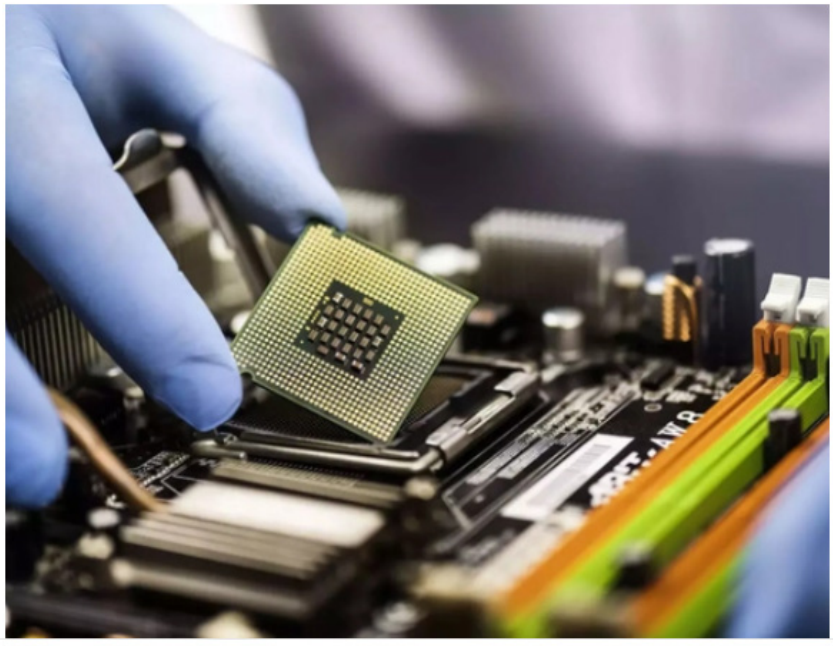
Chip production is said to be ***resource-intensive and an expensive process.***

As the new changes introduced to the scheme aims to provide equal funding for all steps of the process, ***the outlay of the scheme still remains at $10 billion.***

However, the process of establishing a semiconductor fab itself requires an investment of nearly $3 to $7 billion which means that there would be a shortage of outlay for supporting the other important processes such as display fabs,

packaging and testing facilities, and chip design centres.

Further, the semiconductor ***chip-making process also requires gallons of ultrapure water every day***. The existing drought or dry conditions in the major portion of the country makes it a difficult task for the government to provide water to the factories.



Steps taken by the government

2021: 10-billion-dollar **production-linked incentive (PLI) scheme** to encourage semiconductor and display manufacturing in the country.

Fiscal support for a **design-linked initiative (DLI) scheme** to drive global and domestic investment related to design software, IP rights etc.

Modifications in "**Programme for Development of Semiconductors and Display Manufacturing Ecosystem in India**: The Union Cabinet has approved a uniform incentive of 50% of the project cost for setting up semiconductor, display and compound semiconductor fabrication units.

India Semiconductor Mission (ISM) will be set up.

Scheme for setting up of **Compound Semiconductors facilities.**

Vedanta and Taiwanese chipmaker Foxconn will set up a ₹1,54,000 crore semiconductor plant in Gujarat.

SECURITY

What's Inside?

1. VOSTOK-2022
2. OPERATION MEGH CHAKRA
3. VERY SHORT RANGE AIR DEFENCE SYSTEM (VSHORADS) MISSILE
4. INDIAN NAVY'S NEW ENSIGN
5. TARAGIRI – STEALTH FRIGADE
6. PARVAT PRAHAR EXERCISE
7. QIMINGXING-50 (MORNING STAR) – CHINA'S SOLAR POWERED DRONE

VOSTOK-2022

Why in News?

Recently, India joined a multilateral strategic and command **Exercise Vostok - 2022** in Russia along with China among other countries.

About

Exercise Vostok will involve troops from several **ex-Soviet nations, China, India, Laos, Mongolia, Nicaragua and Syria.** The **Indian Army** was represented by the contingent of troops from **8/7 Gorkha Rifles.**

It is aimed at **interaction and coordination amongst other participating military contingents** and observers.

The Vostok 2022 exercise will be held at seven firing ranges in **Russia›s Far East and the Sea of Japan** and involve more than 50,000 troops and over 5,000 weapons units, including 140 aircraft and 60 warships.

The Indian Army contingent will look forward to **sharing practical aspects** and putting into practice the validated drills, procedures and practice amalgamation of new technology through discussions and tactical exercises.

OPERATION MEGH CHAKRA

The Central Bureau of Investigation (CBI) conducted searches at 59 locations across 20 States and one Union Territory, as part of a ***pan-India drive against the circulation and sharing of Child Sexual Abuse Material (CSAM)***. The operation code-named "Megh Chakra" is being carried out following the inputs received from Interpol's Singapore special unit based on the information received from the authorities in New Zealand.

The operation is sought to collate information from various law enforcement agencies in India, engage with the relevant law enforcement agencies globally and coordinate closely through the Interpol channels on the issue. The probe had led to the identification of over 50 groups with more than 5,000 offenders, including the nationals of about 100 countries. ***A similar exercise code named "Operation Carbon" was conducted by CBI in November 2021.***

Protection of Children from Sexual Offences Act, 2012:

It was enacted to protect the children from offences of sexual assault, sexual harassment and pornography with due regard for safeguarding the interest and well-being of children.

It ***defines a child as any person below eighteen years of age*** and regards the best interests and welfare of the child as a matter of paramount importance at every stage, to ensure the healthy physical, emotional, intellectual and social development of the child.

It ***defines different forms of sexual abuse,*** including penetrative and non-penetrative assault, as well as sexual harassment and pornography.

It deems a sexual assault to be "aggravated" under certain circumstances, such as when the abused child is mentally ill or when the abuse is committed by a person in a position of trust or authority like a family member, police officer, teacher, or doctor.

It also casts the police in the role of child protectors during the investigative process.

The Act stipulates that a case of child sexual abuse must be ***disposed of within one year from the date the offence is reported***. It was amended in to provide more stringent punishment- death

VERY SHORT RANGE AIR DEFENCE SYSTEM (VSHORADS) MISSILE

Why in News ?

The Defence Research and Development Organisation (DRDO) recently conducted two successful test flights of the Very Short Range Air Defence System (VSHORADS).

About

It is capable of neutralising low altitude aerial threats at short ranges.

The missile is a Man Portable Air Defence System (MANPAD) designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad in collaboration with other DRDO facilities and various Indian industry partners.

The design of the missile, including launcher, has been highly optimised to ensure easy portability.

The air defence missile incorporates many novel technologies including miniaturised Reaction Control System (RCS) and integrated avionics, which have been successfully tested during the trials.

The missile has been designed to neutralise low altitude aerial threats at short ranges and is propelled by a dual thrust solid motor.

In the multilayered air defence network, ***VSHORAD is the soldier's last line of defence against enemy combat aircraft and helicopters***

TARAGIRI – STEALTH FRIGADE

Recently, Mazagon Dock Shipbuilders Ltd (MDL), which is under the Ministry of Defence, launched Taragiri, the third stealth frigate of Project 17A.

Taragiri is named after a hill range in the Himalayas located at Garhwal. The ship has been built using an integrated construction methodology which involves hull block construction in different geographical locations. The ship will have state-of-the-art weapons, sensors, an advanced action information system, an integrated platform management system, world-class modular living spaces, a sophisticated power distribution system and a host of other advanced features. It will be fitted with a supersonic surface-to-surface missile system. The ship's air defence capability, designed to counter the threat of enemy aircraft and anti-ship cruise missiles will revolve around the vertical launch and long-range surface-to-air missile system.

Project 17A:

Project 17 Alpha frigates (P-17A) were launched by the Indian Navy in 2019 to construct a series of stealth guided-missile frigates. These guided-missile frigates have been constructed with a specific stealth design, which has radar-absorbent coatings and is low-observable which can make its approach undetectable for the enemies. The new technology also reduces the infrared signals of the ship.

The first stealth ship launched under Project 17A was the Nilgiri, which was launched in 2019. Udaygiri,

the second ship, was launched in May 2022, and will likely be commissioned in 2024. Further, seven P17A Frigates are under various stages of construction at MDL and GRSE.

It provides additional benefits such as economic development, and employment generation for Indian Shipyards, their sub-contractors and the ancillary industry. Around 75% of the orders of Project 17A have been placed on indigenous firms including MSMEs, thus reinforcing the country's quest for Atma Nirbhar Bharat.

PARVAT PRAHAR EXERCISE

Parvat Prahar Exercise is a 20 day long exercise routine conducted by Indian Army to undertake disengagement from Patrolling Point 15 in eastern Ladakh. The Army's most recent significant inductions were deployed during the exercise.

The practice took place at 14,000 feet on the plateau of Ladakh. The army took advantage of recently introduced all-terrain vehicles that were delivered, among other things, by K9-Vajra howitzers and Chinook heavy-load helicopters. Artillery weapons and other critical military systems demonstrated their operational capabilities during the drill. The drill is taking place as China and India are preparing to withdraw from PPoint-15 in eastern Ladakh. Simultaneously on the western front, Exercise Gagan Strike culminated with a fire power display of attack helicopters supporting deep operations by Strike Corps.

QIMINGXING-50 (MORNING STAR) – CHINA'S SOLAR POWERED DRONE

China has built its first solar-powered large unmanned aerial vehicle called 'Qimingxing-50 '(Morning Star). It has recently completed its maiden flight. It is seen as a step towards green development. It can be used for time-sensitive operations and during war and one of its kinds of technology where drone will use solar energy for its operations.

With a wingspan of 164-ft, the drone is a large machine powered entirely by solar panels. The high-altitude, long-endurance (HALE) UAV can stay airborne for long durations. Named the Qimingxing-50, or Morning Star-50, this drone flies above 20-km altitude where there is stable airflow with no clouds. This helps these drones to make the maximum use of solar equipment to stay functional for extended durations. The drone is capable to operate without a break for months, even years.

Dual function of drone and satellite

The fact that the drone can operate in near-space – 20 km to 100 km above the Earth's surface – makes it capable of carrying out satellite-like functions. If satellite services are not available for, say, time-sensitive operations or in case of wartime disruption, then near-space UAVs can step in to fill the operational gap. These drones are also referred to as 'High Altitude Platform Stations' or pseudo-satellites. China already has this capacity, but the Qimingxing-50's long-endurance provides an added advantage to make this capability available over a longer period.

Similar drones elsewhere:

The United States and the United Kingdom are among the nations that have built solar-powered drones that can soar as high as 20,000 metres. In July, the US army helped test a solar-powered, near-space Airbus Zephyr S drone that set a new record by being airborne for 42 days. In August 2001, the US Helios mode set a new record for the highest altitude a solar-powered drone has ever reached – 29,524 metres.

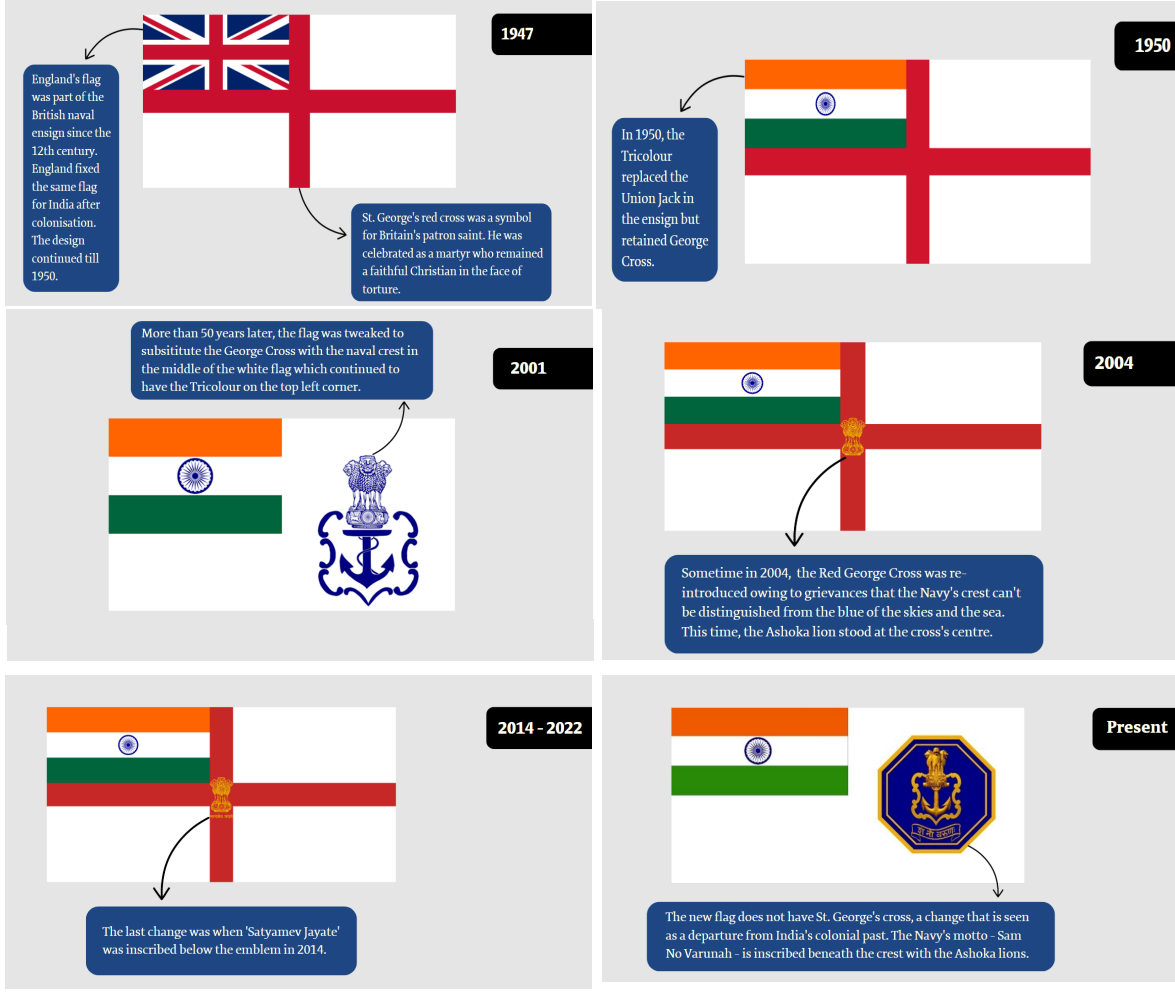
INDIAN NAVY'S NEW ENSIGN

Indian Navy's new ensign was recently unveiled in Kochi, on the occasion of the commissioning of INS Vikrant, the country's first Indigenously Aircraft Carrier (IAC-1).

The new ensign consists of the national flag on the upper canton, a blue octagon encasing the national emblem atop an anchor to depict steadfastness, superimposed on a shield with the Navy's motto "Sam No Varuna" (a Vedic mantra invoking the god of seas to be auspicious) in Devanagari.

The octagon represents the eight directions and has been included as a symbol of the Navy's "multidirectional reach and multidimensional operational capability". The golden borders of the octagon have been inspired by the seal of Maratha Emperor Chhatrapati Shivaji Maharaj.

History of the ensign:



HISTORY

ART & CULTURE

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V.O. CHIDHAMBARAM PILLAI

Why in News?

The Prime Minister paid tributes to freedom fighter V. O. Chidambaram Pillai on his 151st birth Anniversary.

About

V. O. Chidambaranar was born on 5th Sep 1872, in present day Thoothukudi District of Tamil Nadu.

Like Veer Savarkar, V.O. Chidambaranar was also awarded double life imprisonment with hard labour for championing the cause of Indian Independence in Coimbatore and Kannanur jail.

He was chained, yoked to the oil press in the hot sun. V.O.C. toiled hard in prison along with Subramaniya Siva. His health deteriorated worse. Fearing public backlash, the British released both after 4 years.

V.O.C. was born into a wealthy family but spent everything for the country. After release from jail, he suffered in penury. V.O.C. is hailed as **Kappalottiya Tamizhan**. He established India's first steam navigation company. His contribution to Swadeshi Movement is to be etched in the golden memory of our country. He also placed great emphasis on economic progress and becoming self-reliant.

What we call Aatma Nirbhar Bharat today, V.O.C. pioneered it 120 years back. Every product he used in his life were Swadeshi products. V.O.C. precedes Mahatma Gandhi when it comes to the Freedom movement.

RAJAMAHENDRAVARAM

Why in News?

Rajamahendravaram also celebrated the completion of one thousand years of the coronation of Raja Raja Narendra, who ruled the city in 1022. His regime came to an end in 1061

About

Rajamahendravaram / Rajahmundry is a city on the eastern banks of the sacred **Godavari River**, in the southeast Indian state of Andhra Pradesh. The city is known for its floriculture, history, culture, agriculture, economy, tourism, and its heritage. It is known as the "Cultural Capital of Andhra Pradesh"

The city's name was derived from **Rajaraja Narendra**, the ruler of Chalukya dynasty of 11th century who ruled over the city. In 2015, the city was renamed to Rajamahendravaram from the earlier name of Rajahmundry.

Seven gold coins that date back to the Eastern Chalukya dynasty, including the regime of Raja Raja Narendra, are a proud possession of the city.

Of the seven gold coins, only one is big in size compared to the others. The big coin

contains the image of 'varaha' (boar), an official symbol of the Eastern Chalukyas. The big coin also contains some text in early Telugu script. It is believed to be minted marking 'some donation' by the Eastern Chalukyas.

More about Rajaraja Narendra

Rajaraja Narendra (r. 1019 – 1061 AD) was the **Eastern Chalukya king** of the Vengi kingdom in South India. Rajaraja Narendra established the city Rajahmahendravaram. His period was famous for Social and Cultural heritage.

Amangai Devi, daughter of **Rajendra Chola I**, married Rajaraja Narendra, who is the son of Vimaladitya Chalukya. The feudal relationship between the powerful **Cholas and Chalukyas** continued for three centuries from Arinjaya Chola onwards.

The son of Rajaraja Narendra, **Rajendra Chalukya**, who is also called **Kulottunga Chola I**, went on to raid Kedah (Indonesia) for his maternal uncle. He became the king of the Chola empire in Gangaikondacholapuram when a political vacuum occurred and then merged the Chola and Chalukya dynasties.

MYSORE DASARA

Why in News?

Every year thousands of people throng Mysuru from all over the globe to witness the 10-day Dasara festival during Navratri

About

Mysore Dasara is one of the most celebrated and popular festivals in India. The city of Mysore has a long tradition of celebrating the Dussehra festival. Mysore Dussehra has long been declared as the state festival of Karnataka.

It is a 10-day festival that begins with Navratri and concludes on Vijayadashami. During the days of the function, the Mysore Palace remains illuminated with thousands of lights, which is a sight to behold.

Dussehra celebration begins with a puja performed for Goddess Chamundeshwari at the temple located on the top of Chamundeshwari hills with the presence of the Wadiyar royal family and state officials.

Mysore was once called 'Mahishur,' as it is believed to be the place where Goddess Chamundeshwari (a form of Durga) killed the buffalo-headed demon, Mahishasura. Since then, the nine days of Mysore Dasara have been celebrated with much enthusiasm.

The Dussehra festival held in Mysore has a history that goes far back into antiquity. The festival was in early days connected with **Indra, the god of thunder.**

The city celebrates this prominent festival with great pomp and show.The Mysore Palace is one of the most glorious and lauded pieces of architecture in India.

DADASAHEB PHALKE AWARD

Why in News ?

Recently, the Ministry of Information and Broadcasting has announced that the Dadasaheb Phalke Award for the year 2020 will be accorded to legendary actress Ms Asha Parekh.

About

The Dadasaheb Phalke Award is part of the National Film Awards, a highly coveted collection of honours in the film industry. The Award is named after Dhundiraj Govind Phalke, the pioneering filmmaker who gave India its first film– 'Raja Harishchandra', in 1913.

The award is considered the highest honour in the Indian film fraternity. It is awarded for "its outstanding contribution to the growth and development of Indian cinema.

The award was instituted by the government in 1969, and consists of a 'Swarna Kamal', a cash prize of INR 10 lakh, a certificate, a silk roll, and a shawl.

The award is presented by the President of India in the presence of the Union Minister of Information and Broadcasting, the Chairpersons of the juries, the representatives of the Film Federation of India, and the Confederation of All India Cine Employees among senior officials.

The first recipient of the award was Devika Rani Roerich in 1969.

Dhundiraj Govind 'Dadasaheb' Phalke?

- He was born in 1870 at Trimbak in Maharashtra. He studied engineering and sculpture and developed an interest in motion pictures after watching the 1906 silent film The Life of Christ.
- Before venturing into films, Phalke worked as a photographer, owned a printing press, and even worked with the famed painter Raja Ravi Varma.
- In 1913, Phalke wrote, produced, and directed India's first feature film, the silent Raja Harishchandra. As a result of its commercial success, Phalke went on to make 95 more films and 26 short films in the next 19 years.
- He is known as "Father of Indian Cinema".

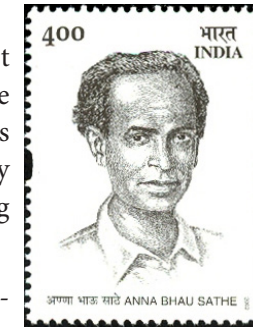
TUKARAM BHAURAO SATHE

Why in news?

Maharashtra's Deputy Chief Minister Devendra Fadnavis unveiled a statue of Lok Shahir (balladeer) Annabhau Sathe at the All-Russia State Library for Foreign Literature in Moscow. An oil painting of Sathe, who passed away in 1969, was also unveiled at Moscow's Indian consulate.

About-

Tukaram Bhaurao Sathe (1 August 1920 – 18 July 1969), popularly known as **Anna Bhau Sathe** was a social reformer, folk poet, and writer from Maharashtra, India.



Sathe was a Dalit born into the untouchable community, and his upbringing and identity were central to his writing and political activism.

Sathe was a Marxist-Ambedkarite mosaic, initially influenced by the communists but he later became an Ambedkarite.He is credited as a **founding father of Dalit Literature** and played

vital role in **Samyukta Maharashtra Movement.**

Sathe's work was immensely inspired by the Russian revolution and the Communist ideology.

He was a member of the Communist Party of India (CPI), and featured among the selected authors from India whose work was translated in Russian.

Sathe wrote his first poem on the menace of mosquitoes in the labour camp.

Literary Works

Several of his works like '

1. Aklechi Goshta,'
2. 'Stalingradacha Povada,'
3. 'Mazi Maina Gavavar Rahili,'
4. 'Jag Badal Ghaluni Ghav'

were popular across the state.

Almost six of his novels were turned into films and many translated into other languages, including Russian.

His **'Bangalchi Hak' (Bengal's Call**) on the Bengal famine was translated into Bengali and later presented at London's Royal Theatre. His literature depicted the caste and class reality of Indian society of that time.

In 1939, he wrote his first ballad '**Spanish Povada**'.

He formed **Dalit Yuvak Sangh,** a cultural group and started writing poems on workers' protests, agitations

In 1943, he along with Amar Sheikh and Datta Gavhankar, formed the **Lal Bawta Kala Pathak.**

In 1943, he was part of the process that led to the formation of the **Indian Peoples Theatre Association (IPTA)**. He became its national president in 1949. Sathe's work was influenced by Marxism, but at the same time he brought out the harsh realities of the caste system

Samyuktha Maharashtra Movement

Samyukta Maharashtra Movement, commonly known as the Samiti, was an organisation in India that advocated for a separate Marathi-speaking state in Western India and Central India from 1956 to 1960.

The Samiti demanded the creation of a new state from Marathi-speaking areas of the State of Bombay, a Marathi state, with the city of Bombay as its capital. The Samiti achieved its goal when the state of Maharashtra was created as a Marathi linguistic state on 1 May 1960. Members continued to advocate for the inclusion of Marathi-speaking areas in northern Karnataka such as Belgaum, Karwar, Dharwad and Bidar into Maharashtra, and the newly annexed state of Goa and Damaon until the 1967 Goa Opinion Poll rejected merger with Maharashtra.

INTERNATIONAL COMMISSION ON MONUMENTS AND SITES (ICOMOS)

Why in news?

The UNESCO team, including an expert from International Commission on Monuments and Sites (ICOMOS), visited the 13th century Keshava temple at Somanathapur in Mysuru district on September 16 before concluding its tour of Hoysala monuments in Karnataka.

The visit is a precursor to the ICOMOS expert, Tiang Kian Boon, submitting his report to UNESCO, which will decide whether the monuments could be accorded the World Heritage Site tag, possibly some time in 2023.

About-

It was founded in 1965 in Warsaw (Poland) as a result of the Venice Charter of 1964.

It is headquartered in Paris, France.

ICOMOS is a partner and founding member of the **Blue Shield**, which works to protect the world's cultural heritage threatened by wars and natural disasters.

ICOMOS works for the conservation and protection of cultural heritage places. It is the only global non-government organisation of

this kind, which is dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archaeological heritage.

ICOMOS is a network of experts that benefits from the interdisciplinary exchange of its members, among which are architects, historians, archaeologists, art historians, geographers, anthropologists, engineers and town planners.

The members of ICOMOS contribute to improving the preservation of heritage, the standards and the techniques for each type of cultural heritage property: buildings, historic cities, cultural landscapes and archaeological sites

It is an **Advisory Body of the World Heritage Committee** for the implementation of the World Heritage Convention of UNESCO.

World Heritage Site

The World Heritage Site is a landmark or area selected by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as having cultural, historical, scientific or ther importance and is legally protected by international treaties. Sites are important for the collective interests of humanity

The World Heritage City is actually a place of various values, ideas and disputed meanings, combined with collective memories, place senses and disputed identities and constantly discussed.

To be selected, the World Heritage Site should be a distinctive and unique landmark, in some respects as a geographical and historical place of particular cultural or physical significance (e.g. ancient ruin, historical structure, building, city, complex, desert, forest, island, lake or Monument or mountain or wilderness area). May indicate a remarkable achievement of humanity, and serve as a guide to our intellectual history on this planet

World Heritage Committee

The World Heritage Committee is composed of representatives of 21 States Parties to the World Heritage Convention who meet annually.

The Convention Concerning the Protection of the World Cultural and Natural Heritage is an international agreement that was adopted by the General Conference of UNESCO in 1972.

It is based on the premise that certain places on Earth are of outstanding universal value and should therefore form part of the common heritage of humankind.

It basically defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List.

The Committee is in charge of implementing the Convention.

Chennakeshava Temple-

The Chennakeshava Temple, also referred to as Keshava, or Vijayanarayana Temple of Belur, is a 12th-century temple in Karnataka and one of the bigger and more renowned Hoysala temples.

It was commissioned by King Vishnuvardhana in 1117 CE (after a major military victory in 1116 CE over the Cholas in the great battle of Talakkad), on the banks of the Yagachi River in Belur, also known as Velapura.

The temple has been an active Hindu temple since its consecration. It is reverentially described in medieval Hindu texts and remains an important pilgrimage site in Vaishnavism. Though a Vaishnava temple, it includes themes from Shaivism and Shaktism, as well as images from Jainism and Buddhism

The temple is an ekakuta (temple with one shrine) and the garbha griha houses an murtiof Krishna (Chenna means beautiful, Kesava is another name of Vishnu). The temple combines

elements of North Indian Nagara and South Indian Karnata style architecture.

It stands on a wide platform (jagati) designed to be a parikrama (circumambulatory) path around the sanctum, typical of Hoysala shrines.

BUDDHIST CAVES AT BANDHAVGARH

Why in news?

In Bandhavgarh Forest Reserve, remarkable archaeological remains unravelled by Archeological Survey of India. In an exploration 26 temples, 26 caves, 2 monasteries, 2 votive stupas, 24 inscriptions, 46 sculptures, other scattered remains & 19 water structure are recorded.

About

ASI has discovered Buddhist caves and stupas, and Brahmi inscriptions, dating back to the 2nd century, and Hindu temples from the 9th-11th centuries, and possibly the world's largest Varaha sculpture also dating to the same period

Buddhist Caves

The ASI team discovered 26 mostly Buddhist caves dating back to the 2nd and 5th centuries. The caves and some of their remains had 'Chaitya' (rounded) doors and stone beds typical of Mahayana Buddhism sites.

Varaha Sculpture

The varaha sculpture is among the many **monolithic sculptures** of the 10 incarnations of Lord Vishnu that were discovered by an ASI at the national park

Inscriptions

The ASI team found 24 inscriptions in Brahmi text, all dating back to the **2nd-5th centuries**. The inscriptions mention sites such as **Mathura and Kaushambi, and Pavata, Vejabharada and Sapatanaairikaa**. The kings they mention include **Bhimsena, Pothasiri and Bhattadeva.**

Temples

The remains of 26 temples date to the **Kalachuri period** between **9th-11th centuries**. In addition to this, **two Saiva mutts** have also been documented.

Some remains of the **Gupta period**, such as door jambs and carvings in caves, have also been found.

Bandhavgarh National Park

Bandhavgarh National Park is a national park of India, located in the Umaria district of Madhya Pradesh. Bandhavgarh, with an area of 105 square kilometres (41 sq mi), was declared a national park in 1968 and then became Tiger Reserve in 1993.

This park has a large biodiversity. The park has a large breeding population of leopards, and various species of deer. Maharaja Martand Singh of Rewa captured the first white tiger in this region in 1951

Bandhavgarh National Park consists of mixed vegetations ranging from tall grasslands to thick Sal forest and so is the perfect habitat of variety of animals and birds. Due to varied topography, the Bandhavgarh national park provides ample opportunity to spot the majestic Indian tiger and some rarely seen animals like leopard and sloth bear

SURAJPURI & BAJJIKA DIALECTS

Recently Bihar Chief Minister Nitish Kumar and Education Minister Prof Chandra Shekhar have asked the state education department to set up academies for the promotion of the Surjapuri and Bajjika dialects on the lines of the Hindi and Urdu academies.

It has been instructed that these two academies be set up on the lines of eight already existing centres, constituted for the promotion of other dialects.

It is also directed that efforts must be made to strengthen all academies and bring them under

an umbrella body for their effective functioning.

The department is currently working to will bring all such academies under one body.

Surjapuri dialects

Surjapuri is spoken mainly in Kishanganj and other parts of Seemanchal in north-eastern Bihar, including the districts of Katihar, Purnia and Araria. The dialect, a mix of Bangla, Urdu, and Hindi, is also spoken in contiguous parts of West Bengal.

The name Surjapuri comes from Surjapur pargana, which no longer exists. But there is a toll plaza called 'Surjapur' between Purnia and Kishanganj.

Although Surjapuri has nothing specifically to do with religion, the largest share of speakers of the language is made up of Surjapuri Muslims, who live mainly in Kishanganj, the district that has about 70 per cent Muslim population.

According to 2011 Census, the total number of Surjapuri-speaking population in Bihar stood at 18, 57,930.

Bajjika dialects

Bajjika, one of five dialects spoken in Bihar, is a mix of Hindi and Maithili, and is spoken mainly in Vaishali, Muzaffarpur, and parts of Sitamarhi, Sheohar and Samastipur.

Bajjika is not as well-known as other dialects such as Bhojpuri and Maithili.

Although the Bihar education department had considered teaching in local dialects up to Class 5 during the 2010-15 which did not come to fruition.

An estimate based on 2001 census data suggests that 20 million Bajjika speakers resided in Bihar at that time.

DARA SHIKOV

When prince Dara Shikoh was just seven years old, his father, Prince Khurram rebelled against the then Emperor Jahangir to stake a claim on the empire above his two elder brothers.

The rebellion stood little chance of success. Four years later, the defeated prince was welcomed back into the royal family, forgiven for his mistakes.

As a check against his son's ambitions, Emperor Jahangir took his grandchildren hostage at the palace and kept them under the watchful eye of their step grandmother, Nur Jahan.

A young Dara would only meet his father at the age of thirteen when prince Khurram was crowned Emperor Shah Jahan.

Dara Shikoh was born in Ajmer , the land of Khwaja Moinuddin Chishti, to whom, his father Shah Jahan had prayed for a son.

The eldest son among six, Dara was groomed to be the future ruler of the Mughal Empire and the citadel was his home.

While his brothers were deputed to far off provinces as administrators, Dara, the apple of his father's eye was kept within the Imperial court.

Kept away from distant dusty provinces and tedious tasks of administration,Dara was able to invest his time in spiritual pursuits.

He developed a keen interest and proficiency in Sufi mysticism and the Quran at a young age.

At the age of twenty-five, Dara wrote his first book, Safinat-ul-Awliya , a concise document detailing the lives of the Prophet and his family,the Caliphs and of saints belonging to the five major Sufi orders then popular in India.

Dara Shikoh was initiated into the Kadiri order of Sufis by his pir (spiritual guide), Mulla Shah.

As a devout follower, Dara would later commission shrines for his pir and Miyan Mir in Lahore.

Miyan Mir was the pir of Mulla Shah. In addition, Dara would also immortalise the biography of the former in Safinat-ul-Awliya , through his own words.

Other works by the Prince include 'Risala-

i-hak Numa' (The Compass of the Truth), the 'Shathiyat or Hasanat-ul-Arifin' and the 'Iksir-i-Azam' He also commissioned the 'Jug Bashist' and the 'Tarjuma-i-Akwal-i-Wasili'

Historians have often painted Dara Shikoh to be a tragic figure, overshadowed by his brother in the annals of Indian history, a flicker of hope in an age of religious orthodoxy.

The words of this beloved sufi have however, outlived his empire and seek a resurgence in times to come India's first 'Dark Sky Reserve'

By the end of 2022, India will establish the country's first Dark Sky Reserve in the cold desert regions of Ladakh, Dr Jitendra Singh, Minister of State (Independent charge) for Science and Technology, announced Saturday. This facility will also promote astronomy-tourism, he said.

NEHRU TROPHY BOAT RACE

In an atmosphere filled with fun, cheer and sheer elation, Mahadevikadu Kattil Thekkethil Chundan (snakeboat) rowed by members of the Pallathuruthy Boat Club (PBC) won the 68th edition of the Nehru Trophy Boat Race (NTBR) held on Punnamada Lake

The PBC, captained by Santhosh Chakko, emerged victorious in a nail-biting finish, clocking 4.30.77 minutes.

With this, the club completed a hat-trick of Nehru trophy titles named after the first Prime Minister of India.

They lifted the trophy in 2018 and 2019 rowing Payippadan Chundan and Nadubhagom Chundan respectively.

Nadubhagom Chundan rowed by the NCDC Boat Club Kumarakom finished second. Veeyapuram Chundan (Punnamada Boat Club) and Champakulam Chundan (Police Boat Club, Alappuzha) finished in third and fourth places.

The Nehru Trophy was also the first race of the second edition of the Champions Boat League (CBL).

Both the NTBR and CBL are held after a pandemic-induced gap of two years.

A total of 77 boats, including 20 snakeboats participated under nine categories in the NTBR.

The event commenced with a race of smaller boats in the forenoon. The excitement was exemplified by the tens of thousands of people who turned up to witness the event dubbed as 'Olympics on water'.

At the same time, it is the maiden Nehru trophy for the Mahadevikadu Kattil Thekkethil Chundan.

A SHIP IN HARBOUR IS SAFE, BUT THAT IS NOT WHAT A SHIP IS FOR

UPSC 2022 QUESTION.

Your son is mentally deficient. We cannot let him attend our school anymore." These were the words in the letter. Her eyes welled with eyes, but she read the letter out to her child, "Your son is a genius. This school is too small for him and doesn't have good enough teachers to train him. Please teach him yourself." Henceforth the child with the six-month formal schooling, the child had homeschooling and self-studying for the rest of his life. This revolutionary step by his mother made history: an exquisite businessman, CEO and world-renowned scientist – THOMAS ALVA EDISON.

Hearing impaired from an early age, he once came across the question, "Why didn't you invent a hearing aid despite inventing so many things?" He replied outrightly that "How much have you heard in the last 24 hours that you couldn't do without?" This reflects his optimistic attitude toward his impairment and a realization of the purpose of life. He utilized his best use of the time and became the holder of more than 1000 patents in the US. Being a lover of competition, he filled his entire life with tests and trials and confidently expressed that "I haven't failed, but found nearly 10000 ways that do not work."

A Genius of his time and a role model of our time, Edison was exhorted by his mother to know the very purpose of life teaching him to be daring to venture like a ship, which was not built to be in the harbour but take voyages.

You see in our life until we realize the purpose, we feel desperate in our journey, but once when we are aware of the purpose and destination, we take every opportunity and start the travel with the end in mind as every incredible personality is a testimony to it. Albeit, the harbour is the safest haven, only when the ship dares to release its anchor and venture into the sea, tackling storms and shipwrecks, it could reach its ultimate destination. Growth in one's life is invisible until the Individual relinquishes his comfort zone.

Presumably, this essay could unravel the answers to the questions as follows:

- What could be the purpose of life?
- How does one pursue their process?
- Then how one tackles the shipwrecks?
- What does the world of humanity benefit from this?
- And finally, how one would be responsible even after tasting the success?

From the individual to the universe, all possess responsibility and duties correlatively. This is well said that kindness is the rent we are paying for our stay on this earth. The whole universe revolves around its purpose. When this applies to the mighty universe, a tiny individual is no longer exceptional to it. So the purpose is meant to be discovered by everyone on this planet either an early age or in the course of the journey of life.

Greta Thunberg is an eight-year-old girl who challenged world leaders to take immediate action for climate change mitigation. She was diagnosed with Asperger's syndrome, OCD and selective catalyst mutism. That means, she could speak when she thinks it is necessary. This was considered by her a superpower.

But there are other sets of persons who are aware of their purpose in the midst and become the embodiment of sacrifice. In that way, Malala Yousafzai, an education activist, challenged the entire world and depicted that she is, even more, stronger than the feared when she was shot at the age of fifteen. Being one among 66 million girls deprived of education, she stood up and asked, "Why is it that making so many tanks

is easy but building schools is so hard?" So she firmly affirmed that ONE CHILD, ONE TEACHER, ONE BOOK AND ONE PEN can change the world.

Carrying along with this, there are also persons who in the later part of their life find the purpose that benefit the whole of humanity. One among them is Jadav Payeng, a forestry worker popularly known as the forest man of India. He spent thirty years of his life planting 40 million trees to create a real man-made forest from the barren sandbar of Brahmaputra.

So, to start the real voyage, one has to first realize the purpose and destination at any part of life, then live life holistically on the planet. When the purpose is once known, the real hurdle lies in the process. And great persons do what they preach. In that sense, all great people focus on their efforts and give their blood and flesh to achieve their goals. These efforts are accompanied by challenges. But the clear vision is like the lamp in the darkness. This could be seen in the life of JK ROWLING, a lone jobless parent known for her conviction and dedication in the process which led to the quintessential Fantasy series: Harry potter. She decided to work tirelessly for her dream book despite the death of her mother. She religiously

"The people who are crazy enough to think they can change the world are the ones who do"

worked on her writing without any reward. Rejected by 12 publishers, she passed on her to the next publisher without much delay. This attitude rewarded her with one final publisher named Bloomsbury. She could accomplish these only by concentrating on the voyage rather than the destination. These focused efforts made her book to be a bestseller. Until today more than 450 mn copies have been sold.

Having understood the purpose and working on goals by concentrating on the process, an individual is often fenced by social stereotypes and prejudices. This often reflects in a woman's life. They are not allowed to explore their life. Their purpose is well determined by society rather than by her. Yes, Women are often considered as weaker sex and second sex by the patriarchal community. This patriarchal mindset especially women in most cases become adversaries for their own gender's ambitions. No society is exceptional in this. The need of the hour is to retain their burning desire to overcome confrontations. A major quagmire faced by every girl child is getting married at an early age. Chanda Zaveri is one such woman from an affluent family in Kolkata, who dared to sculpt her own life. She stepped out of her house at the age of 17 when she was pressurized by her mother to get married. She mortgaged her pair of diamond earing for a flight ticket and worked as domestic labour abroad. Then she pursued her higher education at one of the best universities in the world; Harvard. Now, she is the CEO of a popular skin-care company. This happened only after she was able to preserve her burning desire and ready to face the setbacks and now shining as the captain of her own ship.

The quote from Steve Jobs reflects on her life "the people who are crazy enough to think they can change the world are the ones who do"

If Vasco da Gama, did not venture into the sea, the whole trade and the path to prosperous India may be unknown. Likewise, the Anandwan-forest of joy may not be created if Baba Amte had decided to continue with his privileged life. Baba Amte being the founder of Anandwan was from an affluent family, relinquished his lavish life and decided to work for leprosy patients and for their rights. He is famously known for his motto: Work builds, Charity destroys. Hence, he knew the destination and started his voyage.

This character was also exhibited by Oskar Schindler, who saved the lives of 12000 jews during holocaust. He bypassed the bystander quality and worked compassionately by highlighting that saves one life, saves the entire world.

"Fortune is not at the side of faint hearted, but only favours those who dare." These people cutoff their anchor in the harbour and realize that they were not born to be idle, but dare to face trials. Just as the purpose is important for the individual life, it is pertinent for society as a whole. As is often said that every drop in the ocean counts, societies are expected to be goal conscious of where the entire world's welfare lies.

In that sense, a diverse society like India, in the initial days of post-independence, established import substitution. Later knowing the setbacks, in 1990s it embraces LPG reforms which is now made it to think of Atmanirbhar Bharat: self-reliance and not self-isolation. Celebrating its 75 years of Independence – Azadi Ka Amrit Mahotsav, India already a pioneer in Swachh Bharat Mission, International Solar Alliance is now targeting $5 trillion economy. India was praised in world forums that with 1.3 billion people it is known for its largest democracy and it's smooth functioning. It is also well known for its unity in diversity despite comprising of diverse communities.

When the country realizes its full potential and its destination, the world order works in its best interest. India's geopolitical position has undergone huge changes and is reckoned to be a Global Powerhouse. India frames its foreign policy based on its own interests rather based on friendship or enmity. Recent remarks of PM Modi that "This era is not for war" reflects our Global Ethos based on global citizenship and Deterritorialization. The unanimous drive for humanity is to make the earth the best place to live in. To make this real, world countries rather than restraining themselves with forums and summits alone must come out of their comfort zone on theorizing in the paper and begin to work on their goals in the field of environment, women, marginalized et al.

As said, the proof of the pudding is in the eating likewise implementation should be the predominant function of the world countries. So, the world community are expected to concentrate on the voyage to reach the ultimate destination.

This essay elaborately

answered all the aforementioned questions and makes us understand that the one who is meticulously filling each minute with sixty seconds of hard work and conviction realizes that they are born for a purpose rather than need and would possess the strength to conquer the entire world the Inner strength to venture into the sea as a majestic ship built in the harbour for this accomplishment.

So, the inner strengths could be a testimony and concluded by a small anecdote, "A supreme god decided to hide all the powers of the man who were hitherto Gods in the earth. The suggestions were invited from the lower gods as to where it should be hidden. They suggested placing three options: deep underground, deep undersea, and peak of the mountain. All three were denied by the supreme god and he finally decided to keep all the human's potential, purpose, and prowess under the heart of everyman where according to him they will be unaware and search only outside."

Albeit, this story may be mythological, the essence is to know that our strengths lie inside of us. This was well understood by George Bernard Shaw who said "the people who get on this world are the people who get up and look for the circumstances they want, if they can't find them, make them." Small as a canoe or big as a frigate – now it is in your Harbour, the choice is your hands to take off or put off.

By

M.Keerthiyayini

PRACTICE QUESTIONS

1. Recently declared biodiversity heritage site Borjuri situated in which of the following state

   a) Arunachal Pradesh

   b) Assam

   c) Meghalaya

   d) Sikkim

2. He was one of the first social reformers to come from a Dalit family.In 1910, He was nominated to the Travancore Legislative Assembly, known as the Sree Moolam Popular Assembly or Praja Sabha and became its first Pulaya member.

   a) Sri Narayana guru

   b) Ayyankali

   c) Kumara Asan

   d) Pandit Karuppan

3. The 13th edition of Special Forces Exercise Vajra Prahar recently concluded in Bakloh, Himachal Pradesh conducted by India with Which of the following country

   a) Oman

   b) Australia

   c) USA

   d) France

4. Consider the following statements

   1) The directives for the state are contained only in Directive Principles of State Policy.

   2) DPSP directs the state to secure a living wage and a decent standard of life for all the workers.

   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

5. Consider the following statements regarding "Whale shark"

   1) The whale shark is the largest fish on Earth

   2) The whale shark is distributed all along the Indian coast but concentrated in the Malabar coast

   3) IUCN status of Whale shark is "Endangered"

   Select the correct answer from the following code

   a) 1 and 2 only

   b) 1 and 3 only

   c) 2 and 3 only

   d) 1, 2 and 3

6. Which of the following pairs are correctly matched?

1) Lisbon Declaration - UN ocean conference

2) Carbis bay declaration - new development Bank

3) Hyderabad declaration - Digital Governance

4) Fortaleza declaration - G7 global health

Select the correct answer from the following code

a) 1 and 3 only

b) 2 and 4 only

c) 1, 3 and 4 only

d) 1, 2 and 4 only

7. In the 'Index of Eight Core Industries', which one of the following is given the highest weight?
   a) Coal production
   b) Electricity generation
   c) Fertilizer production
   d) Steel production

8. Consider the following statements:
   1) The office of a governor is not a part of the union executive
   2) Appointment of governor in India is based on the Canadian model of government

   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

9. With reference to bio-toilets used by the Indian Railways, consider the following statements:
   1) The decomposition of human waste in the biotoilets is initiated by a fungal inoculum.
   2) Ammonia and water vapour are the only end products in this decomposition which are released into the atmosphere.

   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

10. With reference to zonal council consider the following statements

    1) Regional council is a constitutional body under which five regional councils are constituted

    2) North eastern council are not included in the regional councils

    Select the correct answer

    a) 1 only

    b) 2 only

    c) Both 1 and 2

    d) Neither 1 nor 2

11. Recently union cabinet approved biodiversity conservation with which of the following country

    a) Bhutan

b) Bangladesh

c) Nepal

d) Myanmar

12. Consider the following statements

1) The International Coconut Community (ICC) is an intergovernmental organization of coconut producing countries organized in 1969

2) It is under the aegis of the United Nations Environmental program

3) India is a member of this organisation

Select the correct answer

a) 1 and 2 only

b) 1 only

c) 1 and 3 only

d) 1,2 and 3

13. India's National Security Council Secretariat (NSCS) conducted the Cyber Security Exercise for 26 Countries as part of the International Counter Ransomware Initiative- Resilience Working Group with which of the following group

a) UK

b) Israel

c) USA

d) Germany

14. With reference to river Teesta, consider the following statements:

1) The source of river Teesta is the same as that of Brahmaputra but it flows through Sikkim.

2) River Rangeet originates in Sikkim and is a tributary of river Teesta.

3) River Teesta flows into the Bay of Bengal on the border of India and Bangladesh.

Which of the statements given above is/are correct?

a) 1 and 3 only

b) 2 only

c) 2 and 3 only

d) 1, 2 and 3

15. Consider the following statements about the Central consumer Protection Authority

1) The CCPA will have the powers to inquire or investigate into matters relating to violations of consumer rights only on a complaint received.

2) The CCPA have the powers to enter any premise and search for any document or article, and to seize these

3) The CCPA have powers to recall goods or withdrawal of services that are "dangerous, hazardous or unsafe

4) The CCPA can pass an order for refund the prices of goods or services so recalled to purchasers of such

goods or services

Which of the following statements are correct?

a) 1, 2 and 3 only

b) 1, 3 and 4 only

c) 1, 2 and 4 only

d) 2, 3 and 4 only

16. CURIE and WEST which are recently in news are related to

a) Disease testing methods

b) Women empowerment initiatives

c) International diplomatic protocols

d) None of the above

17. Consider the following statements about V.O.Chidhambaram Pillai

1) He is known as Kapallottiya tamilan

2) He wrote the biography of Balgangadhar as he was V.O.C's guru.

Which of the following statements is incorrect?

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

18. Haleakala, a volcanic mountain recently seen in news in located in which of the following island?

a) Reunion Island

b) Kuril Islands

c) Hawaiian Island

d) Tonga Island

19. Consider the following statements about Moxie experiment

1) The experiment aims to produce oxygen from the Martian Carbon dioxide atmosphere.

2) It is launched as part of NASA's Curiosity Rover mission, a joint program by NASA and Japan Aerospace Exploration Agency (JAXA).

Choose the correct statements:

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

20. Consider the following statements regarding "Red-Eared Slider Turtles":

1) The species is native to South-Eastern USA.

2) They can accept high levels of organic pollutants.

3) The species breeds comparatively slower than other local turtle va-

rieties.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 3 only

d) 1, 2 and 3

21. Consider the following about Index of Industrial Production (IIP):

1) It is compiled and published quarterly by the National Statistical Office (NSO).

2) The new and current base year for IIP is 2015-16.

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

22. Consider the following statements about International Solar Alliance (ISA):

1) It was conceived as a joint effort by India and USA.

2) All member states of the United Nations have joined the ISA.

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

23. Exercise Kakadu is a multilateral navy exercise led by which country?

a) India

b) Bhutan

c) Japan

d) Australia

24. Kuno national park recently seen in news is in which state?

a) Maharashta

b) Gujarat

c) Madhya Pradesh

d) Odisha

25. With reference to National list of essential medicines 2022, consider the following statements

1) The National List of Essential Medicines was first formulated in 1996

2) National list of essential medicines recommended under National Health Programs of India.

Select the correct answer

a) 1 only

b) 2 only

c) Both 1 and 2

d) neither 1 nor 2

26. With reference to Shanghai cooperation organisation consider the following statements

1) There are eight member states in SCO

2) Belarus is a full-time member In SCO

3) SCO summit in 2023 will be held in India

Select the correct answer

a) 1 and 3 only

b) 2 and 3 only

c) 1 and 2 only

d) 1, 2 and 3

27. Consider the following pairs

1) Vostok. - Russia

2) Pitch black -Japan

3) Yudh Abyas. -China

4) Al Najah -UAE

How many pairs given above are correctly matched

a) Only one pair

b) Only Two pairs

c) Only three pairs

d) All pairs

28. Recently INS Satpura and a P8 I Maritime Patrol Aircraft of the Indian Navy participated in the multinational Exercise Kakadu – 2022, hosted by which of the following country navy

a) Japan

b) Australia

c) Indonesia

d) Russia

29. 'DART Mission' can be often mentioned in news is related to

a) Harness the living and non-living resources from the deep oceans.

b) Preparedness in case an asteroid heads toward Earth in the future.

c) 3 identical telescopes containing mirrors to collect X-rays from celestial objects.

d) Countering the illicit drug trafficking on Darknet markets.

30. Which of the following statement is not correct about 'Trees Outside Forests in India Initiative?'

a) Increasing tree coverage outside of forest lands in India to mitigate climate change.

b) It is a collaborative initiative of the US and India.

c) The program will be implemented

in all the states and UTs of India.

d) It will enhance carbon sequestration & strengthen the climate resilience of agriculture.

31. Consider the following statements

1) India is the world's second-largest producer and consumer of natural rubber.

2) Kerala and Tamil Nadu account for 81% of the total rubber production.

3) The Rubber Board is a statutory organization under the administrative control of the Ministry of Finance.

Choose the correct statements:

a) 1 only

b) 2 only

c) 3 only

d) None

32. Consider the following statements regarding broken rice

1) Broken rice is defective rice grains, broken in the field, during drying, during transport, or during milling.

2) It is as nutritious as the equivalent quantity of unbroken rice.

3) China, and Senegal are the major importers of broken rice.

Which of the following are correct?

a) 1 and 2 only

b) 1 and 3 only

c) 2 and 3 only

d) 1, 2 and 3

33. 'Manasbal Lake', Which is recently seen in news is located in

a) Haryana

b) Himachal Pradesh

c) Jammu and Kashmir

d) Uttarakhand

34. Consider the following statements

1) National Commission for Scheduled Tribes (NCST) was established by the amending the article 338 and inserting article 338 A

2) The Constitution prescribes the criteria for specification of a community as a Scheduled Tribe.

3) The tenure of members of NCST is 3 years

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

35. Consider the following statements

1) At present, the Supreme Court has 49th Chief Justice of India

2) In 1981 first judge case the court held that opinion of Chief Justice binding on the government

Select the correct answer

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

36. With reference to Spotted deer, Consider the following statements

1) It is the state animal of Chattisgarh

2) It is protected under schedule 2 of wildlife protection act 1972

3) It is listed as least concern in IUCN Red list

Select the correct answer

a) 1 and 3 only

b) 3 only

c) 2 and 3 only

d) 1,2 and 3

37. With reference to El Niño and La Niña consider the following statements

1) The term "Godzilla "refers to Sustained high intensity of La Niña

2) The term "Triple dip" refers to long episode of El Niño

Select the correct Answer

a) 1 only

b) 2 only

c) both 1 and 2

d) Neither 1 nor 2

38. With reference to Prompt corrective action framework consider the following statements

1) The RBI had imposed PCA norms on the banks in 2017 due to its high NPA and Return of assets

2) The RBI placed 11 banks under PCA framework

3) central bank of India is the last bank to be removed from the PCA norms

Select the correct answer

a) 1 only

b) 1 and 3 only

c) 2 and 3 only

d) 1, 2 and 3

39. Recently US congress passed Klobuchar act, it is related to which of the following

a) Shale oil regulation

b) Sanctions on Russia in natural gas trade

c) Sanctions on Iran for violating IAEA norms

d) Anti-trust legislation for US big tech firms

40. Consider the following statements regarding the Central Electricity Regulatory Commission:

1) It is a non-statutory body functioning with quasi-judicial status.
2) It is a regulator of the power sector in India which intends to promote competition and efficiency, and improve the quality of supply.

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

41. Consider the following statements about LoRa technology

1) LoRa technology is a wireless modulation technique in the physical layer, allowing long-range communication using a chirp spread spectrum.
2) It uses dedicated radios, which are not usually present in end-user devices, limiting interferences from other devices.

Choose the correct statements:

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

42. The terms 'proof-of-work,' and 'proof-of-stake', which were seen in the news sometimes, are related to

a) Service Sector
b) Gig workers
c) Blockchains
d) Agriculture

43. Consider the following statements regarding "Shrinkflation"

1) Shrinkflation is the reduction in the size of a product in response to rising production costs or market competition.
2) Shrinkflation causes losses to the company or the firm
3) shrinkflation makes it harder to accurately measure price changes or inflation

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

44. Consider the following statements regarding green crackers

1) Green Crackers are developed by CSIR-NEERI
2) They contain a very little amount of barium and lithium
3) They release water vapor during

combustion

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 ٣

45. The jurisdiction of National Investigation Agency extends to-

1) human trafficking,

2) counterfeit currency or bank notes,

3) manufacture or sale of prohibited arms,

4) cyber-terrorism and

5) Explosive substances.

Select the correct code

a) 1, 2, 3 and 5 only

b) 1, 3 and 5 only

c) 1, 2, 4 and 5 only

d) 1, 2, 3, 4 and 5

46. 'Operation Megha Chakra' recently seen in news is related to

a) Maritime exercise between India and Singapore

b) CBI's operation against child sex abuse material

c) Recently launched mission by the Defence Ministry on indigenisation

d) Logistics agreement signed by Sri Lanka with India

47. Consider the following statements with respect to Avalanche monitoring Radar:

1) The radar is equipped with capabilities to detect avalanches within three seconds of their trigger

2) It is operated by the Indian Army and the Defence Geoinformatics and Research Establishment (DGRE).

3) Recently it has been set up at an altitude of 15,000 feet in Sikkim.

Select the correct answer using the code given below:

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

48. Consider the following about NavIC (Navigation with Indian Constellation):

1) It consists of a constellation of eleven satellites to provide reliable position, navigation and timing services over India.

2) NavIC-based vehicle trackers are mandatory for all commercial vehicles in the country.

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

49. Dharamsala declaration recently seen in news is related to

a) Ban on online gambling.

b) Reducing mercury pollution.

c) Sustainable and responsible tourism.

d) Elimination of violence against women.

50. With reference to India, the terms 'Surajpuri' and 'Bajjika' recently seen in news are

a) Tribes

b) Languages

c) Festivals

d) Dance forms

Answers:

1.	B	2.	B	3.	C	4.	B	5.	B	6.	A	7.	B	8.	C	9.	D	10.	B
11.	C	12.	C	13.	A	14.	B	15.	C	16.	B	17.	D	18.	C	19.	A	20.	A
21.	D	22.	D	23.	D	24.	C	25.	C	26.	A	27.	A	28.	B	29.	B	30.	C
31.	A	32.	C	33.	A	34.	B	35.	A	36.	B	37.	D	38.	D	39.	D	40.	B
41.	C	42.	C	43.	B	44.	B	45.	D	46.	B	47.	D	48.	B	49.	C	50.	B

FACT SHEET

GENERAL STUDIES – 1

SOCIETY

- Life expectancy in India has increased by more than 2 times since Independence -> 32 years in 1940's and currently it is about 70 years -> At the same time, the fertility rate has decreased to about 2 from 6 children per woman.

- However, the proportion of the elderly (60 years and above) in India is 9% of the total population in 2011 & this proportion is expected to reach 18% by 2036 => National Commission on Population data.

- Among individuals aged 60 and above, about 30% to 50% had shown symptoms of depression -> higher among women than men & increases with the increase in age.

- Population across the world (in numbers) has been steadily increasing, despite the consistent decline in average global fertility over the past 7 decades.

- As per World Population Prospects, 2022 => Average number of children per woman in the reproductive age group has declined by 50%.

- India's total fertility rate (TFR) declined below replacement level for the first time to 2.0 in 2021 with a drop of 10% in just 5 years => National Family Health Survey (NFHS-5) data.

- As per NFHS-05 => Only 5 States have a fertility rate above the replacement rate => Bihar (3), Meghalaya (2.9), Uttar Pradesh (2.4), Jharkhand (2.3) & Manipur (2.2).

- There is a significant increase in the current use of any modern contraceptive method -> 56.5% in 2019-21 against 47.8% in 2015-16.

- An ageing population will also affect global interest rates negatively as the share of people over 50 years will form almost 40% of the population by 2100.

- As per the data from the Census 2011 => Urban population in India constituted 34% of the overall population. It will breach the 40% mark by 2030 & 50% mark by 2050. The urban population constituted 50% of the overall worldwide population by the end of the 20th century. (World Urbanization Prospects, 2018)

- As per Census 2011=> There are about 705 ethnic groups listed as Scheduled Tribes under Article 342. They constitute 8.6% of the population. The sex ratio among STs is 990 females per 1,000 males. Madhya Pradesh has the highest ST population (14.7 %) and Meghalaya has the lowest (2.5%).

GENERAL STUDIES – II

POLITY

- According to the NCRB data => The cases of preventive detentions increased by about 23.7% in 2021 as compared to 2020, with more than 1.1 lakh individuals being placed under preventive detention. As per Section 151 of the CrPC, the police are empowered to make preventive arrests if they feel the need to do so to prevent the commission of "any cognisable offence".

"Crime in India" report, 2021 by NCRB:

- Violent crimes such as rape, kidnaps, atrocities against children, robberies and murders have increased in 2021.
- Highest rate of violent crimes in => Assam, Delhi & West Bengal. Lowest rate was recorded in => Gujarat, Andhra Pradesh & Tamil Nadu.
- Domestic violence continues to be the major crime against women, accounting for over 31%.
- The drop-in conviction rates (from 59.2% in 2020 to 57% in 2021) suggests => despite an increase in violent crimes in the country, law enforcement has been less responsive.
- The suicide rate is 12 per 1 lakh people in 2021 -> highest in the past 5 years. Key reasons for suicides => domestic problems (33.2%) & illnesses (18.6%). Most of the suicide victims were daily wage earners (25.6%) & housewives (14.1%).
- There has been a steady spike in cases of cybercrime in the last 5 years (from 12,000 cases in 2016 to 50,000 in 2020) and a 6% increase in 2021 (compared to 2020) => indicates an increase in the use of digital devices.
- Though the number of cases of cybercrime in urban areas has declined by 8.3% (compared to 2020) -> the overall increase in cyber-crimes indicates an increase in cyber-crimes in rural areas => these mandates, awareness programmes in rural areas.

HEALTH

- Annually, about 1.25 lakh women are diagnosed with cervical cancer, and over 75,000 die from the disease in India. Despite being largely preventable, cervical cancer is the 4th most common cancer among women globally, according to the WHO.
- In 2022, till now 979 cases of Mid-day meal-related food poisoning were reported in schools across India. In the last 13 years, at least 9,646 such cases were reported. Close to 12% of such victims became ill after consuming mid-day meals in which lizards, rats, snakes and cockroaches were found.
- Rabies causes 20,000 deaths annually. Moreover, 30-60% of reported rabies cases and deaths belong to the age cohort of 0 to 15 years. India has set the target of elimination by 2030 which requires the extensive vaccination of dogs as they are responsible for approximately 99% of all rabies infections.

- According to the Delhi Traffic Police's Delhi Road Crash Report, 2021 => Average of 3 persons were killed every day in Delhi due to road accidents over the last 2 years. In 2021, most of the victims killed in road crashes were pedestrians. Over-speeding -> key reason for the high number of fatal accidents. Road safety initiatives for two-wheeler riders can be initiated along with the provision of free-to-use helmets with a use-and-return policy to tackle the rising number of fatalities.
- According to the NCRB Prison Statistics India Report, 2021 => There are approximately 9,180 prisoners suffering from mental illness, out of them, nearly 58.4% were undertrials.

CHILDREN

- In 2021 alone, more than 29 million reports of suspected child sexual exploitation were reported by online platforms to the National Center for Missing & Exploited Children's Cyber Tipline.
- In a global compilation of reports of Child Sexual Abuse Material (CSAM) found online, India stands on top of the list, with 11.7% of the total reports followed by Pakistan, which contributes 6.8% of all reports. 3 of the top 4 countries were in South Asia, raising concerns about the online safety of children in the region.

INTERNATIONAL RELATIONS

- Bangladesh is India's sixth largest trade partner with bilateral trade rising from $2.4 billion in 2009 to $10.8 billion in 2020-21. According to the World Bank => Bangladesh's exports could rise 182% under a free trade agreement. This could become 300% if combined with trade facilitation measures and reduced transaction costs.

Achievement of social-democratic model in Nordic countries

- Among the OECD countries, Scandinavian countries have the highest proportion of the workforce belonging to trade unions.
- 5 Nordic countries also rank in the top 10 among OECD countries in the public expenditure on health and education as a percentage of GDP.
- Because of such a strong social welfare model -> share of labour participation is the highest in the world even among women.
- They have a high level of international trade and participation in globalisation, economic progress, low levels of inequality and high living standards.
- According to a UNDP report => Norway has been ranked 2nd among countries on the Human Development Index (0.961). Iceland is ranked 4th (0.959), Denmark -> 6th (0.948), Sweden -> 7th (0.947) & Finland -> 11th (0.940).
    - They have also performed very well in press freedom and gender equality indices.
- As per the World Bank's data => These countries also are among the top 20 countries in GDP per capita (Purchasing Power Parities).

GENERAL STUDIES-III

ECONOMY

- In India, now the services sector accounts for over 50% of the GDP of the country. However, it has failed to create enough jobs in a consistent manner -> which has increased the burden & stress on the agriculture sector as it continues to employ over 45% of the total workforce of the country accounting for 15% of GDP.
- India's logistics cost is estimated to be about 14% of its GDP which is high as compared to other developed countries. Reduced logistics cost improves the competitiveness of Indian goods (in domestic & export markets). The Indian logistics sector provides livelihood to more than 22 million people and improving the sector will facilitate 10% decrease in indirect logistics costs leading to the growth of 5 to 8% in exports.

Rubber

- India is the 5th largest producer of natural rubber in the world. Thailand is the largest producer of natural rubber in the world.
- However, India is the 2nd largest consumer of natural rubber in the world.
- Close to 40% of India's total natural rubber consumption is met through imports.
- According to reports by the Rubber Board => Natural rubber production in the country is said to be 8.5 lakh tonnes whereas the consumption estimates are over 12.9 lakh tonnes.
- The production of natural rubber increased by about 8.4% during 2021-22 compared to 2020-21 because of the increased yield, tappable area and area tapped.
- Top rubber-producing states: Kerala & other states like Tripura, Karnataka, Tamil Nadu, Assam and other North-Eastern states.
- Out of the total consumption, the auto-tyre manufacturing sector constituted about 73.1%.

Energy

- India has a target of setting up 175 GW capacity of renewable energy by 2022 and 450 GW by 2030. To achieve this target, around 25 GW of solar energy capacity is needed to be installed every year, till 2030.

AGRICULTURE

Nano Urea v/s Traditional Urea:

- A single half-litre bottle of the liquid nano urea can compensate for 45 kg of urea granules & it is cheaper than conventional urea.
- Conventional urea is effective just for 30-50% in delivering nitrogen to plants, the effectiveness of the nano urea liquid is over 80%.
- Average yields in areas that used nano urea increased by 7% compared to traditional practices.

- Urea forms 82% of the total nitrogenous fertilisers consumed in India, with an annual consumption of 33.6 million tonnes in 2019-20.
- As per the Union government's claim, by 2025, India's domestic urea production & production of nano urea would together result in "self-sufficiency" & would no longer require the 90 lakh tonnes annual import. This will save about 40,000 crores in the exchequer.

SCIENCE & TECH

- On a few selected countries, India has occupied the lowest rank with only 14% female researchers working in STEM (science, technology, engineering, and mathematics) areas => UNESCO data.
- The Lumpy Skin Disease killed at least 50,000 cattle in India in 2022.

ENVIRONMENT

- In line with the efforts to reduce its carbon footprint, the Indian Air Force (IAF) is looking to fly an AN-32 transport aircraft modified to operate on 10% blended biodiesel for 200 flight hours in the next 6 months. Globally, the aviation industry is one of the largest contributors to greenhouse gas emissions. The fuel consumption of the IAF for 2021-22 was said to be over 6.2 lakh kilo litres, which accounted for about 15 lakh tonnes of carbon dioxide.
- According to the Water Scarcity Clock => More than 200 crore people across the world are witnessing high water stress.
- As per the Global Drought Risk and Water Stress map (2019) => The major parts of India, especially the west, central & few areas of peninsular India are experiencing high water stress and water scarcity.
- NITI Aayog report named the Composite Water Management Index, 2018 => Over 60 crore people experiencing severe water shortages.
- A minimum of 12% of the large cities in the world rely on inter-basin transfers. UN report on "Transboundary Waters Systems – Status and Trend", 2016 => Connected the issue of water transfer with many Sustainable Development Goals proposed to be achieved from 2015 to 2030.
- South Asian region, including India -> placed under the category of high biophysical & highest socio-economic risks.

VALUE ADDITION

1. *BSF has for the first time developed an indigenous "Drone Tear Smoke Launcher" to control riots and other crowd control situations. This will help in dropping multiple grenades simultaneously at accurate locations with minimum chances of physical injuries. It will play an important role in law-and-order management.*
2. *Tokyo Olympic gold medallist Neeraj Chopra has become the first Indian to win the prestigious Zurich Diamond League Final 2022 in Switzerland.*
3. *The Indira Gandhi Urban Employment Guarantee Scheme has been rolled out in Rajasthan with the objective of providing economic support to the poor and needy families living in the cities through work to be provided on demand for 100 days a year.*
4. *Tejaswi Satpute, an IPS officer launched Operation Parivartan in 2021. It is a four-point action plan of soft policing (such as counselling) to crack down on illegal hooch distilleries in Solapur. A year later, nearly 80% of illegal hooch distilleries in Solapur rural areas have shut down and over 650 families involved in the trade have been rehabilitated. Tejaswi Satpute was awarded the FICCI smart policing special jury award for operation Parivartan. (Case study).*
5. *NITI Aayog and Rocky Mountain Institute have launched the Shoonya Campaign to promote zero-pollution delivery vehicles or Electric Vehicles (EVs) by working with consumers and the industry.*
6. *The Nehru Trophy Boat Race is a popular Vallam Kali held in the Punnamada Lake near Alappuzha, Kerala. The most popular event of the race is the competition of Chundan Vallams (snake boats).*
7. *Bihar government has decided to set up factories to make glass bangles out of seized liquor bottles through its Rural Livelihoods Promotion Programme, JEEVIKA.*
8. *Bihar government recently decided to set up new academies to promote local dialects - Surjapuri and Bajjika. This will help in protecting indigenous languages and culture and have a positive social, cultural and political impact on people speaking these two dialects.*
9. *Nayagarh, a district in Odisha has adopted a unique initiative named 'Aliva programme,' to meticulously record the information on all adolescent girls in the district with an aim of eradicating child marriage.*
10. *The Foreign Ministers of the Quad grouping recently signed the Humanitarian Assistance and Disaster Relief (HADR) partnership in the Indo-Pacific. It aims to improve their coordination in disaster response operations in the Indo-Pacific region and to respond to the region's vulnerabilities by increasing their capacity, capability, interoperability, and operational synergy.*
11. *The general rules for Indian Railways prescribe for the guard to protect the rear of the train from any possible collision by a train approaching from behind. The guard is duty-bound to place coin-sized detonators at certain distances that will trigger multiple minor explosions with a loud noise when a train passes on them giving an alert to the loco pilot of obstruction ahead. The Indian Railways is considering withdrawing this decades-old*

policy of guards protecting the rear of the train.

12. *Sri Lanka beat Pakistan to win their sixth Asia Cup title by the Asian Cricket Council which was founded as a measure to promote goodwill between Asian countries. The Asia Cup was originally scheduled to be held every two years and it is the only continental championship in cricket.*
13. *The Union Health Ministry is organising a nationwide, mega voluntary blood donation drive, called the Raktdaan Amrit Mahotsav which aims to collect about 1 lakh units of blood (1 unit of blood is equal to 350 ml). An individual can donate blood once every 3 months. Through the E-Rakt Kosh portal, a repository of voluntary blood donors is created; who could be contacted during emergencies. After donation, the whole blood has a shelf-life of about 35-42 days. The blood can also be processed into components such as Plasma (with a shelf-life of 1 year), red blood cells (35-42 days) and platelets (5 days). [October 1 - National Voluntary Blood Donation Day]*
14. *26 drugs which include common gastrointestinal medicines such as ranitidine and sucralfate have been excluded from the National List of Essential Medicines (NLEM), 2022 which now consists of 384 drugs. NLEM aims to promote the rational use of medicines considering the three key aspects namely cost, safety and efficacy.*
15. *India's recent procurement of over 5,450 electric buses shares the vision of having over 50,000 e-buses operating in the country by 2030. This requires continuing the spirit of true inter-ministerial and Union-State collaboration.*
16. *World Ozone Day 2022 or International Day for the Preservation of the Ozone Layer is celebrated on September 16. Theme for 2022: 'Global Cooperation Protecting Life on Earth'.*
17. *Tamil Nadu government has started a free breakfast scheme for government school students with the target of providing an average of 293 calories and an average protein input of 9.85 gm/day. Union government's midday meal guidelines prescribe between 450-700 cals/child/day & protein intake of 12-20 gm/day. So, the ongoing mid-day meal scheme along with the new breakfast scheme provides an average of 846 cal and nearly 28 gm of protein a day. Provision of nutritious food in schools for free shall not be considered a freebie, but the foremost duty of a government to ensure no child goes hungry.*
18. *Harvest of Kinnow is likely to witness a drop of about 50% due to many issues such as polluted canal water due to chemicals from factories. Kinnow is a high-yield mandarin and is a hybrid of two citrus cultivators 'King' and 'Willow Leaf'. It is mainly grown in Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan and some parts of Haryana.*
19. *Recently, Pakistan is witnessing the worst flooding disaster in its history. Almost 1/3rd of Pakistani territory is under water, 2 million acres of farmland have been submerged, large number of livestock have died and transportation networks have been damaged and over 33 million people are suffering from the disruption caused by the flood. Food insecurity and the threat of water-borne diseases pose serious concerns. Pakistan demanded reparations/compensation from the rich countries that are mainly responsible for causing climate*

change. Climate reparations refer to a call for money to be paid by developed countries to developing countries as a means of addressing the historical contributions that the Developed countries have made (and continue to make) toward climate change.

20. *The International Day of Peace is observed on the 21st of September every year. To strengthen the ideals of peace, through observing 24 hours of non-violence and ceasefire. Theme of 2022: "End racism. Build peace".*
21. *The Delhi government is expected to spray a bio-decomposer free of cost over 5,000 acres of paddy fields this year to address the issue of stubble burning and reduce air pollution in the NCR region during the winter. A bio-decomposer capsule by IARI decomposes straw and stubble into manure.*
22. *In 2020, Prime Minister Modi stressed the significance of toys in shaping a child's thinking and he recommended the use of toys as a pedagogical tool in all Anganwadi centres and schools for the all-around growth and development of the children. Also, the new national education policy incorporates play-based and activity-based education on a large scale. In this regard, the Union Government has prepared a National Toy Action Plan with a view to making the domestic toy industry competitive.*
23. *Forest Department officials have noticed that adult elephants can communicate over large distances using various chemical signals from dung and urine left behind by members of the group, and also by using infrasonic communication. Various species communicate using different signals including visual, auditory, sound-based, chemical, or touch-based signals. Understanding these methods used by animals to communicate can play a significant role to reunite a calf with its mother & the conservation of such species.*
24. *Kaziranga National Park in Assam has got a memorial made out of the ash of burnt rhino horns named "Abode of the Unicorns." It has three rhino sculptures – an adult male, an adult female and a calf. The ash collected from the burning of a stockpile of 2,479 rhino horns, seized from poachers and smugglers and collected from animals that died naturally, was used in the concrete mix to create the life-size rhinos.*

TERMS IN NEWS

25. *Hyper Lapse Consumerism refers not only to the kinds of products being sold but also to the ease with which consumers order them and the speed at which such products are delivered.*
26. *Kurki means attachment of a farmer's land, already pledged to the money lending institution or individual, in case of a loan default. Apart from banks, private moneylenders, commission agents also get these decrees against farmers from time to time.*
27. *Crime Multi Agency Centre (Cri-MAC) is an online platform meant to share information and coordinate action among law enforcement agencies on serious criminal incidents, 24×7. It was launched in 2020, by the Union Ministry of Home Affairs. It is run by NCRB to help in the early detection and prevention of crime incidents across the country. It is crucial to tackling human trafficking as it is a highly organised crime often involving inter-State gangs.*

28. *Synthetic biology is a field of science that involves redesigning organisms for useful purposes by engineering them to have new abilities. Synthetic biology researchers and companies around the world are harnessing the power of nature to solve problems in medicine, manufacturing and agriculture.*

RELEVANT QUOTES

29. *"The highest result of education is tolerance." - Helen Keller.*
30. *"An institution speaking in one voice will not be a sign of a healthy democracy. Like every other sphere, diverse views and viewpoints are essential for the judicial institution and democracy." - N.V.Ramana, The former Chief Justice of India.*
31. *"Literacy is a bridge from misery to hope." - Kofi Annan.*
32. *"Progress is more plausibly judged by the reduction of deprivation than by the further enrichment of the opulent." - Amartya Sen.*
33. *"If you want others to be happy, practice compassion. If you want to be happy, practice compassion." – Dalai Lama.*