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Outstanding performance by BYJU'S students in IAS 2021

Congratulations to our toppers

03

Ranks in
Top 10

12

Ranks in
Top 25

25

Ranks in
Top 50



RANK 01

Shruti Sharma



RANK 5

Utkarsh Dwivedi



RANK 6

Yaksh Chaudhary



RANK 12

Yasharth Shekhar



RANK 13

Priyamvada
Mhaddalkar



RANK 14

Abhinav Jain



RANK 15

Challapalle
Yaswanthkumarreddy



RANK 16

Anshu Priya



RANK 19

Diksha Joshi



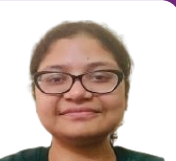
RANK 20

Arpit Chauhan



RANK 21

Dilip Kainikkara



RANK 25

Shruti Rajiakshmi



RANK 29

Bhavishya



RANK 31

Avinash V



RANK 33

Jaspinder Singh



RANK 35

Kartikeya Jaiswal



RANK 37

V Sanjana Simha



RANK 40

Kushal Jain



RANK 44

Anjali Shrotriya



RANK 47

Naman Kumar
Singla



RANK 50

Abhijit Ray

Outstanding performance by BYJU'S students in IAS 2020

Congratulations to our toppers

02

Ranks in
Top 10

18

Ranks in
Top 50

36

Ranks in
Top 100



RANK 02

Jagrati Awasthi



RANK 8

Kartik Jivani



RANK 13

Gaurav Budania



RANK 14

Karishma Nair



RANK 17

Sarthak Agarwal



RANK 25

Vaibhav Rawat



RANK 26

Pulkit Singh



RANK 28

Divya Mishra



RANK 30

Divyanshu
Choudhary



RANK 31

Megha Swaroop



RANK 32

Rallapalli Jagat Sai



RANK 35

Aparna Ramesh



RANK 37

Narwade Vinayak



RANK 38

Varuna Agarwal



RANK 41

Aswathy Jiji



RANK 42

Pooja Gupta



RANK 46

Jubin Mohapatra



RANK 50

Abhishek Shukla

Incredible Results

CSE 2019

4 Ranks
in top 10

13 Ranks
in top 50

22 Ranks
in top 100



Rank 3
Pratibha Verma



Rank 6
Vishakha Yadav



Rank 8
Abhishek Saraf



Rank 10
Sanjita Mohapatra

CSE 2018

11 Ranks
in top 50

28 Ranks
in top 100

183 Ranks
in the final list



Rank 11
Pujya Priyadarshni



Rank 16
Dhodmise Trupti Ankush



Rank 21
Rahul Jain



Rank 24
Anuraj Jain



Rank 31
Mainak Ghosh

CSE 2017

5 Ranks
in top 50

34 Ranks
in top 100

236 Ranks
in the final list



Rank 3
Sachin Gupta



Rank 6
Koya Sree Harsha



Rank 8
Anubhav Singh



Rank 9
Soumya Sharma



Rank 10
Abhishek Surana

CSE 2016

8 Ranks
in top 50

18 Ranks
in top 100

215 Ranks
in the final list



Rank 2
Anmol Sher Singh Bedi



Rank 5
Abhilash Mishra



Rank 12
Tejaswi Rana



Rank 30
Prabhash Kumar



Rank 32
Avdhesh Meena

CSE 2015

5 Ranks
in top 50

14 Ranks
in top 100

162 Ranks
in the final list



Rank 20
Vipin Garg



Rank 24
Khumanthem Diana Devi



Rank 25
Chandra Mohan Garg



Rank 27
Pulkit Garg



Rank 47
Anshul Agarwal

CSE 2014

6 Ranks
in top 50

12 Ranks
in top 100

83 Ranks
overall selections



Rank 4
Vandana Rao



Rank 5
Suharsha Bhagat



Rank 16
Ananya Das



Rank 23
Anil Dhameliya



Rank 28
Kushaal Yadav



Rank 39
Vivekanand T.S

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March (13, 19, 20, 26 & 27) + April (02, 03, 09, 10, 16 & 17)	Economics	Economics			
April (23, 24 & 30) + May (01, 07, 08, 14, 15, 21, 22 & 28)	Modern History + Post Independent	Modern History + Post Independent	Modern History + Post Independent		
May (29) + June (04, 05, 11, 12, 18, 19, 25 & 26) + July (02 & 03)	Geography	Geography	Geography	Geography	
July (10, 16, 17, 23, 24, 30 & 31) + August (06, 07, 13 & 14)	Ancient India + Medieval India + Art & Culture	Polity	Polity	Polity	Polity
August (20, 21, 27 & 28) + September (03, 04, 10, 11, 17, 18 & 24)	International Relations + World History	International Relations + World History	Economics	Economics	Economics
September (25) + October (01, 02, 08, 09, 15, 16, 22, 23, 29 & 30)	Environment & Ecology + Science & Technology + Disaster Management	Environment & Ecology + Science & Technology + Disaster Management	Environment & Ecology + Science & Technology + Disaster Management	Modern History + Post Independent	Modern History + Post Independent
November (05, 06, 12, 13, 19, 20, 26, 27) + December (03, 04 & 10)	Social Issues & Social Justice + Essay + Compulsory Language Paper	Social Issues & Social Justice + Essay + Compulsory Language Paper	Social Issues & Social Justice + Essay + Compulsory Language Paper	Social Issues & Social Justice + Essay + Compulsory Language Paper	Geography
December (11, 17, 18, 24 & 31) + January '23 (07, 08, 14, 15, 21 & 22)	Ethics + Governance	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT
January '23 (28 & 29) + February '23 (04, 05, 11, 12, 18, 19, 25 & 26) + March ' 23 (04)	Internal Security + CSAT	Ancient India + Medieval India + Art & Culture	Ancient India + Medieval India + Art & Culture	Ancient India + Medieval India + Art & Culture	Ancient India + Medieval India + Art & Culture
March '23 (05, 11, 12, 18, 19, 25 & 26) + April '23 (01, 02, 08 & 09)	Focus Prelims	Focus Prelims	International Relations + World History	International Relations + World History	International Relations + World History
April '23 (15,16,23,29 & 30) + May '23 (06,07,13,14,20 & 21)		Focus Prelims	Focus Prelims	Environment & Ecology + Science & Technology + Disaster Management	Environment & Ecology + Science & Technology + Disaster Management
May '23 (27 & 28) + June '23 (17, 18, 24 & 25) + July (01, 02, 08, 09 & 15)		Ethics + Governance	Ethics + Governance	Ethics + Governance	Ethics + Governance
31st May to 11th June, 2023	PRELIMS 2023	PRELIMS 2023	PRELIMS 2023	PRELIMS 2023	PRELIMS 2023
July '23 (16, 22, 23, 29 & 30) + Aug '23 (05, 06, 12, 13, 19 & 20)					Social Issues & Social Justice + Essay + Compulsory Language Paper
1st September to 30th September, 2023	MAIN 2023	MAIN 2023	MAIN 2023	MAIN 2023	MAIN 2023

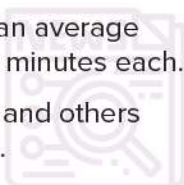


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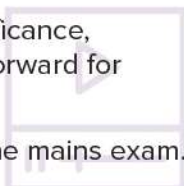
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POLITY

Important Supreme Court cases and judgments

1. Supreme Court on EWS Quota

- » Mains: Concerns surrounding the EWS quota proposal

Context:

- Recently, the Supreme court of India finalised three cardinal issues for examining whether the 103rd Constitutional Amendment violates the Basic Structure of the Constitution.

Introduction:

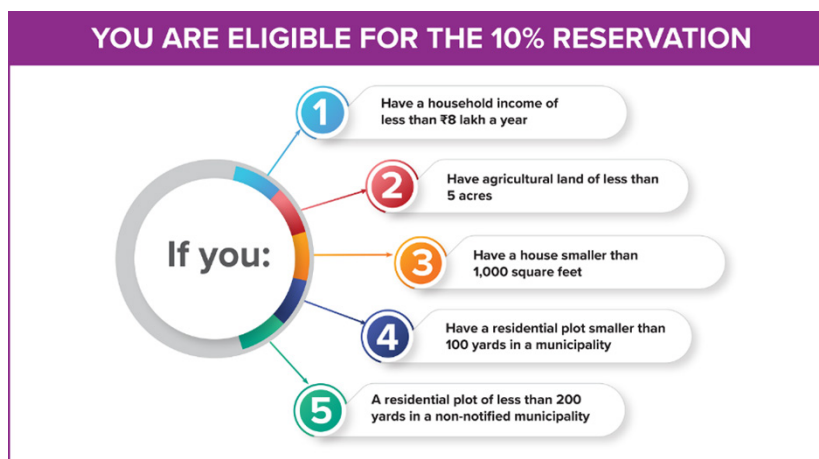
- A Constitution Bench led by Chief Justice of India U.U. Lalit finalised three cardinal issues for examining whether the 10% quota to economically weaker sections (EWS) of society in government jobs and educational institutions provided by the 103rd constitutional amendment violates the Basic Structure of the Constitution.
- The three issues for the court's examination were forwarded by Attorney-General of India K.K. Venugopal.
- The case started with several NEET aspirants challenging a July 29, 2021 notification of the Centre announcing the 27% quota to OBCs and 10% reservation to EWS in the All India Quota for NEET.
- The Supreme court questioned the very basis of the income criterion of ₹ 8 lakh to determine EWS, asking whether the figure came out of "thin air" or was even an automatic adoption of the OBC criteria.

Three issues on violation of the Basic Structure:

- The Supreme Court bench will examine whether the 103rd amendment breaches the Basic Structure by letting the state make special provisions, including reservation, based on economic criteria.
- Whether it violates the Basic Structure by allowing the state to make special provisions in relation to admissions to private unaided institutions.
- Whether the Basic Structure is trampled upon by the constitutional amendment by excluding SEBC/OBC/SC/ST communities from the scope of the EWS quota.

Economically Weaker Section (EWS):

- The EWS Bill promises 10% reservation to individuals classified as economically backward.
- The individual should have an income threshold of ₹8 lakh per annum.



Nut Graf:

The Supreme Court ought to examine whether the EWS quota was in violation of the rule of equality and non-discrimination and if the move to grant reservation under the constitution amendment act to forward castes (EWS or otherwise) was simply impermissible.

Functioning of the Judiciary

2. Retirement Age of Judges

» Prelims: Retirement age of judges in the High Courts and Supreme Court

Context:

- Advocates bodies, including the Bar Council of India (BCI), are demanding to raise the retirement age of judges of the Supreme Court and High Courts.

Details:

- The Bar Council of India after holding joint meetings with the State Bar Councils and Office Bearers of the High Court Bar Associations came to the conclusion that the age superannuation of the judges should be increased.
- They demanded amendments to raise the age of High Court judges from 62 to 65 and that of Supreme Court judges from 65 to 67 years.
- They intend to communicate their resolution to the Prime Minister and the Union Law Minister.
- The Union Minister for Law and Justice told the Parliament that there is no proposal to increase the retirement age of Supreme Court and High Court judges.

Background:

- The National Commission to review the working of the Constitution, 2002 recommended raising the retirement age of the Judges of both the Supreme Court and High Court.
- The Constitution (114th Amendment) Bill was introduced in 2010 to increase the retirement age of High Court judges to 65. However, it was not taken up for consideration in Parliament and lapsed with the dissolution of the 15th Lok Sabha.
- Several Supreme Court Judges have also recommended increasing the retirement age of judges in the higher judiciary to decrease the pendency of cases.
- Attorney General of India K. K. Venugopal has publicly voiced his support for it on various occasions.

Constitutional Provisions:

- The age of retirement for Supreme Court judges is 65 under Article 124(2) of the Indian Constitution.
- As per Article 217(1) of the Constitution, High Court judges retire at 62.
- The retirement age of High Court judges was fixed at 60 by the Constituent Assembly, which was later increased to 62 by a constitutional amendment in 1963.

Need for a raise in the retirement age:

- The judge-population ratio in India is among the lowest in the world at 19.66 judges per million people.
- India is also facing a very high number of pending cases. The total number of pending cases in the Supreme Court of India is 71,411 as on August 2, 2022.
- This will also make post-retirement assignments unattractive and strengthen the independence of the judiciary to sustain democracy.

Global Practices:

- In the United States, a judge of the Supreme Court holds office till his/her death.
- In Norway, Australia, Denmark, Belgium, the Netherlands, and Ireland, the prescribed retirement age is 70 years.
- In Germany, it is 68 years.
- The retirement age is 75 years in Canada.

Nut Graf:

The Indian judiciary is a sui generis model, having its peculiarities and challenges. The idea of increasing the age of retirement for judges has been mooted for years as a solution for dealing with the mounting pendency of cases and judicial vacancies. Enshrining the retirement age of judges in the Constitution is a safeguard for protecting judicial independence.

Parliament—structure, functioning, conduct of business, powers & privileges and issues arising out of these.

3. Parliamentary business

- » Prelims: Facts about Parliamentary Committees and Parliamentary Standing Committees
- » Mains: The significance of Parliamentary Standing Committees in policy-making, issues associated with them and key recommendations

Context:

- Important bills were referred to the Parliamentary Standing Committees for detailed scrutiny in the recently concluded monsoon session.

Background:

- In the monsoon session of the Parliament which was adjourned sine die on August 8, 2022, the Competition (Amendment) Bill and the Electricity (Amendment) Bill were referred to the Parliamentary Standing Committees for detailed analysis.
- The government in the past has been wary of referring the bills to the Standing Committees as it felt that the process was time-consuming and counterproductive.
- Further, in recent times there have been several delays in the proceedings of the Parliament due to disruptions.
 - * The recent monsoon session of Parliament reflects the same with the Lok Sabha's productivity being just 47% and the Rajya Sabha's being only 42%.
- The share of Bills that have been referred to the Department Related Parliamentary Standing Committees (DRSC), during the 14th (2004-2009), 15th (2009-2014) and 16th Lok Sabhas (2014-2019) regimes has been 60%, 71% and 27%, respectively.
 - * The substantial reduction in the share during the 16th Lok Sabha was mainly in the second half of its session when the Government pushed several big-ticket reforms through when the Opposition was adamant to prevent these reforms in the backdrop of the 2019 elections.

Department Related Parliamentary Standing Committees (DRSC):

- There are a total of 24 DRSCs in the Parliament with 8 under Rajya Sabha and 16 under Lok Sabha.
- DRSCs are duly constituted by the Speaker of the Lok Sabha and the Chairman of the Rajya Sabha, jointly.
- DRSCs consist of members from both houses of the Parliament. Each DRSC consists of 31 Members with 21 from Lok Sabha and 10 from Rajya Sabha.
- DRSCs are mandated to examine various legislations referred to them, the budget proposals of different Ministries, and to involve in policy thinking on the vision, mission and future direction of the Ministries concerned.

Parliament v/s Committees:

- Despite there being no obligation on the part of the Government to accept to refer all the legislation to the DRSCs it is believed that sending a Bill to the DRSC has been largely beneficial in the process of lawmaking.
- The Bills that are passed without the scrutiny of such committees are often criticised as not being examined or analysed fully and that the decisions have been taken by the bureaucracy unilaterally ignoring the inputs from other key stakeholders.
 - * Example: The controversy associated with the three Farm Bills.
- Experts believe that scrutiny of the Bills by the committees is more advantageous for the Government than the Opposition as the discussions in the committee and in Parliament take place differently.
 - * The committee meetings are said to be held in a friendly and cordial setting as compared to meetings in the Parliament.
- The discussions held in the committees help add value to the content of the legislation, and usually, consensus would be reached between the Members of different parties.
- Also, the Bills that have been scrutinised by the committees will foster ownership of such bills by the members of the committee from both the ruling and the Opposition parties.
- The Governments should not be hesitant to refer Bills to these committees, as most of these committees will have members from the ruling party in the majority and the final decision is always through the process of voting.

Recommendations:

- The Speaker of the Lok Sabha and the Chairman of the Rajya Sabha are empowered to refer Bills to a DRSC of Parliament and are often influenced by several political and administrative factors.

- * To negate such unruly influences the process of reference of Bills to the committees can be made a mandatory or an automatic process.
- * Exemptions can be provided with the specific approval of the Speaker/Chairman after detailed reasoning.
- * Hence the prerogative of the House to refer the Bills to the Committee, through an amendment, would, of course, remain unaffected.
- Efforts must be undertaken to ensure that all the discussions in the Parliamentary Standing Committee must be frank and free by making sure that no whip of the party would apply to them.
- The Parliamentary Standing Committee can be given a fixed timeline to put forth its recommendations and present its report and such timelines can be fixed by the Speaker/Chairman.
 - * The Speaker/Chairman should have the right to fix a time limit and such limits can also be stringent at times.
 - * It can also be provided that if the committee fails to submit its report/recommendation within the timeline, the Bill can be put up before the House concerned directly to avoid delays.
- To improve the quality of assessments and examinations in the committees, a provision must be introduced to invite the experts from the respective fields who bring in domain knowledge and expertise which help make key decisions in line with the latest trends in that field.
- There is usually enough time to convene committee meetings in the parliamentary committees between the two sessions.
 - * However, there is some negligence among the members in this respect, and they try to push through these pieces of legislation when the next session is announced.
 - * Hence, it is crucial for the Ministry of Parliamentary Affairs to keep a check on such behaviour.
- During the meetings on budget proposals by the ministries, the committees should also make suggestions for the Ministry about the prospects of new initiatives and the potential of people-centric measures.

Nut Graf:

In the wake of the existing hesitance of both Government as well as the Opposition to refer Bills to the Standing Committees of Parliament, promoting the trust of parliamentarians in the relevance and significance of the system of the committees is of paramount importance.

Functioning of the Judiciary

4. Free Legal Aid

» Mains: Provisions for free legal aid in India

Context:

- The Delhi High Court recently quashed the judgement of a trial court due to insufficient legal aid provided to the accused.

Background:

- The Delhi High Court quashed the judgment of a trial court which sentenced a man to life imprisonment for murdering his wife, as the man was not represented by a lawyer for a substantial period of the trial.
- The High Court called it a "grave miscarriage of justice" for not honoring right to free legal services.

Right to Free Legal Aid in India:

- In India, legal aid was first introduced by Justice P.N. Bhagwati under the Legal Aid Committee, formed in 1971.
- Legal Aid means providing free legal services to persons who are not able to afford legal representation and access to the legal and court system in India.
- Free legal aid is necessary to provide access to justice to all to ensure equality before law, right to legal advice and lawyer, and the right to a fair trial.
- The courts in India including the Supreme Court on several occasions have held that in case any accused is not able to afford legal services then he has the right to free legal assistance at the cost of the State.
- To give a uniform statutory framework to the legal aid schemes in India the Legal Services Authorities Act, 1987 was enforced in 1995.
- It is an Act to constitute legal services authorities to provide free and competent legal services to the weaker sections of the society and to ensure opportunities for securing justice.

As a Constitutional Right:

- Free legal service is a constitutional duty of the State and right of a citizen of India.
- Articles 14 and 22(1) make it obligatory for the State to ensure equality before law and a legal system which promotes justice on the basis of equal opportunity to all, without any discrimination, financial or otherwise.
- Article 21 provides for reasonable, fair and just trial for all.
- Directive Principle of State Policy under Article 39A clearly requires the State to promote justice by providing equal opportunities of justice to all. The courts in India have held that in case any accused is not able to afford legal services then he has the right to free legal assistance at the cost of the State.

Nut Graf:

Various Supreme Court judgements hold that the right to free legal services is an essential ingredient of "reasonable, fair and just" procedure for a person accused of an offence. The legal system in the country must work to promote justice on the basis of equal opportunity.

Comparison of the Indian constitutional scheme with that of other countries**5. Scandinavian social democracy**

- » Mains: Social democracy in Nordic countries, its key features and achievements.

Context:

- In the backdrop of the recent elections in Sweden, there has been focus on the Nordic model of social democracy.

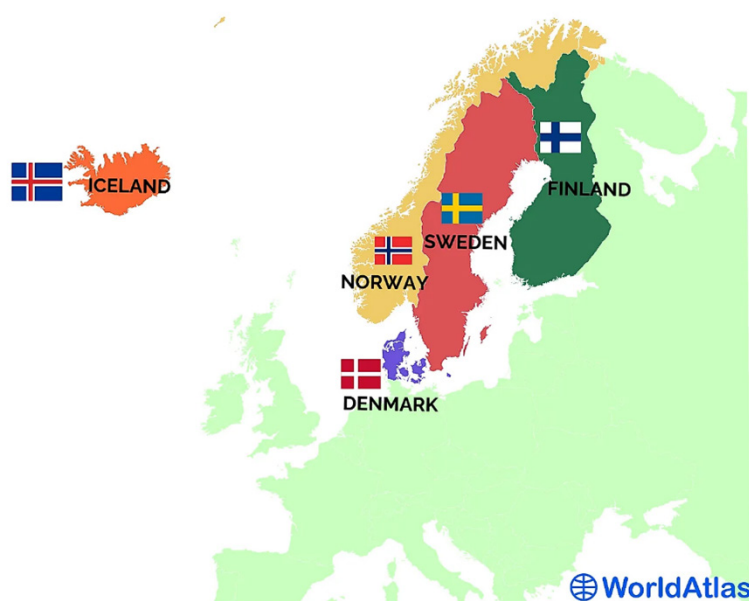


Image source: WorldAtlas

Socialism and its evolution in recent times:

- Although the political and economical system in the Scandinavian countries is mainly based on welfare it cannot be categorised as "socialist".
- Socialism is usually associated with the Communist regimes in the past in which the state played a major role in the ownership of the important means of production and also in political life.
 - * It is also associated with a "one-party system" which derives its ideological principle for rule on behalf of the working class.
- After the downfall of the Soviet Union, new kinds of socialist systems have emerged in recent times which have been moving away from the one-party system.

- * These new socialist regimes have focused more on retaining the functioning of market economies, emphasising redistribution of wealth and greater participation of the state in this process.
- The political and economical system in Latin American countries such as Venezuela, Bolivia and Chile is regarded as “democratic socialist”.
- * The regimes in these countries seek to reach the socialist targets of redistribution and restructuring of formal democratic and liberal institutions mainly in unequal and elite-driven systems.

Social democracy in Nordic countries:

- However, in the Scandinavian countries, the regimes can be regarded as “social democracies”.
- The social democratic regimes in the Scandinavian countries are known for their:
 - * Dependence on representative and participatory democratic institutions
 - * Separation of powers
 - * The holistic social welfare model
 - * Emphasis on publicly provided social services such as investment in child care, education and research that are funded by progressive taxation
 - * Existence of strong labour market institutions with active labour unions and employer associations play a key role in collective bargaining, wage negotiations and coordination along with governance and policy.

Key features of the Social democracy in Nordic countries:

- The relatively smaller and more homogenous populations in these countries have helped to ensure focused governance which has eventually led to a successful social democratic model in these countries.
- Further, these countries also follow a capitalist model of development which promotes entrepreneurship and which in turn helps in the funding of various welfare schemes in the form of corporate taxes.
 - * This “corporatist” model involving the interests of both capital and labour, mediated by the government has helped these countries in a smooth transition from agrarian to industrial to knowledge/service economies.
 - * This tripartite consensus has also facilitated the expansion of production which has helped create more and better-paying jobs.
- Additionally, these countries have undertaken various efforts to deregulate the industry and privatisation of some of the public services ever since the Keynesian era till the 1970s. However, they have retained the importance given to welfare, taxation and investment as compared to other countries.
- Education: Education is free in all the Nordic States (Denmark, Finland, Iceland, Norway, and Sweden).
- Health: Healthcare facilities are free in countries such as Denmark and Finland, and are partially free in Norway, Sweden and Iceland.
- Social benefits: Workers are accorded various social security benefits such as unemployment insurance, pensions, and effective child care.
- Further, the other common feature found in these countries is the political presence of the Social Democratic Parties such as the Labour Party in Norway, Social Democrats in Denmark, Finland’s Social Democratic Party and the Left-Green alliance in Iceland.
- These social democratic parties mitigated the effect of the global economic crisis in the 1930s by fortifying their democracies, signing alliances with agrarian parties with favourable agricultural prices and ensuring universal social security, giving less priority to issues of ownership, emphasising more on job creation and increasing tax incomes.

Achievement of the social democratic model in Nordic countries:

- Among the Organisation for Economic Cooperation and Development (OECD) countries, Scandinavian countries have the highest proportion of the workforce belonging to trade unions.
 - * Iceland – 90.7% of the workforce; Denmark – 67%; Sweden – 65.2%; Finland – 58.8% and Norway – 50.4%.
- The five 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 the share of labour participation in Nordic countries is among the highest in the world even among women.

- The countries have also registered a high level of international trade and participation in globalisation, economic progress, low levels of inequality and high living standards.
- According to a recent report by the United Nations Development Programme (UNDP), Norway has been ranked second among countries on the Human Development Index (0.961).
 - * Iceland is ranked fourth (0.959), Denmark-sixth (0.948), Sweden-seventh (0.947) and Finland-11th (0.940).
- The Nordic states have also performed very well in the various indices on aspects such as press freedom and gender equality.
- As per the World Bank's latest data, these countries also are among the top 20 countries in GDP per capita (Purchasing power parities (PPP), \$)

Nut Graf:

The Nordic model of social democracy is said to be a remarkable example of the welfarist model and has key lessons for developing countries like India and the rest of the world.

Indian Constitution—Historical Underpinnings, Evolution, Features, Amendments, Significant Provisions and Basic Structure

6. Essential religious practices doctrine

- » Prelims: Doctrine of essential practices
- » Mains: Related Supreme Court Judgment and concerns with the doctrine of essential practices

Context:

- A two-judge Bench of the Supreme Court of India is hearing arguments against the Karnataka High Court judgment that upheld the ban on the use of the hijab by students in Karnataka.

Arguments of the petitioners:

- The petitioners claim that the judgment of the Karnataka High Court is violative of the rights of students to freedom of expression, conscience, and religion and would also adversely impact the right to education of Muslim women.
- The petitioners also claim that the state government law despite its seemingly neutral language, results in singling out of the hijab and hence can be considered as discriminatory against Muslim women.

Karnataka High Court Judgment:

- In March 2022, a three-Judge Bench of the Karnataka High Court upheld the ban on the hijab in the State's educational institutions. The bench's judgment was based on the following observations/arguments.
 - * The use of a hijab is not essential to the practice of Islam and thus the ban on wearing of hijab does not violate the right to freedom of religion and conscience of the concerned people.
 - » The doctrine of essential practice came up in the Shirur Mutt case of 1954.
 - * The Court noted that classrooms being qualified public places, there exists no right to freedom of expression or privacy inside a classroom and hence the argument that the ban on wearing hijab goes against the right to freedom of expression and privacy of the concerned students does not hold. The ban on the wearing of hijab seems to be proportionate and legitimate in this regard as in public spaces individual rights must give way to the interests of "general discipline and decorum".
 - * The Court noted that the state government's order calling for a uniform dress code to be prescribed by the State or school management committees, does not discriminate, either directly or indirectly, against Muslim students and hence cannot be held to be discriminatory against the Muslim students.

Concerns with the doctrine of essential practice:

- While all cases should be decided based on the application of ordinary doctrines of constitutional law, in such cases dealing with the question of religious freedom in India, often the argument goes towards the doctrine of essential practice. This is not good for the justice system as the application of this doctrine requires the judges to engage not merely in legal analysis but also in theological study to determine how indispensable the practice is to faith. Notably, the judiciary has little expertise in this regard.

- This doctrine also amounts to giving the judiciary ecclesiastical power by allowing it to decide which religious practices are deserving of constitutional protection. This has allowed the Court to impinge on the autonomy of groups to decide for themselves what they deem valuable, violating, in the process, their right to ethical independence.
- This doctrine has allowed for the justification of certain practices which can be deemed to be detrimental to the cause of social justice. Based on this doctrine, the judiciary struck down a Bombay law that prohibited excommunications made by the Dai of the Dawoodi Bohra community.

Arguments in favour of the doctrine of essential practice:

- This doctrine would provide the state with an avenue to lawfully interfere in the interests of social welfare and reform in matters that are connected to religion but are not intrinsically religious.

Way forward:

- The essential practices doctrine needs to be relooked by a Bench of more than seven judges. Notably, a nine-judge Bench has been constituted in the review petitions filed against the judgment in the Sabarimala case and this bench should look into this doctrine.
- The principle of anti-exclusion proposed by Justice D.Y. Chandrachud in the Sabarimala temple entry case should be used to overcome any adverse impact of the essential practices test. This principle of anti-exclusion would require the judiciary to presume that a practice asserted by a religious group is an essential religious practice. But regardless of this, the Constitution will not offer protection to the practice under consideration if it excludes people on grounds of caste, gender, or other discriminatory criteria.

Nut Graf:

The doctrine of essential practice given its limitations needs to be relooked at by a nine-judge Bench of the Supreme Court and until that happens alternatives like the principle of anti-exclusion should be used to overcome the adverse impact of the essential practices test.

Powers, functions and responsibilities of various Constitutional Bodies

7. Inner-party democracy

- » Prelims: About Political Parties in India and the Election Commission of India
- » Mains: The role of inner-party elections in enforcing internal democracy and various recommendations to improve inner-party democracy

Context:

- The Congress party is gearing up for elections for the post of the party president.
- The Yuva Jana Shramika Rythu Congress Party (YSRCP) elected the current Chief Minister of Andhra Pradesh as the president of the party for life in July 2022 and the Election Commission of India (ECI) has rejected this idea of a "permanent president" as anti-democratic.

Political Parties in India:

- Despite India looking as if it is a party- led democracy or democracy based on political parties, the term "political party" was not mentioned or described in the original Constitution.
- The definition of a "political party" was introduced in the Constitution for the first time through the Anti-defection Law only in 1985.
- The Indian political parties are of different kinds:
 - * A few of the parties are structured and are cadre-based organisations that operate with an ideological goal or a principle
 - * A few others are loosely structured collections of individuals with varied opinions but functioning within an association that has core ideals
 - * And a few others still reflect social or regional cleavages
- Moreover, all the rules and regulations in India are applicable more to candidates than to political parties.

The need for inner-party elections:

- The increased fragmentation of India's polity into a federalised and multi-party system has often led to the domination by certain charismatic individuals or their families due to the amount of influence they enjoy within the party or due to their financing structures. This necessitates the periodic conduction of inner party elections.

- Further, internal elections are said to be the key to upward mobility from being controlled by strong individuals or political families.
- In democratic countries, the ideals of democracy should be reflected at every level, and political parties which are a crucial pillar of democracy are also expected to operate in a democratic manner through formal and periodic elections for the posts of its office-bearers.
- As most of the political parties in India lack homogeneity with respect to ideas and leadership, the internal elections, meetings and contests of ideas become more important to build consensus among the members of the party.

Can inner-party elections be mandated by ECI?

- The courts in the past have observed that none of the provisions in Article 324 of the Constitution, or Section 29A of the Representation of the People Act, 1951 (RP Act) provides the power to ECI to regulate internal structures, organisations or elections of the party.
- Despite there being no law or any statutory powers, the ECI has constantly used the guidelines issued for the registration of parties under Section 29A of the RP Act to persuade the parties to conduct elections and to ensure that their leadership is renewed.
 - * ECI in the past has ordered the conduct of organisational elections within the political parties through executive orders.
- However, the ECI does not question the result or the procedure of the election followed by the parties and it just expects political parties to abide by their constitution, a copy of which is submitted to the ECI when the parties are registered.
- The registered political parties are mandated to inform the ECI about changes in their leadership and also submit a document about the cost incurred during elections and in the non-election period. However, there is no provision for action against non-compliance.

Recommendations:

- Rather than introducing new laws, there is a need for new and reinterpretation of the existing laws which accords more power to the ECI to enforce inner-party democracy.
- Also, the ECI must come up with innovative methods to regulate political parties.
- There have to be efforts to check the arbitrariness in electing certain individuals unopposed as getting elected unanimously is also considered a valid election.
- Further, in 1999, the Law Commission Report recommended that the government must consider state funding of political parties as these political parties are currently involved in sourcing money from corporates or private individuals who most of the time expect something in return.

Nut Graf:

Most of the political parties in India have failed to follow their own constitutional norms due to the centralised nature of their internal structures and organisations. This is said to be a key challenge for the functioning of a democracy and hence there is a need for enforcing inner-party elections which ensures more democracy and accountability within political parties.

Provisions for Checks & Balances in Indian Constitution

8. Mercy Petition

- » Mains: Pardoning powers of President and Governors.

Context:

- The Supreme Court criticised the delay on the part of the government to decide on a mercy petition.

Background:

- A former constable of Punjab Police, Balwant Singh Rajoana was convicted for his role in the explosion outside the Punjab civil secretariat that killed Beant Singh on August 31, 1995.
- Sixteen others were also killed in the bombing. A special court that convicted him sentenced him to death in July 2007 and this was upheld by the Punjab and Haryana High Court in October 2010.
- Rajoana filed the mercy petition in 2012.

Supreme Court on the delay:

- In 2019, the Union government decided to spare his life in commemoration of the 550th birth anniversary of Guru Nanak Dev.
- In May 2022, the Supreme Court ordered the Union government to decide on the mercy petition of Rajoana, preferably within two months.
- Expressing displeasure over the delay despite missing the 2-month deadline, the Supreme Court on 28 September 2022, gave the Union government two days time to record the progress made in addressing the mercy request of Rajoana.
- In 2021, Solicitor General Tushar Mehta had specifically drawn the Court's attention to the gravity of the facts in the case while highlighting charges of involvement of Khalistani elements in the crime. He had said that appeals of other co-accused were pending in the apex court.
- The court had said the law was settled that once the government decided to recommend a Presidential pardon for a man, the pendency of appeals in the Supreme Court of his co-accused cannot delay the process initiated under Article 72 (Presidential pardon) of the Constitution.

About Mercy Petition:

- Mercy petition to the President is the last constitutional resort a convict can take when he is sentenced by a court of law.
- It is done under Article 72 of the Constitution of India.
- Similarly, the power to grant pardon is conferred upon the Governors of States under Article 161 of the Constitution of India.
 - * Previously, the governor could not pardon the death sentence. But recently on 3rd August 2021, the Supreme Court held that the Governor of a State can pardon prisoners, including death row ones, even before they have served a minimum of 14 years of a prison sentence.
 - * The recent judgement regarding the Governor's power to pardon overrides a provision in the Code of Criminal Procedure (Section 433A) which mandates that a prisoner's sentence can be remitted only after 14 years of jail.
- Both the President and Governor are required to act on the advice of the appropriate government—the Central and State governments. They cannot exercise their discretion with regard to their powers under Articles 72 and 161.
- The President can either accept or reject the mercy plea as per the advice of the council of ministers.
- However, the Constitution doesn't provide for a specified time limit to accept/reject the mercy petition.
- President's pardon/rejection/delay is also subjected to judicial review.

Nut Graf:

The pardoning power is founded on the consideration of public good and is to be exercised on the grounds of public welfare, which is the legitimate objective of all punishments. The pardoning power is an act of grace and humanity in the course of law. Unnecessary hurdles and delays in approving the mercy petition can cause severe discomfort to both the convicts and the victims

Constitution of India - historical underpinnings, evolution, features, amendments, significant provisions and basic structure**9. Preamble of the Constitution**

- » Mains: Key features of the Preamble of the Constitution of India and the debate surrounding the terms "Secular" and "socialist" in it.

Context:

- The Supreme Court of India recently heard a petition which sought the removal of the words "socialist" and "secular" from the preamble of the Constitution of the country.

Preamble of the Constitution of India:

- The "Preamble" of the Constitution of India is a brief introductory statement that sets out the guiding purpose and principles of the document, and it indicates the source from which the document derives its authority, meaning, "the people".
- The Preamble is primarily based on the Objective Resolution which was moved by Jawaharlal Nehru in the Constituent Assembly on 22nd January, 1947.

- The Preamble of the Constitution was adopted on 26 November 1949 by the Constituent Assembly of India and came into effect on 26th January 1950.
- The Preamble has been amended only one in 1976 by the 42nd Amendment through which words such as “socialist”, “secular” and “integrity” were added to it.
- The key objectives of the Preamble is to secure all the citizen of India:
 - * The social, economic and political justice
 - * Liberty of thought, expression, belief, faith and worship
 - * Equality of status and of opportunity
 - * Fraternity assuring the dignity of the individual and the unity of the Nation
- In the Kesavananda Bharati Case the Supreme Court held that the Preamble is an integral as part of the Constitution and plays an important role in the interpretation of statutes and provisions of the Constitution.
- However, the violation of any principle mentioned in the preamble cannot be a reason to go to court, the wordings in preamble are “non-justiciable” in nature.

Preamble to the Indian Constitution	
Source of the Indian Constitution	The People of India are revealed to be the source of the authority of the Indian Constitution. The words, ‘We, the People of India’ reflect the same.
Nature of the Indian State	The Preamble of India tags India as the sovereign, secular, republic, secular and democratic nation
Objective of the Indian Constitution	Justice, Liberty, Equality and Fraternity are denoted as the objectives of the Preamble of India
Adoption Date of the Constitution of India	November 26, 1949 as the date when then the Indian Constitution

“Secular” and “socialist” in the preamble:

- The terms “Secular” and “socialist” were inserted into the preamble as part of the 42nd Amendment of the Constitution in 1976 during the Emergency imposed by then Prime Minister Indira Gandhi.
- Secular: Despite being added only in 1976, the state envisaged by the Constitution was always a secular state.
 - * The fraternity and unity of the country could be built only on a secular basis.
 - * The meaning of a secular state is that the State does not prioritise any one religion for the country and its people
 - * State intervention can become necessary to lawfully regulate or remove pernicious or exploitative practices in the name of religion.
 - * The term ‘secular’, has not been defined in the Constitution but its operative meaning may be drawn from the different provisions of the Constitution.
 - » Example: Discrimination on the basis of religion is forbidden to the State, equality is assured to all irrespective of religion, freedom of faith, belief and worship is allowed to all.
- Socialist: While the original Constitution did not mention any particular ideology, it did give expression to the resolve of securing the citizen’s economic justice and equality of opportunity which is the essence of socialism.
 - * The term is not defined in the Constitution and it may be noted that the socialism envisaged in India does not mean the abolition of private property or nationalisation of all means of production.

Debate on the terms “secular” and “socialist” in the preamble:

- Critics have argued that these terms were never intended to be in the original Constitution and that such insertion is “beyond the amending power of the Parliament under Article 368”.
- Critics feel that these terms reflect the ideologies of a particular political party that introduced these terms into the Constitution and that liberal policies have been adopted post the 1990s.
- Further, the critics also point out Dr. B R Ambedkar’s statement when there were debates in the Constituent Assembly to add these words to the preamble, which said that “what should be the policy of the State, how the Society should be organised in its social and economic side are matters which must be decided by the people themselves according to time and circumstances. It cannot be laid down in the Constitution itself because that is destroying democracy altogether.”

Comparison of the Indian constitutional scheme with that of other countries.**10. Constitutional monarchy**

- » Prelims: About Constitutional Monarchy and the Comparison Between Indian Parliamentary System & British Parliamentary System

Context:

Upon the death of the Queen, Prince Charles, who was the Prince of Wales, became king of the United Kingdom of Great Britain and Northern Ireland.

Constitutional Monarchy

- A monarchy is a form of government in which a person, the monarch, is head of state for life or until abdication.
- A constitutional monarchy also known as the parliamentary monarchy or democratic monarchy, is a form of monarchy in which the monarch exercises their authority in accordance with a constitution and is not alone in deciding.
 - * In constitutional monarchies, the monarchs have significantly less personal discretion in the exercise of their authority.
- A constitutional monarchy form of Government can be seen in countries like Thailand, Malaysia, Japan, Belgium, Sweden, Canada, United Kingdom, Netherlands, Spain, and Cambodia.

Comparison Between Indian Parliamentary System & British Parliamentary System

Indian Parliamentary System	British Parliamentary System
1. Harmony Between Legislature and Executive: The greatest advantage of the parliamentary system is that it ensures harmonious relationship and cooperation between the legislative and executive organs of the government. The executive is a part of the legislature and both are interdependent at work. As a result, there is less scope for disputes and conflicts between the two organs.	1. The responsibility of the Executive and Legislature: The most characteristic feature of the parliamentary form of government is the responsibility of the Executive to the Legislature.
2. Responsible Government: By its very nature, the parliamentary system establishes a responsible government. The ministers are responsible to the Parliament for all their acts of omission and commission. The Parliament exercises control over the ministers through various devices like question hour, discussions, adjournment motion, no-confidence motion, etc.	2. Cabinet and Monarch: The Cabinet as the head of the Executive is answerable to the Parliament for its acts of omissions and commissions. The Monarch is the nominal head of the State. He/she acts on the advice of the ministers, who are responsible to the Parliament.
3. Prevents Despotism: Under this system, the executive authority is vested in a group of individuals (council of ministers) and not in a single person. This dispersal of authority checks the dictatorial tendencies of the executive. Moreover, the executive is responsible to the Parliament and can be removed by a no confidence motion.	3. Confidence of the House of Commons: The Cabinet remains in power as long as it enjoys the confidence of the House of Commons. Whenever the Cabinet loses the support of the majority members, it resigns or advises the King to dissolve the House of Commons in order to have a fresh election; In the new election, if the Cabinet gets the majority it continues in office; otherwise it resigns in favour of a new government.
4. Ready Alternative Government: In case the ruling party loses its majority, the Head of the State can invite the opposition party	4. Ministers as Homogenous Pol. Party: All the ministers are collectively responsible to the House of Commons. They swim or sink together.
5. Wide Representation: In a parliamentary system, the executive consists of a group of individuals (i.e., ministers who are representatives of the people). Hence, it is possible to provide representation to all sections and regions in the government. The prime minister while selecting his ministers can take this factor into consideration	5. Combination of Political Parties: The Ministers are also preferably from a homogeneous political party, or a combination of political parties having identical views and policies.
6. India has a republican system and the Head of the State in India (that is, President) is elected,	6. The Head of the State in Britain (King or Queen) enjoys a hereditary position.
7. The Parliament is not supreme in India and enjoys limited and restricted powers due to a written Constitution, federal system, judicial review and fundamental rights	7. The British system is based on the doctrine of the sovereignty of Parliament
8. In India, the prime minister may be a member of any of the two Houses of Parliament	8. In Britain, the prime minister should be a member of the Lower House (House of Commons) of the Parliament.
9. In India, a person who is not a member of Parliament can also be appointed as minister, but for a maximum period of six months	9. the members of Parliament alone are appointed as ministers in Britain

10. India has no such system. The ministers in India are not required to countersign the official acts of the Head of the State	10. Britain has the system of legal responsibility of the minister
11. There is no concept of "Shadow cabinet" institution in India	11. "Shadow cabinet" is a unique institution of the British cabinet system. It is formed by the opposition party to balance the ruling cabinet and to prepare its members for future ministerial office.



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ECONOMY

Issues related to agriculture - Fertilizers

1. Nano Urea

- » Mains: Significance of Nano urea over granular urea

Context:

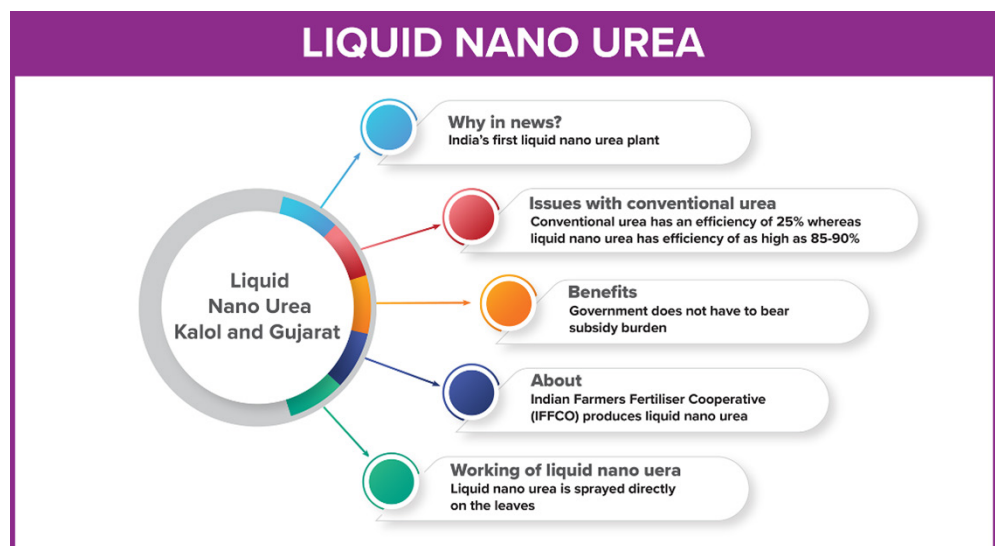
- Nano urea approval has been fast-tracked despite incomplete trials.

Introduction:

- Nano urea is developed by the Indian Farmers and Fertiliser Cooperative (IFFCO).
- It is the only Nano fertiliser approved by the Government of India and included in the Fertiliser Control Order (FCO)
- It is advertised as a solution to reduce farmer dependence on packaged urea.
- It has been fast-tracked for commercial application despite incomplete trails.
- Three seasons of independent assessment by the Indian Council of Agricultural Research (ICAR) is done for approving a new fertiliser, but in the case of nano urea this was reduced to two.

Nano Urea v/s Traditional Urea:

- Nano urea is a patented and indigenously made liquid that contains nanoparticles of urea.
- A single half litre bottle of the liquid can compensate for a 45 kg of urea granules and it is cheaper than conventional urea.
- Granular Urea is traditionally used in the cultivation of crops such as wheat, rice and mustard.
- A 500 millilitres bottle of nano urea can replace one bag of conventional urea as it has 40,000 ppm of nitrogen, which is equivalent nitrogen nutrient provided by one bag (45Kg) of conventional urea.
- It is applied in two stages–The first packet is applied during the early sowing stage. The second application is done when the plant has sprouted a canopy of leaves, and is approaching the reproductive phase of plant growth.
- Despite Nano Urea, the traditional urea is still necessary during the initial stage, as basal nitrogen, of crop development.
- The nano urea could be useful in the reproductive phase of the plant growth.
- Conventional urea is effective just for 30-50 per cent in delivering nitrogen to plants, the effectiveness of the nano urea liquid is over 80 per cent.
- Nano urea using nano technology enables designing ultra-small particles that offer higher surface-mass ratios, and help in the controlled delivery of plant nutrients.
- Due to the ultra-small size and surface properties, the nano urea liquid gets absorbed by plants more effectively when sprayed on their leaves.



Significance:

- Field trials were done over four seasons on 94 crops across 21 States since 2019 in all the agro-climatic regions.
- Nano urea liquid will increase the production of crops with improved nutritional quality.
- Average yields in areas that used nano urea increased by 7% compared to traditional practices.
- Nano Urea liquid is also expected to reduce the environmental pollution caused by the granular form, by reducing its excessive application that exacerbates soil, water and air pollution with climate change problems.
- It will significantly bring down the cost of logistics and warehousing.
- 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 as well as production of nano urea would together result in "self-sufficiency" and would no longer require the 90 lakh tonnes annual import. This will save about 40,000 crore in exchequer.

Nut Graf:

Nano Urea apart from reducing the country's subsidy bill is aimed at reducing the unbalanced and indiscriminate use of conventional urea, increase crop productivity, and reduce soil, water, and air pollution.

Indian economy and issues related to it**2. Why is inflation rate different across States?**

- » Mains: Inflation variation in different states.

Status of Indian Economy:

- The economy of India grew at a much slower-than-expected rate of 13.5% in the first quarter of the fiscal year.
- Though Private consumption picked up slightly, inflation particularly Retail inflation shot up to an eight-year high of 7.79% in the month of April. However, it reduced to 6.7% in July.
- Inflation as per the Consumer Price Index (CPI) crossed the central bank's target of 6% in the month of January and has averaged at 6.8% till July 2022.
- In many states like Andhra Pradesh, Assam, Haryana, Gujarat, and Telangana, the inflation rate was above 7% inflation in July also. As many as eleven States such as Bihar, Uttar Pradesh, and West Bengal, saw the accelerated price rise.
- The average rural inflation is usually more than urban at 7.07% for the period of January to July. It was the highest at 8.38% in the month of April.
- The inflation crossed 6% in March 2022 for the urban population. It has averaged 6.47% through 2022. The highest was experienced in April at 7.09%.

Status of different state's economies:

- Fourteen States and three Union Territories including Jammu and Kashmir had an inflation rate more than the national inflation averaging around 7%.
- States with an inflation rate of more than 8%:
 - * Telangana – 8.32%
 - * West Bengal -8.06%
 - * Sikkim also had 8%-plus inflation
- The average retail inflation of other states :
 - * Haryana and Maharashtra have been at 7.7%.
 - * The next is Madhya Pradesh with retail inflation at 7.52%.
 - * Assam has a 7.37% inflation rate.
 - * Uttar Pradesh is at 7.27%.
 - * The next on the list is J&K and Gujarat both averaging 7.2%.
 - * These are followed by Rajasthan with 7.1% average retail inflation.

- States with a retail price less than the target of 6%:
 - * Kerala – 4.8%
 - * Tamil Nadu – 5.01%
 - * Punjab – 5.35%
 - * Delhi – 5.56%
 - * Karnataka – 5.84%
 - * Meghalaya – 3.84%
 - * Goa – 3.66%
 - * Manipur – 1.07%,

Reasons for variation across different states:

- Food price inflation is the major differentiating factor in the States' inflation.
 - * States that do not produce major crops experience higher food inflation than the other states as transport costs are also added.
 - * The states with predominantly rural areas also face more inflation as the CPI for rural areas assigns more weightage to food.
- The consumption patterns and variation in the price trends of different items also cause variations among States. For example, Tomato inflation fell to 44% from 158.4% in June, whereas fish and meat prices dropped to four year low of 3% in July.
- The fuel prices also make a difference. As per a report, the petrol inflation used for transportation eased to a 32-month low of 0.3%, whereas, at (-)2.4%, diesel turned negative for the first time since November 2019. However, LPG inflation was at a six-month high of around 23% and kerosene was at its peak of 108.8% in July. Many states lowered the fuel taxes, and this in turn had an impact on inflation.

Impact of such variation:

- The persistently high inflation dents the spending propensity of the consumer. This is especially visible in rural areas that face more price pressures as compared to urban areas.
- Private consumption is impacted due to high inflation and subdued rural demands.
- It is important to identify the driving factors of inflation in various states, as it helps in better policy decisions and provides relief to the consumers.

Nut Graf:

As the inflationary pressure hampers the household budget and disturbs consumer sentiments, it is important that the Centre and States should coordinate to address the price rise that is not driven by global headwinds but by local factors.

Infrastructure - Ports

3. Vizhinjam port

- » Prelims: Vizhinjam Port
- » Mains: Infrastructure – Ports

Context:

- Protest against the construction of the International Transshipment port by the Adani Group.

About the Vizhinjam port:

- Vizhinjam port is a deep water port.
- It is a significant port because:
 - * It is proximate to east-west shipping routes.
 - * It has a natural undredged draft of around 20 metres.
 - * It is suitable for large vessels making it a unique site.
 - * Moreover, it can become a hub to earn income and drive economic growth just like the hubs of Dubai, Singapore, and Shanghai.



Source: Vizhinjam Seaport Limited

Issues with the port:

Impact on Local Population:

- The revenue generation is at the cost of the local residents, as around 350 families lost their homes to coastal erosion in a span of one year. This will be further worsened with the new developments apart from the continuing coastal erosion and frequent cyclones in the region.
- The livelihood of the local residents is severely affected.

Impact on Ecology:

- The ecology of the region can be irreversibly destroyed and can trigger more hazards.
- Port development can also unleash the deterioration of marine biodiversity.
- Coastal erosion and accretion can be exacerbated by the deepening of harbour channels in ecologically sensitive areas, as evident from the siltation in Chennai and Visakhapatnam ports. The risk is far greater in Vizhinjam because of the order of magnitude.
- A study in 2017 warned about the fallout for the marine ecosystem and shoreline from the construction of breakwater and dredging.
- Similarly, a study showed that during the period of 2006-20, there was an erosion of around 2.62 square kilometres (approximately 650 acres) from the coast of Thiruvananthapuram alone.
- The National Institute of Ocean Technology (NIOT), Chennai released a shoreline report which was based on beach profile and satellite analysis. The report highlighted significant erosion on the northern and southern coast of the port. Accretion was also reported during the port construction from 2015 to 2021.
- Another study related to the shoreline changes in Kerala, which was conducted by the National Centre for Sustainable Coastal Management attributes most of the drastic shoreline changes during 1972-2010 to the infrastructure development along its coast.

Issues with Project Documents:

- A false premise is presented citing negligible siltation and minimum literal drift on the project site.
- The documents do not address the impacts of the port on the marine ecosystem and biodiversity despite the fact that the Vizhinjam-Poovar stretch is a biodiversity hotspot and a marine protected area.
- Thiruvananthapuram has the highest percentage of erosion. However, these facts are ignored during environmental clearances.

Concerns with EIA

- The discussion of the impact on fauna, flora, and lakes in the environmental impact assessment (EIA) is purely pro forma.
- The EIA on the vital shoreline assessment (May 2013) has factual errors. For instance, there is no mention of the ecological consequences of the dismantling of two hills in the Western Ghats to provide rocks for the project.
- In addition to these, no funds have been allocated to maintain dredging.

Measures Ahead:

- High pollution penalties should be imposed on the creators of damage.
- The borrower and the financier must ensure sufficient safeguards to avoid marine pollution and biodiversity destruction in case of large-scale infrastructure projects.
- Moreover, the project must allocate enough funds to recognize the centuries-old rights of people on the sea and its resources. The very first order of business in case of infrastructure projects across the world is providing sufficient compensation to the displaced people and restoring their rights.
- Corrective action in the form of hard-engineering solutions like seawalls and soft responses like afforestation should also be adequately implemented.
- The gross neglect of the damage to marine biodiversity should be addressed by a proper EIA, including inputs from experts in ecology and oceanography.
- In addition to the above points, an independent assessment of measures taken should be a prerequisite for any further construction work. This should be monitored by the port authorities.

Nut Graf:

As approximately two-thirds of Kerala's coasts are eroding, adequate precautions are indispensable before proceeding with any development works in ecologically sensitive areas. It is extremely critical to have sustainable development with the scope of mid-course transformation.

Marketing of agricultural produce and issues and related constraints**4. The fall in natural rubber prices in India**

- » Prelims: Natural Rubber production in India and about Rubber Board
- » Mains: Reasons for the price-drop of natural rubber in India and its implications.

Context:

- Rubber growers under the National Consortium of Regional Federations of Rubber Producer Societies India protested in front of the Rubber Board headquarters in Kottayam, Kerala.

Rubber Board

- The Rubber Board is a statutory body constituted by the Government of India, under the Rubber Act 1947.
- The Board is responsible for the overall development of the rubber industry in the country.
- The Board has its headquarters in Kottayam in Kerala.
- The Rubber Board functions under the administrative control of the Union Ministry of Commerce & Industry.
- The Board has a Chairperson appointed by the Central Government.

Background:

- The cost of natural rubber has fallen down to a 16-month low of ₹150 per kg (RSS grade 4) in the Indian market.
- Further, after the price of latex reached its peak during the COVID pandemic due to increased demand from glove makers, the prices of latex have crashed below ₹120.
- The fall in the prices of rubber has impacted the local economy and the income of cultivators who have resorted to protests.

Production and consumption of natural rubber in India:

- At present, India is the fifth largest producer of natural rubber in the world.
 - * Thailand is the largest producer of natural rubber in the world.
- However, India is the second 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. This increase in production is attributed to the increase in yield, tappable area and area tapped.
- Top rubber producing states: Kerala is the topmost rubber producing state and other states include Tripura, Karnataka, Tamil Nadu, Assam and other northeastern states.
- On the demand side, consumption in the country increased by nearly 12.9% in 2021-22 compared to 2020-21.
 - * Out of the total consumption, the auto-tyre manufacturing sector constituted about 73.1%.
 - * In order to meet this increase in demand, the imports of natural rubber have increased to 5,46,369 tonnes from 4,10,478 tonnes.

Reasons for the price-drop:

- Reduced Chinese demand – It is said to be the primary reason for the reduction in the prices.
 - * China's "zero-Covid strategy" that aims to drive down the number of Covid-19 cases by imposing strict lockdowns, closing borders and imposing travel bans has severely impacted the prices of rubber as China consumes nearly 42% of the global volume.
- European energy crisis
- High inflation
- Increased imports – Experts feel that increased imports have also impacted the prices.
 - * The domestic tyre industry has ample stock in its inventory mainly in the form of block rubber from the Ivory Coast and compounded rubber from the Far East.

Farmers' demand:

- Farmers demand the Central Government increase the import duties on latex products and compound rubber by either 25% or ₹30 per kg (whichever is lower) to bring it on par with natural rubber.
- Farmers also demand State Governments increase the replanting subsidies.
 - * At present, the replanting subsidy in Kerala is ₹25,000 per ha.
- Farmers also demand State Governments increase the support price for rubber under the price stabilisation scheme to ₹200 from ₹170.

Nut Graf:

As the fluctuations in the prices of natural rubber will have severe political and economical consequences in the regions that depend extensively on rubber production, there is an urgent need for interventions from the governments at both the union and the state levels and the Rubber Board.

Intellectual Property Rights.

5. Patent ecosystem in India

- » Mains: Analysing India's Patent trends.

Context:

- Report on the patent ecosystem of India.

Details:

- The recent report titled 'Why India Needs to Urgently Invest in its Patent Ecosystem?' was published by the Economic Advisory Council to the Prime Minister (EAC-PM).
- The report discusses the importance of having a robust patent ecosystem for building a knowledge economy. It will also help in promoting technological innovations.
- It also noted the increasing share of residents in the total applications of patents that were filed in India. It is more than double what was reported in the previous decade.
- Moreover, this is the first time that the number of patent applications by Indian residents has surpassed that of foreign applications during the last quarter of the financial year 2021-22.

- The Economic Survey 2022-23 also showed similar trends.
- The share of patent applications in the Indian patent office surged by approximately 48% during the period of 2010-11 and 2020-21. This growth is largely driven by the applications of residents.
- The higher education sector of India is rising in prominence in research and development (R&D). This is evident from the growth rate (GERD) which has risen from 5% in 2013 to 7% in 2018, as per UNESCO's data on science, technology, and innovation.
- It was also reported that the number of patent applications filed by the top ten academic institutes of India has risen by more than two times in just four years (from approximately 838 in 2015-16 to 2,533 in 2019-20). The residents' share also doubled from around 6.4% to 12.2% during the same time span.

Concerns raised in the report:

- A major issue raised in the report is the time taken to process patent applications in India.
- It was also brought to the fore that the number of abandoned patent applications increased considerably during the decade. The abandoned patents have risen from 13.6% in 2010-11 to nearly 48% in 2019-20.
- As per the Annual Report of the Office of the Controller General of Patents, Designs, Trademarks and Geographical Indications (CGPDTM), 2019-20, the number of rejections on account of not meeting the conditionalities of Sections 9(1) and 21(1) of the Patents Act has increased by nearly 350%.
 - * Section 9(1) of the Patents Act: The applications that are accompanied by provisional specifications should provide the complete specifications within the span of one year.
 - * Section 21(1) of the Patents Act: The documents should be re-filed if they do not meet the specifications as per the patent examiner.
- Another reason that is cited for low reporting is the lack of confidence in the patent applicant about their applications passing the scrutiny and, thereby not pursuing the application process.
- Moreover, in innovations that have a short life span, long pendency might discourage applicants.
- A key issue in the patent ecosystem is the emphasis given to the patent application filing in the National Intellectual Property Rights Policy 2016, disregarding the quality of innovation.
- India's score in the 'Industry-academia' parameter in the Global Innovation Index (GII) has reduced from 47.8 in 2015 to 42.7 in 2021, leading to a decline in ranking in the same dimension from 48 to 65.
- Similarly, the Draft National Auto Policy 2018 has also reiterated that the industry-academia is limited to niche research areas that have poor commercial significance.

Measures ahead:

- The efficiency of processing patent applications should be considerably increased to improve the patent ecosystem in the country.
- Moreover, the patent ecosystem should be investigated adequately to design appropriate guidelines. The national innovation ecosystem should also be kept in view while referring to the matter.
- The perverse incentives given in filing the application should be eliminated to improve the overall patent ecosystem of India.

Nut Graf:

The patent system in a country forms a crucial linchpin in the national innovation ecosystem. Therefore it is very important to strengthen the quality of the patent applications as well as develop a robust collaboration between Academia and Industry.

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

6. National Logistics Policy

- » Mains: Policies on Infrastructure development

Context:

- Prime Minister Narendra Modi recently launched the National Logistics Policy (NLP) in New Delhi.

Background:

- The logistics cost in India is high as compared to other developed countries. India's logistics cost is estimated to be about 14% of its GDP.

- Reduced logistics cost improves the competitiveness of Indian goods both in domestic as well as export markets by encouraging value addition and enterprise.
- Since 2014, the government has put significant emphasis on improving both, Ease of Living and Ease of Doing Business.
- The National Logistics Policy was announced by the Finance Minister in the 2022-23 Union Budget.

National Logistics Policy:

- NLP is a comprehensive effort to address high logistics costs with an interdisciplinary framework for the development of the country's \$150-billion logistics sector.
- The new logistics policy has 04 critical features:
 - * Integration of Digital System (IDS)
 - * Unified Logistics Interface Platform (ULIP);
 - * Ease of Logistics (ELOG); and
 - * System Improvement Group (SIG).
- Policy also focuses on areas such as process re-engineering, digitisation, and multi-modal transport.



Image Source: moneyControl

Significance of the Policy:

- As the world's fifth largest economy and emerging manufacturing hub, India needs a policy that helps to improve the competitiveness of Indian goods, enhance economic growth and increase employment opportunities.
- The policy provides for the government creating a single point of reference for all logistics and trade facilitation matters, reducing costs for the logistics sector.
- The Indian logistics sector provides livelihood to more than 22 million people and improving the sector will facilitate a 10 % decrease in indirect logistics cost leading to the growth of 5 to 8% in exports.
- It will create a single window e-Logistics Marketplace and focus on skill development and making MSMEs competitive.

Supporting Policies to make NLP more robust:

- The PM GatiShakti launched in October 2021, was a pioneering step in this direction. PM GatiShakti will get further boost and complementarity with the launch of the National Logistics Policy.
- Introduction of GST has brought in efficiency in the logistics and transportation sector. It has reduced turnaround time of trucks by over 20%.

- Faceless assessment in customs and e-way bills and FASTag are bringing efficiency in the logistics sector.
- Sagarmala project that connects ports and dedicated freight corridors have improved logistics connectivity and systematic infrastructure development work.
- Village Storage Scheme through Women Self-help groups shall provide backward linkages for seeds thereby reducing logistics costs. Financial assistance under MUDRA loans and NABARD shall be provided for this purpose.

Nut Graf:

The National Logistics Policy will facilitate a unified policy and regulatory environment for end-to-end logistics services and an overarching institutional framework that will govern the logistics sector and enhance its competitiveness. Both State and centre government would prepare a master plan for logistics that will cover projects planned by different ministries to ensure multi-modality, optimal modal mix and addressing first and last mile connectivity.

Indian Economy and important economic terminology

7. Shrinkflation

» Prelims: Inflation

What is Shrinkflation?

- Shrink inflation is when a product downsizes its quantity while keeping the price the same.
- Downsizing of products is done to offset higher production costs but keep retail prices the same.
- An increase in the cost of input materials and intense competition results in Shrinkflation.

The effect of inflation:

- Inflation has numerous effects on the daily life of consumers such as on rent, food, gas, and other living expenses.
- Since container and vessel sizes are reduced by extremely minor quantities, shrinkflation tricks consumers into thinking that the brands they purchase are unaffected by inflation.
- Shrinkflation can occur in different ways other than changes in quantity, by reformulating or removing ingredients while maintaining its price to keep consumers from switching to different brands.
 - * For example, Cadbury Dairy Milk stopped using foil which it used to prevent chocolate from losing its quality and flavour in order to save expense. Though downsizing products reduces costs for manufacturers, it is an unfair practice toward consumers.
- Shrinkflation can lead to customer frustration and deterioration of consumer sentiment towards a producer's brand.
- Price points become misleading when the basket of goods cannot always be measured by considering the product size.
- Overall inflation must be tackled to address shrinkflation.
- It can be done with a mix of macroeconomic policies to manage demand and supply and address structural rigidities in the economy.
- The Central Consumer Protection Authority shall bring guidelines to inform consumers about changes in quality, quantity, potency, purity, standard, and price of goods.
- In India, the Right to Information has been recognised as a consumer right under the Consumer Protection Act, 2019.

Indian Economy and issues relating to Planning, Mobilization of Resources, Growth, Development and Employment.

8. Pitching India as a signature tourist destination

» Mains: Boosting India's tourism sector.

Context:

- World Tourism day is celebrated on 27th September.

Details:

- A first-of-its-kind meeting of tourism ministers of states was held in the Dhauladhar ranges of the Himalayas. Discussions, debates, and deliberations took place on topics like modes and mechanisms to develop India's tourism sector.

- The Prime Minister of India, on Independence Day of 2019, requested Indian citizens to travel to at least 15 tourist places in India by the year 2022. However, this could not be realized owing to the pandemic. Tourism has been severely affected by the COVID-19 pandemic.
- The outcome of the meeting was 'The Dharamshala Declaration'. The Dharamshala Declaration drew inspiration from the Prime Minister's approach – 'Whole of Government'. It enables the breaking down of silos and encourages synergies across various corridors.
- The objective of 'The Dharamshala Declaration' is to realize India's role in global tourism and focus on the recovery of the sector by nurturing domestic tourism.
- The Ministry of Tourism has proposed an action plan and strategy in the declaration, to boost domestic tourism and encourage Indian citizens to explore the country's, cultural, spiritual, and natural beauty and embrace 'Ek Bharat Shrestha Bharat'. Ek Bharat Shrestha Bharat implies interaction and mutual understanding.
- Moreover, the Tourism Ministry is working in collaboration with the Ministry of External Affairs to recognize twenty Indian missions abroad that are the largest source of tourists to India. It is also building country-specific plans to attract foreign tourists.

Measures to boost the Tourism sector:

- The Emergency Credit Line Guarantee Scheme (ECLGS) of the Indian Government was recently increased to ₹5 lakh crore from the earlier ₹4.5 lakh crore. The intent behind the enhancement was to aid hospitality and associated sectors like hotels and restaurants, tour operators and travel agents, marriage halls, and heritage and adventure facilities.
- National Tourism Policy:
 - * The Government has also prepared a draft National Tourism Policy 2022. This is the first attempt after 2002, to bring a transformative tourism policy to India. The objective of the policy is to:
 - » improve the conditions for tourism development
 - » support tourism industries
 - » strengthen support functions
 - » develop sub-sectors of tourism
 - * The policy also aims to leverage technology, digitalization, and innovation through the National Digital Tourism Mission
 - * It will also provide skilling opportunities through the Tourism and Hospitality Sector Skill Mission.
 - * It also gives a special push to private sector participation through the public-private partnerships (PPP) model.

India's Potential in Tourism:

- India has a golden opportunity to project itself as a major tourist destination under the backdrop of the G20 presidency. The period of the G20 presidency is from December 2022 to November 2023. India's traditional dictum of 'Atithi Devo Bhava' can be put forth while welcoming delegates from the nineteen countries and the European Union while hosting 200 meetings.
- The authorities are preparing a list of cities for meetings and conferences on the basis of various dimensions like accommodation availability, conference infrastructure, Swachh Bharat rankings, etc. The basic intent is to showcase India's cultural richness as it welcomes the world.
- The Tourism Ministry is also collaborating with other departments and ministries to bring necessary interventions like visa reforms, and traveller-friendly and improved immigration facilities at airports to strengthen ease of travel.
- By mid-2024, India's tourism sector will reach pre-pandemic levels, achieving approximately \$150 billion contribution to the GDP and nearly \$30 billion in foreign exchange earnings. The estimated figure for foreign tourists is around 15 million.
- Moreover, India's tourism sector is projected to grow at a 7%-9% compounded annual growth rate (CAGR) by 2030. With an enabling policy framework, the tourism sector can add approximately \$250 billion to the GDP, apart from 140 million jobs and \$56 billion in foreign exchange earnings. The tourist arrivals may reach more than 25 million.

Nut Graf

India has a rich civilizational ethos of sustainable, inclusive, and responsible tourism. It is evident from multiple reiterations by great personalities like Gautama Buddha and Mahatma Gandhi, who have strongly advocated the principle of harmonious living with nature. India should renew these pledges to position itself as the best travel destination in the world by 2047.

Agriculture - marketing of agricultural produce - issues and related constraints Mains: Export curbs imposed on various agriproducts-their causes and impacts

9. Agri export curbs by various countries in 2022

» Mains: Export curbs imposed on various agri products - their causes and impacts

Context:

- In the wake of the Russia-Ukraine war, Governments across Asia have imposed curbs on export of various agricultural products to ensure adequate supplies and tackle the price rise.

Agricultural products on which export curbs were imposed:

Coal:

- Indonesia, which is regarded as a top exporter of thermal coal in the world, imposed an export ban for about one month in the wake of rising fears of insufficient supplies for domestic power plants.
- This move significantly impacted exports of the country and also affected top importing countries like Japan.
- The move also resulted in a large-scale rise in the prices of coal.
- Later, the government gradually lifted the export ban for companies that met a Domestic Market Obligation (DMO) to prevent future supply disruption and power outages.
- Further, in August, the Indonesian legislators urged the government to put in place strict rules on domestic coal sales as there were concerns about the miners choosing to pay fines to export for higher profits instead of abiding to sell a 25% of their output to local power generators.

Palm oil:

- Indonesia, which is also a top palm oil exporter, imposed an export ban on edible oil and related products between 28th of April to 23rd of May.
- The move was aimed at tackling the surge in domestic prices and improving domestic cooking oil supplies as the Russia-Ukraine war disrupted the sunflower oil exports from Ukraine.
- Later, the government withdrew the ban and imposed DMO requirements for exporters. However, the industry experts sought that export restrictions and taxes, including removing the DMO be lifted
- The government has now begun waiving palm oil export levies to promote exports and help farmers get better prices.

Wheat:

- India had imposed a ban on wheat exports in May despite announcing that India had a target of exporting over 10 million tonnes of wheat on account of shortage of wheat due to the conflict in Ukraine.
- The government was forced to impose the ban due to lower yield because of severe heat wave conditions in the wheat growing regions of the country and the corresponding increase in the domestic prices which reached record highs.
- Despite having the ban in place, the government has permitted some shipments of wheat to prevent the damage of products from monsoon rains which are still lying at various ports.

Sugar:

- India imposed curbs on sugar exports for the first time in six years in order to arrest the rising domestic prices after the mills sold a record volume on the world market.
- The government is looking to permit sugar exports in two tranches for the next season beginning in October.

Chicken:

- As the Ukraine conflict disrupted production and caused shortage of feed, Malaysia imposed a ban on the exports of live chickens to balance the output and domestic prices.

Rice:

- India, which is one of the biggest exporter grains in the World, imposed a ban on exports of broken rice and a 20% duty on exports of various grades of rice in September to stabilise supplies and domestic prices which have been affected due to below-average monsoon rainfall and reduction in planting.
- Further, the rice loading has been halted at Indian ports and close to one million tonnes of grain are trapped in the ports as buyers are wary of paying the government's new 20% export levy above the agreed contract prices.



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INTERNATIONAL RELATIONS

Global Groupings & Agreements Involving India and/or Affecting India's Interests

1. Treaty on the Non-Proliferation of Nuclear Weapons

- » Mains: Nuclear disarmament treaties

Context:

- The 10th Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was concluded recently.

Treaty on the Non-Proliferation of Nuclear Weapons:

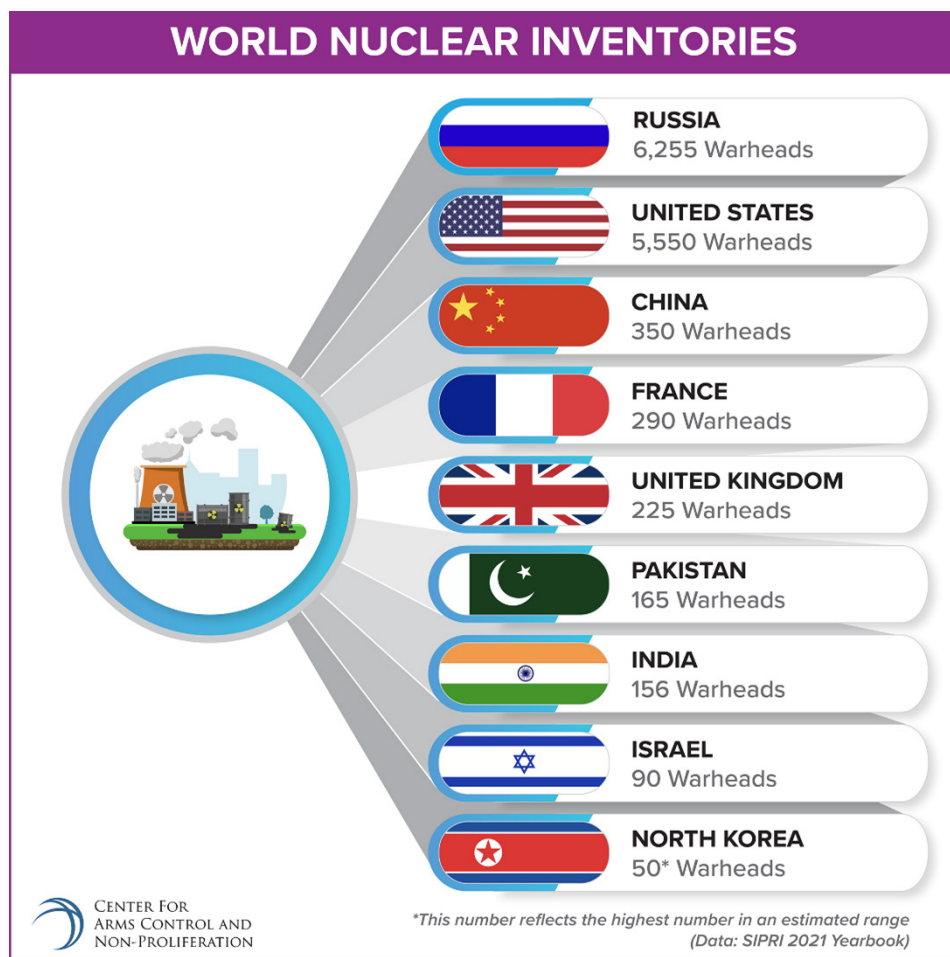
- It is an international treaty to limit the escalation of a nuclear arms race and the technology related to it.
- It aims to promote cooperation in the peaceful use of nuclear energy and achieve complete nuclear disarmament.
- The NPT was negotiated during the 1960s to reconcile 3 objectives:
 - * Controlling the further spread of nuclear weapons beyond the permanent members of UNSC that had already tested;
 - * Negotiating reductions of nuclear arsenals leading to their elimination; and
 - * Sharing benefits of peaceful applications of nuclear science and technology.

NPT's success and weakness:

- Only 4 of the ten review conferences have concluded with a consensus document.
- The recently concluded review conference also failed to conclude with a consensus document after 4 weeks of debate and discussion.
- In previous meetings, the three depositary states (the United States, the United Kingdom and Russia) stood together against the divergences over Iran, Israel, and West Asia. At the 2022 conference, Russia objected to critical references to its military control over the Zaporizhzhia nuclear power plant in Ukraine.
- The non-proliferation objective strongly supported by the nuclear-haves has been achieved in large measure.
 - * Only 04 more countries have gone on to test and develop nuclear arsenals — India, Israel, North Korea and Pakistan.
- But the treaty failed to have meaningful discussions or negotiations on nuclear disarmament within its framework.
- NPT also failed to bring down the collective arsenal of Russia and the U.S.
 - * In December 2001, the U.S. withdrew from the 1972 Anti-Ballistic Missile (ABM) Treaty with the U.S.S.R. thereby ensuring mutual vulnerability in the bipolar era.
 - * This led to the nuclear modernisation of Russia.
 - * In 2019, the U.S. notified Russia of its decision to quit the 1987 Intermediate Range Nuclear Forces (INF) Treaty.
 - * The lapse of the START which expires in 2026 would mark the first time since 1968 that the U.S. and Russian nuclear arsenals would be unconstrained by any agreement.

Nuclear modernisation:

- The growing strategic rivalry between China, Russia and the U.S. is pushing the modernization plans for nuclear arsenals.
- The U.S.'s 30-year nuclear modernisation programme, intended to provide 'credible deterrence against regional aggression' is already underway.
- Russia and China are developing hypersonic delivery systems, nuclear torpedoes and new cruise missiles.
- Satellite imagery over China in 2021 revealed the development of at least three new missile storage sites.



Other treaties on Nuclear weapons:

- The Treaty on the Prohibition of Nuclear Weapons negotiated by the nuclear have-nots entered into force in January 2021. All 86 signatories are nuclear have-nots and parties to the NPT.
 - * It creates a new legal instrument and is committed to pushing for 'stigmatising and de-legitimising' nuclear weapons, condemning all nuclear threats.
- The Comprehensive Test Ban Treaty (CTBT) was opened for signature in September 1996. It obligates countries that sign and ratify "not to carry out any nuclear weapon test explosion or any other nuclear explosion." It is yet to formally enter into force because the U.S. and China are yet to ratify it.

Nut Graf

Developments in space and cyber technology are blurring the line between conventional and nuclear weapons, leading to nuclear entanglement. The rivalries in a multipolar nuclear world create new challenges, different from the challenges of the bipolar era when the NPT was concluded. Without addressing the new challenges, the NPT will weaken.

Bilateral, regional and global groupings involving and affecting India's interest.

2. India and Australia, from divergence to convergence

- » Prelims: Track 1.5 dialogue between India and Australia.
- » Mains: India- Australia relations.

Context:

- Indian and Australian leaders met for the fifth round of the most important bilateral Track 1.5 dialogue in New Delhi.

Details:

- The India- Australia relationship is very crucial for the future of the Indo-Pacific region.
- Almost till the twentieth century, Australia and India rarely had any meaningful dialogs. The reasons were:
 - * The shadow of the Cold War era.
 - * Autarkic economic policies of India.
 - * The White Australia policy.
 - * The decision by Australia not to transfer uranium to India etc.
- The similar values and interests between the India and Australia are evident from:
 - * Both the countries are English-speaking and multicultural
 - * They have federal democracies having the rule of law
 - * India and Australia have strategic interests and want to ensure a balance in the Indo-Pacific and further reiterating that the region should not be dominated by any particular hegemonic power.
 - * Moreover, the largest source of skilled migrants in Australia is India.
 - * There is also a view that the already robust economic relationship between India and Australia, could be further transformed if the new Australia-India Economic Cooperation and Trade Agreement (ECTA) is successfully realized.

Significance of India- Australia dialogue:

- The Leadership Dialogue between the two countries is important because ideas matter in a relationship as much as negotiations and transactions.
 - * The dialogue is defined as a conversation between co-equals who have agreed to work as partners.
- Strong, stable, and sustainable relationships are not just based on potential gains but are equally built on future promise. In other words, forums like these can provide the space and the ambience to infuse new ideas and generate new energy in the relations.
- It is believed that dialogue provides the power of personal and collective communication in a shared physical space. It is ultimately the people and real connections that matter the most, contrary to the cyber world.
- Moreover, this is the first Dialogue post-pandemic. It was not held since 2019 and has kept both countries apart.

Areas of Co-operation:

- The areas of cooperation where both the countries face shared challenges are:
 - * Artificial intelligence (AI) and cyber threats
 - * Geopolitically turbulent region of Indo- pacific
 - * Measures to decarbonize economies
 - * Helping each other to develop robust supply chains through cooperation in the field of critical minerals
 - * The cooperation in the field of Human resources, where the Indian diaspora can help in addressing Australia's skills gaps.
 - * The use of emerging technology is another area that is high on the agenda.
- Moreover, Australia wants to find an alternative Chinese market and diversify the supply chains for its critical minerals. As a country with reserves of almost 21 out of the total 49 minerals identified in India's critical minerals strategy, Australia is perfectly placed to serve the needs of India. It is all the more essential in the present scenario for India's carbon reduction target.
- It will also be significant for the regional security aspect.
- The relations will promote commercial and business opportunities. It also has the potential to strengthen people-to-people ties.

Nut Graf

As India surpasses the United Kingdom as the fifth largest economy, India- Australia relations can provide further impetus to the Indian economy. The leaders of both countries should recommend more concrete steps to strengthen the relationship and create a more habitable, peaceful, and sustainable planet.

Bilateral, Regional and Global Groupings and Agreements Involving India and/or affecting India's interests.

3. India- U.S. relations and the Pakistan factor

» Mains: India – U.S. bilateral relationship and the Pakistan factor

Context:

- Recently, the U.S. Defense Security Cooperation Agency notified a possible Foreign Military sales worth \$450 million for engine, electronic warfare and other hardware and software upgrades and spares for Pakistan's F-16 fighter fleet.
- Though this does not include any new capabilities, weapons, or munitions, the move marks a thaw in the U.S.'s attitude towards Pakistan wherein the administrations in the recent past had stayed away from defence deals with Pakistan.

Concerns for India:

- India is upset with this move of the U.S. based on the following factors.
 - * As against the U.S. objective to arm Pakistan in the fight against terrorism, U.S. aid is being used for Pakistan's actions against India. The F-16 fighter fleet has been the backbone of the Pakistan Air Force since the early 1980s and was used to target Indian military bases close to the Line of Control during the skirmishes that followed the Balakot air strike by the Indian Air Force.
 - * India has criticized Pakistan repeatedly for its duplicity in its approach towards terrorist groups operating from its territory. Pakistan has used terrorism as a state policy against India for decades.
 - * India views U.S. partnership as an irritant to the growing bilateral relationship between India and the U.S. This could undermine the India-U.S. diplomatic and military engagements.

U.S.'s take on the issue:

- The U.S. argues that its defence partnership with Pakistan, considered a major non-NATO ally, is critical for its global war on terror, especially for its interests in Afghanistan.

Recommendations:

- India and the U.S. must skilfully manage their differences on the Pakistan issue. The Pakistan factor should not undermine India's close defence and security ties with the U.S. and instead, the two countries need to work to ensure that the spectacular gains made in bilateral ties are preserved and nourished.

Nut Graf

Pakistan remained an extremely crucial factor in Indo-US relations during the Cold War era. Despite some decrease in the effect of the Pak factor in the US-India relationship in the recent past, the U.S. decision to refurbish the Pakistani F-16 fighter fleet may not augur well for the U.S.'s growing relationship with India.

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

4. Eastern Economic Forum and India

» Mains: Significance of EEF to India

Context:

- Recently, Russia hosted the seventh Eastern Economic Forum (EEF) in Vladivostok.

Introduction:

- The EEF is an annual international forum that takes place in Vladivostok, Russia.
- It was established in 2015 for the purpose of encouraging investment in the Russian Far East.
- It serves as a platform for the discussion of crucial global issues regarding the economy, regional integration, and the development of new industrial and technological sectors.
- Over the years, it has emerged as an international platform for discussing the strategy for developing political, economic and cultural ties between Russia and the Asia Pacific.
- The coming together of countries like Myanmar, Armenia, Russia, and China seems like the forming of an anti-sanctions group in the international order.
- Agreements signed at the EEF increased from 217 in 2017 to 380 agreements in 2021, worth 3.6 trillion roubles.
- As of 2022, almost 2,729 investment projects are being planned in the region. The agreements focus on infrastructure, transportation projects, mineral excavations, construction, industry and agriculture.

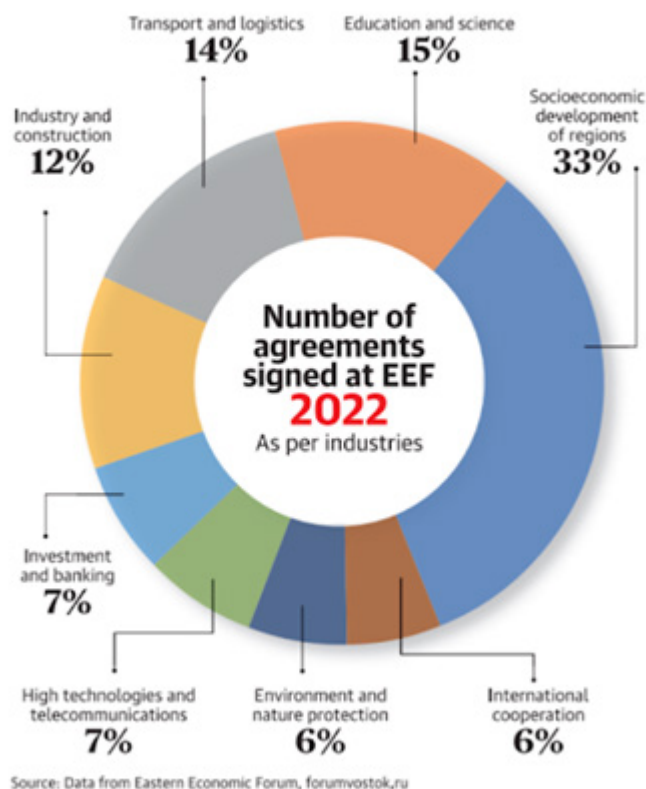


Image Source: The Hindu

- Main objective of the Seventh Eastern Economic Forum was connecting the Far East with the Asia Pacific region.

China and EEF:

- China, as the biggest investor in the region, sees potential in promoting its Belt and Road Initiative and the Polar Sea Route in Russia's Far East (RFE).
- 90% of the total investments in the region are from China.
- Due to economic pressures caused by the Ukraine conflict, Russia needs Chinese investments now more than ever.
- Russia-China shares a 4000-kilometre-long border, and Trans-Siberian railways enable them for functional trade and sharing of resources with some infrastructural assistance.
- Both have invested in a fund to develop RFE and northeastern China by connecting the cities of Blagoveshchensk and Heihe via a 1,080-metre bridge, supplying natural gas, and a rail bridge connecting the cities of Nizhnelenskoye and Tongjiang.

South Korea and EEF:

- South Korea has invested in the manufacturing of electrical equipment, shipbuilding projects, agricultural production, gas-liquefying plants and fisheries.
- In 2017, the Export-Import Bank of Korea and the Far East Development Fund announced their intention to inject \$2 billion into the RFE.

Japan and EEF:

- Japan has invested \$16 billion in the region through 21 projects in 2017.
- Japan has identified 08 areas of economic cooperation and pushed private businesses to invest in the development of the RFE.
- Japan depends on oil and gas resources from Russia after the 2011 Fukushima disaster which led the Japanese government to pull out of nuclear energy.
- Given similar climatic conditions, RFE can be a potential market for Japanese agro-technologies.
- The trade relations between Russia and Japan are hindered by the Kuril Islands dispute as they are claimed by both countries.

India and EEF:

- India aims to establish a strong inter-state interaction with Russia through the EEF.
- Prime Minister Narendra Modi expressed India's readiness in expanding trade, connectivity and investments in Russia during the recent Forum.
- The RFE has many petroleum resources which are of great interest to India
- There are also plans to connect the port of Chennai with Vladivostok, the largest city in the Russian Far East which would provide an alternative sea route with respect to the Suez Canal.
- India is keen to deepen its cooperation in energy, pharmaceuticals, maritime connectivity, healthcare, tourism, the diamond industry and the Arctic.
- In 2019, India also offered a \$1 billion line of credit to develop infrastructure in the region.
- Business representatives of Gujarat and the Republic of Sakha have launched agreements in the diamond and pharmaceuticals industry.

Russian Far East:

- The Russian Far East stretches from Lake Baikal, the world's largest freshwater lake, to the Pacific Ocean and comprises roughly a third of Russia's territory.
- The area is rich with natural resources such as fish, oil, natural gas, wood, diamonds and other minerals which contribute to 5% of Russia's GDP.
- Procuring and supplying these resources is an issue due to the lack of population in the area and the unavailability of personnel.
- The RFE is geographically placed at a strategic location which acts as a gateway into Asian trading routes.

EEF V/S Indo-Pacific Economic Framework for Prosperity (IPEF):

- The U.S.-led Indo-Pacific Economic Framework for Prosperity (IPEF) and the EEF are very different based on their geographic coverage and partnership with the host countries.
- India has invested substantially in EEF despite the current international conditions. At the same time, India has given its confirmation and acceptance to three of the four pillars in the IPEF.
- The IPEF presents a great opportunity for India to act in the Asia-Pacific region, without being part of other regional groupings such as the China-led Regional Comprehensive Economic Partnership.
- The IPEF partners act as new sources of raw materials and other essential products, reducing India's reliance on China for raw materials.

Nut Graf

EEF operates within the framework of the Russian agenda regarding the development of the Far East and its integration into the global economy. It gains significance, especially during the ongoing conflict with Ukraine and subsequent international sanctions.

Important International institutions and agencies**5. Future of the Commonwealth**

- » Mains: Analysing the consequences of the death of the British Monarch.

Context:

- Death of Queen Elizabeth II of the United Kingdom.

Details:

- The Queen was the Head of State for 14 commonwealth countries and she was the longest serving ruler (seventy years).
- There has been a significant change in the polity of the commonwealth countries during her reign, which will continue at a greater pace following her death. It is often highlighted by many scholars that more countries will remove the British monarch from the position of Head of state, similar to Barbados.

* Barbados was the eighteenth country to substitute the Head of State with a National Government Functionary in 2021.

Commonwealth and its realms:

- It is a group of 56 countries that were previously British colonies. The member countries are mostly located in Africa, the Americas, Asia, and the Pacific.

- There are three European countries as well, namely, Cyprus, Malta, and the U.K. along with three developed nations Australia, Canada, and New Zealand.
- It consists of both realms and republics. The realms are headed by the British Monarch, whereas the Republics are ruled by elected representatives. The only exceptions are Brunei Darussalam, Eswatini, Lesotho, Malaysia, and Tonga which have their own self-governed monarchy.
- The realms include Antigua and Barbuda, Australia, the Bahamas, Belize, Canada, Grenada, Jamaica, New Zealand, Papua New Guinea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Solomon Islands, and Tuvalu.
- The countries of the group have good relations with each other and foster the policy of coordination through initiatives like Meetings of Heads of State.

Countries ending their formal ties with British Monarchy:

- There are popular movements in Australia that are looking forward to establishing a republic. In this respect, a minister will set in a motion for a gradual transition towards a republic country. A referendum in this regard will be taken up for severing official ties with the British monarchy in the coming months.
- Similarly, the Prime Minister of the Bahamas has also shown intentions to conduct a referendum for removing the King from his official role as Head of State. It is to be noted that the Bahamas gained independence in 1973.
- Five other Caribbean countries namely Antigua and Barbuda, Belize, Grenada, Jamaica, and Saint Kitts and Nevis are also of similar views.
- New Zealand said that it will continue to support the British Monarchs but will also look forward to becoming a republic in the future.

Nut Graf

The death of the Queen will bring winds of change in the commonwealth realms and might result in establishing themselves as republics.

Important International Institutions and their functioning

6. UN Security Council- 1267 list

- » Mains: Counter-Terrorism Policies

Context:

- China recently blocked a joint India-U.S. attempt to put a Pakistan-based terrorist on the UN Security Council's 1267 list.

Details:

- China blocked a joint India-U.S. attempt to add Lashkar-e-Taiba 'commander' Sajid Mir, on the UN Security Council's 1267 list.
 - * He is a Pakistan-based terrorist who is wanted for the 26/11 Mumbai terror attacks, as well as attacks in the U.S. and Denmark.
 - * Sajid Mir is on India's UAPA most wanted list, and the U.S. FBI's most wanted list.
 - * In the 26/11 attacks trial, Mir was identified as having recruited and trained the attackers, including Ajmal Kasab.
 - * Sajid Mir is presently in Pakistan jail after being convicted of terror financing.
- This is the third time in three months that China has blocked India-US bid to add terrorists in UNSC's 1267 list.
- This recent move by China came as Prime Minister Narendra Modi and Chinese President Xi Jinping attended the Shanghai Cooperation Organisation (SCO) summit in Samarkand, where the Eurasian grouping had agreed to take strong and consolidated action against terrorism in the region.

Background:

- In June 2022, China blocked a joint proposal by India and the US to designate Pakistan-based top LeT militant Abdul Rehman Makki as a global terrorist under the UN sanctions committee.
 - * Makki is US-designated terrorist and the brother-in-law of Lashkar-e-Taiba (LeT) chief and 26/11 mastermind Hafiz Saeed.
 - * India and the US have already listed Makki as a terrorist under their domestic laws.
- China also blocked the listing of Pakistan-based Jaish-e-Mohammed (JeM) leader Abdul Rauf Azhar as a global terrorist at the UN Security Council in August 2022.
- China had previously blocked India's several attempts to put Jaish-e-Mohammed chief Masood Azhar as a global terrorist until he was added in the list 2019.

- Masood Azhar is one of about twenty 1267-sanctioned terrorists who have Pakistani nationality, and more are based there.

UNSC 1267 committee:

- It is also known as the UN Security Council's Al-Qaeda and ISIL Sanctions Committee. It was first set up in 1999, and strengthened after the September, 2001 attacks.
- It comprises all permanent and non-permanent members of the UNSC.
- It discusses various measures to restrict the movement of terrorists, especially those related to travel bans, the freezing of assets and arms embargoes for terrorism.
- Any member can submit a proposal for listing an individual, group, or entity.
- Decisions on listing and delisting are adopted by consensus.
- The designation of a terrorist by the UN Security Council requires the country where the person is based to take three steps – freezing of funds and financial assets, enforcing a travel ban, and cutting off access to weapons and related materials.

Concerns:

- The threat of terrorism is grave and universal, and can only be defeated by collective efforts of all UN member states.
- Justifying terrorism in any way, whether on grounds of religion, ideology, ethnicity or race, will only provide the necessary fodder for terrorists to enhance their activities even more.
- India has in the past criticised countries such as China and Pakistan that are violating global commitments sheltering terrorists and blocking resolutions in UNSC which are empowering such terrorist groups to extend their power and strength.
- Protecting terrorists from sanctioning will only undermine China's credibility and "risk exposing" even itself and other countries more to the growing threat of terrorism
- The continued absence of a universally agreed definition of terrorism is detrimental to the shared goal of eliminating the global scourge.

Nut Graf

Collective efforts by the UN member states with policy of zero tolerance towards terrorism is necessary to check terrorism. China has been holding and blocking the bids by India and its allies to list Pakistan-based terrorists. Blocking such genuine and evidence-based proposals suggests "double standards" rendering the credibility of the Council's sanctions regime at an "all-time low".

Effect of Policies & Politics of Developed & Developing Countries on India's Interests

7. Kyrgyzstan-Tajikistan conflict

- » Mains: Significance of Central Asian countries

Context:

- Violent border conflicts between Kyrgyzstan and Tajikistan have claimed hundreds of lives and injured thousands more. Recently, a ceasefire was reached through Russian mediation.

Background:

- Kyrgyzstan and Tajikistan share a 1,000-km long border, a large part of which is disputed. Historically, the Kyrgyz and Tajik populations enjoyed common rights over natural resources and there have been flare-ups in the past as well over sharing water and land resources.
- Both share multiple water channels with undulating trajectories and flow, which upset equitable access to water in both countries and resulted in small-scale conflicts practically every year during the vital irrigation period.
- Despite having a shared history, the internal dynamics of the two countries have been very different ever since they became independent states. Their instability can be linked to internal ethnic conflict and global challenges.
- In 2021, conflicts killed around 50 people.



Image Source: The Economist

Ongoing Conflict:

- Vorukh is a regular flashpoint over territorial claims and access to water. It is an enclave surrounded by Kyrgyzstan that forms part of the city of Isfara in the Sughd Region.
- The location of the border of the enclave is disputed by the Tajik and Kyrgyz governments.
- Ferghana valley continues to be a site of struggle and frequent violent outbursts, with the location consisting primarily of Tajiks, Kyrgyz, and Uzbeks, who have historically shared common sociological specificities, economic activities, and religious practices.
- Close to 1,50,000 people of the Batken region of Kyrgyzstan have either fled the area or have been relocated by the state.

Reasons behind the ongoing conflict:

- One of the crucial points of disagreement remains over the map which should be used for demarcation purposes.
- By imagining a specific kind of development project in an effort to stabilise the internal dynamics of their respective countries and legitimise their authority, the leaders of both countries have in some way contributed to the conflict's prolongation.
- This "development project" is comparable to how the Soviet Union approached modernization, which led to the extensive eviction of nomadic populations and ultimately served as an "environment driver" for the ongoing conflict.
- The environmental trajectory of the conflict can be further highlighted by incidents which saw groups from either side planting trees in disputed areas and engaging in a physical confrontation using agricultural equipment as weapons.
- The disintegration of the Soviet Union which dissolved the then-existing water and land agreements saw the creation of multiple smaller independent farms, which led to a marked increase in water consumption patterns among the farmers.
- The highly militarised borders also add to tensions.

Way Forward:

- It will be necessary for groups to agree on a shared map in order to find a solution to the conflict.
- Elders have historically been employed to settle disputes, thus the international community will have to make steps to resolve the disagreement by involving elders in the communities.
- The individual nations would also need to work together to further enhance the informal small-scale governance systems in order to stabilise the geopolitical dynamics.

Nut Graf:

The ideological basis of the ongoing conflict in the Central Asian region is reinforced by developmental issues. This region that has been at the centre of significant political and economic changes owing to its geography, will now, in the 21st century, be even more crucial due to the Belt and Road Initiative's implementation, India's Connect Central Asia policy, and the EU's new Central Asia strategy.

Important International institutions, their structure, and mandate.

8. Permanent membership of the UNSC

- » Mains: UNSC reforms.

- » Prelims: United Nations Security Council (UNSC)

Context:

- Talks around UNSC reforms and permanent membership for India in the council.

Background Details:

- Almost 25 years ago, the nuclear weapons club had a total of five member countries. These five countries are the same as the Permanent members of the United Nations Security Council, often referred to as P-5. These countries are China, France, the Russian Federation, the United Kingdom, and the United States.
- However, India, Israel, North Korea, and Pakistan also became nuclear-weapons-equipped countries.
- India has actively called for reforms in UNSC in the past few years and is constantly demanding permanent membership. Indian External Affairs Minister has proposed text-based negotiations instead of verbal references.

Veto Powers of P-5:

- While drafting the Charter of the United Nations in 1944-45, the article related to Security Council and specifically the right to vote underwent maximum debates, discussions, and controversy.
- The British representative suggested that the United Nations will either have the provision of veto or there would be no United Nations. The other participating countries (there was a total of 50) had to accept the first option.
- Even today there is a considerable amount of unhappiness about the veto powers among the other members of the UNSC.
- Incidents of the use of the Right to Veto:
 - * Russia has used the veto a maximum number of times in comparison to the other three western countries. The number is estimated to be 120 or nearly half of all the vetoes cast.
 - * The western countries have used their veto power multiple times to protect Israel in the Israel-Palestine question. They have also used it to prevent sanctions on the apartheid regime of South Africa.

Expanding P-5:

- The declared candidates for permanent membership are: Brazil, Germany, Japan, and India often referred to as G-4.
- At present Africa, Latin America, and the Caribbean are unrepresented in the permanent category. And thus Africa's claim for two permanent seats is widely understood and supported.

Challenges for the proposed candidates:

- Africa has not yet decided on the countries for permanent membership.
- In the case of India, apart from Pakistan's opposition, China's support cannot be expected.
- China will never support Japan's membership also.
- Brazil has regional claimants and opponents.
- Italy firmly opposes Germany's claim with an interesting argument that if both the axis power of the Second World War (Germany and Japan) join as permanent members, then Italy would be left out.
- The P-5 countries are rigidly opposed to any sort of dilution of their privileged position. Moreover, they are also opposing the conferring of Veto power to any new permanent member.
- Even the vast majority of other members are also apprehensive about more veto-wielding members in UNSC.
- The consent of two-thirds of the total membership of the UN along with the concurring votes of P-5 is required to amend the charter and expand the membership. This implies that each of the P-5 members will have the right to veto.
 - * The charter of the UN has been amended only once in the 1960s, to expand the council by additional non-permanent seats.

Future Course of Action:

- India needs to be cautious about the veto power. It should be noted that Russians have bailed India out on many occasions like the Kashmir question. Moreover, Russia also helped India by vetoing unfavourable resolutions during the Bangladesh Liberation War in 1971.
- Some experts have suggested the creation of a new category of semi-permanent members. Countries under this category would be elected for a period of eight to ten years. India can consider this idea. However, there are counterarguments to this suggestion also.
- There is a proposal that a resolution should be defeated by a negative vote of at least two P-5 members, which can also be considered.

Nut graf:

Though countries are pitching for expansion of the permanent membership of the United Nations Security Council, there are many roadblocks in the path ahead. India needs to adopt a cautious approach apart from garnering support from other countries.

India and Neighbourhood relations.**9. Energising India-Nepal ties, the hydropower way**

- » Mains: India-Nepal relations.
- » Prelims: SR-6 project.

Context:

- India and Nepal signed a Memorandum of Understanding to develop West Seti and Seti River (SR6) projects.

Details:

- Investment Board Nepal has signed a Memorandum of Understanding (MoU) with India's National Hydroelectric Power Corporation (NHPC) Limited to develop the 1200 MW West Seti and Seti River (SR6) projects.
- China was developing the project earlier but withdrew it four years back.
- The project was first proposed in the 1980s and was started by a French company. The project could not see the light of day and was transferred to an Australian firm. Due to environmental clearance and investment issues, it finally shifted to China. Later, Nepal domestically started working on the project.
- After changing many hands, Nepal has now collaborated with India to develop the SR 6 project.

India-Nepal Engagement and its Significance:

- Some of the projects of India and Nepal are:
 - * Mahakali Treaty (6,480 MW)
 - * Upper Karnali Project (900 MW)
 - * Three projects of Arun (900MW) in eastern and western Nepal.
- Nepal has reposed its trust in India by signing the MoU. Once completed, it will provide India with the leverage in future hydropower cooperation with Nepal.
- It will also help India in minimizing the geopolitical influence of China on Nepal. It should also be noted that the West Seti Hydroelectric Project was a major Chinese venture under the Belt and Road Initiative (BRI).
- The hydropower projects also have the potential to boost cross-border power exchanges between the two neighbours.
- Nepal has a huge hydropower potential of 83,000 MW but still faces power shortages in peak season. Nepal's electricity exports to India have the potential to increase foreign exchange and address the challenge of power shortage. If the country can fully harness its hydropower potential it can generate revenue of ₹310 billion by 2030 and ₹1,069 billion per year by 2045 by exporting electricity to India.
- Owing to the ever-increasing energy demand in India, the Government of India is compelled to arrange for alternative energy sources. The West Seti Project can also help India in this regard.

Way Ahead:

- As the project has been delayed because of investment-related constraints there should be a cautious study of the investment environment, resettlement and rehabilitation cost, and distribution and transmission network.
- Nepal has raised concerns regarding the inadequacy of electricity rates and supply from India. Though various steps have been taken in this regard like a revised percentage share of energy, further steps should also be taken to address domestic demand in Nepal.
- To boost cross-border energy cooperation, the project can also be extended to other regional countries under the Bangladesh-Bhutan-India-Nepal (BBIN) framework. For instance, the combined hydropower potential of Nepal, Bhutan, and Northeast India can create a robust cross-border energy market.

Nut graf:

The recent agreement on the SR-6 project between India and Nepal has opened new gates in the bilateral relations between the two neighbours. The project is equally significant for both countries in energy security and is a potential win-win situation at the regional level.

India and its neighbourhood - relations

10. India Bangladesh Relations

- » Prelims: About Ganges Water Sharing Treaty and other outcomes of the bilateral meeting
- » Mains: Significance of India- Bangladesh Relations and existing roadblock to further India-Bangladesh relationship

Context:

- During the latest visit of the Bangladesh Prime Minister to India, both countries discussed various bilateral issues.

Key outcomes of the bilateral meeting:

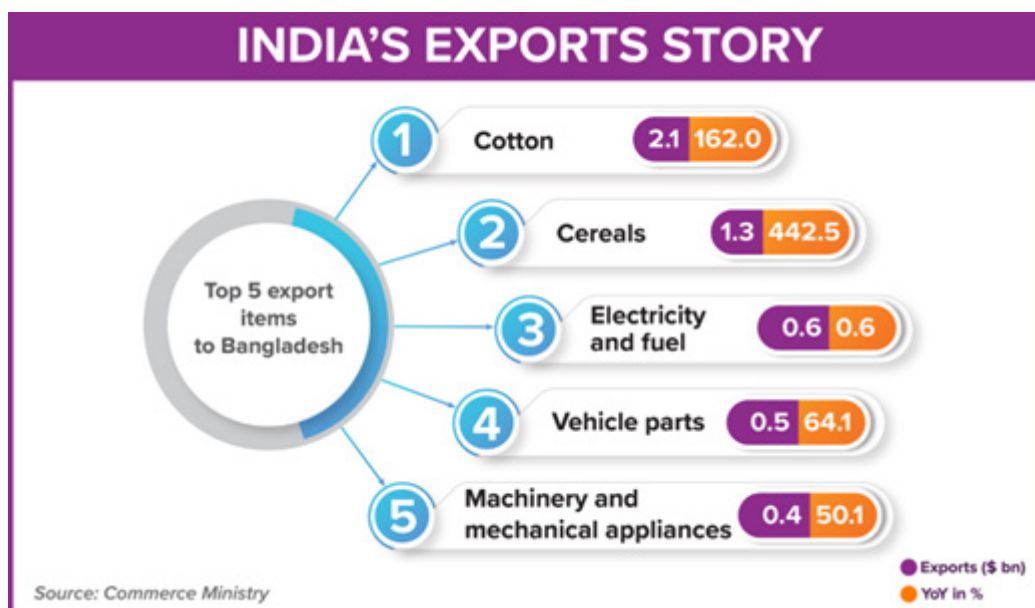
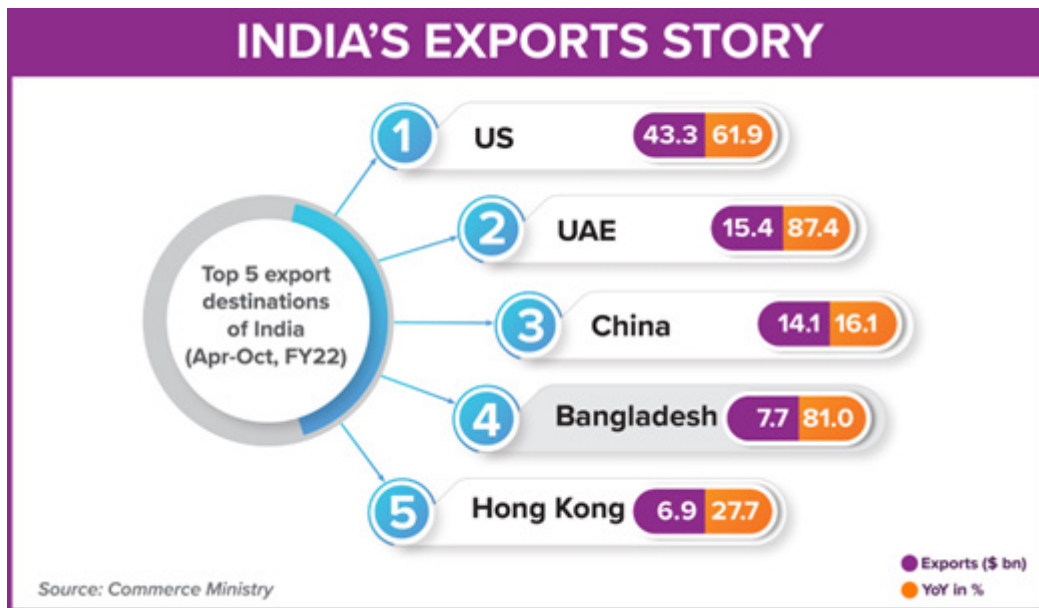
- Discussion on Teesta Water Sharing Treaty: Various existing issues were discussed during the meeting including issues with the Teesta Water Sharing dispute.
 - * The Teesta River is a tributary of the Brahmaputra river that flows through Sikkim and West Bengal before merging with the Brahmaputra in Assam and the Jamuna (Brahmaputra) in Bangladesh.
- Kushiara water sharing agreement: The most significant outcome of the meeting was the signing of an agreement on the sharing of Kushiara river water between the lower Assam and Sylhet region in Bangladesh.
 - * This is said to be the first such agreement in about 28 years after the conclusion of the Ganga Waters Agreement of 1996.

Ganges Water Sharing Treaty

- The Ganges Water Sharing Treaty was signed by the then Indian Prime Minister H.D. Deve Gowda and Bangladesh Prime Minister Sheikh Hasina in 1996.
 - This Treaty was demanded by erstwhile East Pakistan ever since India initiated its work on the Farakka barrage in 1962 to divert the water from the Ganga to the port of Kolkata.
 - According to the Treaty, both countries must mutually cooperate to harness the water resources.
 - The Treaty also allowed the construction of barrages and irrigation projects in Kushtia and the Gorai-Madhumati River in Bangladesh, draining the south-western districts and thus preserving the environment, natural and economic resources.
 - As per the Treaty, a Joint Committee consisting of representatives nominated by the two Governments in equal numbers would be set up and the Committee was entrusted to submit all data collected by it and a yearly report to both Governments.
 - The Treaty would remain in force for a period of 30 years (until 2026) and it needs to be renewable on the basis of mutual consent.
- Real-time information sharing: India further extended the timeline for sharing flood water-related information in real-time which will aid Bangladesh to address various challenges of annual floods.
 - Railways: The Ministries of Railways of both countries signed an agreement that facilitates the training of personnel of the Bangladesh Railway in India.
 - Rupsha rail bridge: Another important development is the inauguration of the Rupsha rail bridge which will play a key role in enhancing the connectivity between the countries.
 - * The bridge will help connect Khulna with Mongla port and Petrapole and Gede in West Bengal.
 - Energy: the two countries announced Unit 1 of the Maitree power plant which is a 1,320-MW supercritical coal-fired thermal power plant in Rampal in the Khulna division of Bangladesh.
 - * This is expected to help Bangladesh counter the existing energy crisis and increase access to affordable electricity.
 - * The project is being built at an estimated cost of over \$2 billion out of which \$1.6 billion will be in the form of Indian Development Assistance.
 - Discussions of Comprehensive Economic Partnership Agreement (CEPA): Acknowledging that India is the largest market in Asia for Bangladesh's exports and Bangladesh is India's largest development partner and largest trade partner in the region, discussions over CEPA are expected to start soon.
 - Rohingya issue: Rohingya issue was another key issue discussed between the two leaders and India will continue to support the safe return of Rohingya migrants in a secure and expedited manner.
 - Bangladesh shares wish list of defence equipment from India: Bangladesh has shared a wish list of military platforms and systems that its armed forces would like to procure from India.
 - * This is in line with the \$500 million defence Line of Credit (LoC) extended by India to Bangladesh.

- * The wish list contains a wide range of equipment which include a floating dock, logistics ship, oil tanker and an ocean-going tug for the Bangladeshi Navy.

Significance of India- Bangladesh Relations



- Bangladesh is the sixth largest trade partner of India with a bilateral trade value of approximately Ten billion dollars in 2020-21. Bangladesh imports crucial industrial raw materials from India.
- The two neighbouring countries expanded their partnerships including areas like cybersecurity, Artificial Intelligence, startups, connectivity, and fintech. This was the result of the seventh round of the India-Bangladesh Joint Consultative Commission that was concluded in June 2022 .
- India is the most important and closest neighbour to Bangladesh as both the countries share over 54 common rivers and 4,000 kilometres of border.
- India highlighted the immediate irrigation-related requirements in the state of Tripura which can be addressed with the waters of the river Feni and urged Bangladesh to expedite the interim water sharing agreement on the river.
- Bangladesh urged India to ensure a predictable supply of essential food items like rice, wheat, sugar, onion, ginger and garlic.
- India and Bangladesh have agreed to fasten the implementation of projects that aim to connect the power grids of both countries through the proposed high capacity 765 kV transmission line from Katihar in Bihar to Bornagar in Assam through Parbatipur in Bangladesh.

- In the wake of the energy crisis in Bangladesh, the progress on the construction of the India-Bangladesh Friendship Pipeline is also of significant importance.
- Bangladesh has sought increased support from India to import power from Nepal and Bhutan to which India said that the guidelines for the same are already in place.
- Further, the main focus of Bangladesh is on attracting Foreign Direct Investment FDI from Indian industries which is largely beneficial for Bangladesh.

Existing challenges to further India-Bangladesh relationship

- The Teesta river sharing has remained a contentious issue between the two nations since 1947.
 - * As in the case of India, Teesta is important for the state of West Bengal where it sustains an impoverished farming district comprising nearly 12.77% of its population and the Teesta's flood plains are also crucial for Bangladesh as it covers around 14% of the total cropped area of the nation and provides direct livelihood to nearly 7.3% population.
- As in the case of India, Teesta is important for the state of West Bengal where it sustains an impoverished farming district comprising nearly 12.77% of its population and the Teesta's flood plains are also crucial for Bangladesh as it covers around 14% of the total cropped area of the nation and provides direct livelihood to nearly 7.3% population.
 - * Bangladesh had approached China for a mega project to enhance the Teesta river water flow.
 - * China is also supporting Bangladesh in solving the Rohingya refugee crisis.
 - * Moreover, Bangladesh is the second largest arms market for China (after Pakistan).
- Bangladesh is also trying to warm up with Pakistan after decades-long frosty relations.
- There was also concern regarding the NRC and the Citizenship Amendment Act.
- The killings in the border region are also a serious issue that often disturbs the relationship between the two countries.
- There is also a perceived nation in Bangladesh that India is aligned to one particular political ideology.

Nut Graf:

Strong bilateral ties based on mutual trust and cooperation are extremely significant for both India and Bangladesh. In this context, all the outstanding issues in the bilateral relations must be resolved expeditiously in the spirit of friendship and cooperation.

Regional, and global groupings and agreements involving and affecting India's interest.

11. SCO summit

- » Prelims: About SCO
- » Mains: Important outcomes of SCO Samarkand summit, India's changing foreign policy and the way forward for India.

Context:

- The Shanghai Cooperation Organisation (SCO) summit was recently held in Samarkand, Uzbekistan.

Shanghai Cooperation Organisation (SCO)

- It was initially started as the "Shanghai Five" in 2001 with Russia, China, Kazakhstan, Kyrgyzstan and Tajikistan as members.
 - * With the induction of Uzbekistan as its member, "Shanghai Five" was renamed as Shanghai Cooperation Organisation (SCO) and came into force in 2003.
 - * India and Pakistan joined SCO in 2017.
- Observer status: Afghanistan, Iran, Belarus and Mongolia
- Aim: Strengthening mutual trust among the member states; promoting their effective cooperation in politics, trade, economy, research and technology, and culture.
- Focus areas: Education, Energy, Transport, Tourism and Environmental conservation.

Significance of SCO summit:

- Uzbekistan recently hosted the Shanghai Cooperation Organisation (SCO) meeting in the city of Samarkand. It was a significant meeting as it tested the member states in dealing with current conflicts and trying to adopt a new framework for international relations.
- The special significance of the meeting also lay in the fact that it was taking place when the world is at a crossroads with regard to the Russia-Ukrainian conflict.
- The summit also provided a platform for the leaders of the member nations to meet their counterparts bilaterally and discuss various issues.
- The SCO summit also provided a platform to advance the agenda of regional and cross-regional connectivity.

Key takeaways from the SCO summit:

- The SCO summit in Samarkand is said to be a dress rehearsal for what may eventually emerge in the world in the future.
- It was observed that as a chair of the next SCO summit, India does not have the potential to change much because of the domination of the China-Russia-Iran-Pakistan axis.
- The ripples of the summit were also felt in the United Nations General Assembly, where for the first time both Russia and the USA favoured the expansion of the UNSC to make it more effective. Russia has outrightly supported India's permanent membership.
- However, the key outcome of the summit was the Samarkand declaration, which included many of India's concerns such as terrorism, and denial of transit rights to member state, etc.
- Varanasi (Kashi) in Uttar Pradesh was declared as the first ever SCO - Tourist and cultural capital for the year 2022-23.
- It was also decided to set up a special working group on the start-up and innovation system, and setting up of an expert working group on traditional medicine, an area where "India has global leadership capabilities" was also approved.
- During the summit, the members also agreed to work towards developing a unified list of terrorist, separatist and extremist organisations whose activities are prohibited on the territories of the SCO member states.

India's changed foreign policy:

- India's presence at the SCO meeting reflects India's desire to be a part of both blocs, without compromising its relationship with either of them.
- India has adopted a 'new version' of non-alignment, where it is steering an independent course for itself, despite having association with rival blocs.
- It is also argued that India's foreign policy is becoming more passive rather than active. For example, India's foreign policy in neighbouring countries like Afghanistan and Sri Lanka looks better on paper than in reality.

Way forward for India:

- India should deeply introspect before implementing fundamental changes in the non-alignment policy.
- Moreover, India should also consider improving India-China relations in the longer term. India's foreign policy officials should look for opportunities to strengthen the relationship.
- Attention should also be given to the growing China-Russia nexus, as it has the potential to hamper the growing warmth between India and Russia.
- It is in India's strategic interest to give more importance to nuclear aspects as it has remained subdued in foreign policy for a very long time. Nuclear stability is all the more important in the present context where China's nuclear forces' sophistication is growing and the relations between China and Pakistan are strengthening.
- It is the need of the hour that India's foreign policy experts should transform their existing policy constructs and look for wider outreach, as there will be new political challenges in the coming decades.
- New priorities should be devised without completely ignoring the past inheritance and learnings of managing the rival blocs.

Nut Graf:

The recent SCO summit that took place in Samarkand at a time when the global order is going through a complex phase has provided an outlook about the future of the emerging world and has helped countries like India understand their position in the changing geopolitics.

Bilateral, Regional and Global Groupings and Agreements Involving India and/or affecting India's interests.

12. VOSTOK 2022

- » Prelims: Vostok-2022 Military Exercise
- » Mains: Significance of Vostok-2022 and India's participation

Context:

- India is participating in the multilateral exercise 'Vostok-2022' which was commenced recently in Russia.

Vostok-2022:

- Russia is holding annual military exercises in the first week of September 2022. It will take place in the eastern region of Russia.
- Thirteen countries are participating. They include Armenia, Algeria, Azerbaijan, Belarus, China, India, Kyrgyzstan, Kazakhstan, Laos, Mongolia, Nicaragua, Syria, and Tajikistan.
- The exercise is aimed at interaction and coordination amongst other participating military contingents and observers.
- Participating contingents include observers from the Collective Security Treaty Organisation, the Shanghai Cooperation Organisation (SCO) and other partner states.
- Further, the warships Pacific Fleet of the Russian Navy and the Chinese People's Liberation Army Navy (PLAN) will be participating in the maritime drill.

Significance of Vostok-2022:

- The exercise has gained significance as it is the first multilateral exercise after the Russian-Ukraine conflict.
- Further, the exercise also includes a maritime component near South Kuril, the disputed island that is claimed by Russia as well as Japan.
- There will be approximately Fifty thousand troops and Five thousand units of military equipment including 60 warships and 140 aircrafts participating in the exercises.

India's Participation:

- The Indian Army contingent is part of the joint maneuvers which will consist of combat discussions, firepower exercises, and joint field training exercises.
- Only an army contingent of the 7/8 Gorkha Rifles is sent by the Indian Army, and it was reported that India will participate in the maritime section of the two-part event of Vostok 2022.
- However, India is not participating in the maritime drill to respect Japan's sentiment.
- The reason cited for such an action is that the first part of the exercises that will take place on land will be held in Siberia and the Far Eastern Federal District of Russia whereas the maritime exercises would be held in the Sea of Japan and the Sea of Okhotsk. These regions are near the disputed islands of South Kuril. This decision is in line with Tokyo's sensitivities.

Significance of India's participation:

The decision of India to join the exercise sends a four-pronged message:

- It showcases the continued relationship of India with Russia, where the government has decided to avoid the Western sanctions regime and not to curb oil imports or other economic engagement with Russia.
- It also signals the balance and non-alignment of India in the current Russia- Ukraine crisis. It also highlights that New Delhi is comfortable in all its engagement with the U.S.-EU coalition as well as its rival groupings led by China and Russia.
 - * For example: Yudh Abhyas and Shanghai Cooperation Organization.
- By taking a decision to stay away from participation in the maritime exercises, India has shown sensitivity to Japan's case of maintaining the status quo over the disputed Kuril islands.
 - * Through this step, India has also reiterated its stand on integrity and territorial sovereignty.
 - * Moreover, this was also significant as India is about to host a Quad meeting, where it will hold bilateral talks with Japan and the U.S. on matters like defence and trade.
- Further, the Indian government's message is clear that it is looking forward to engaging with China on various fronts, despite

the military level talks with China on the issue of the Line of Actual Control (LAC) remains deadlocked.

Nut Graf:

India has made a very calculated move in regards to participation in Vostok 2022. On one hand, it has reiterated its stand of Non-Alignment with either Russia or Ukraine, whereas on the other it has shown sensitivity by supporting Japan's concern and opted out of the maritime exercises that will be held on the disputed island.

Optional Subject Coaching

for Political Science and International Relations, and Sociology

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ART AND CULTURE

Indian Art and Culture - Salient aspects of Art Forms, Literature and Architecture from ancient to modern times.

1. Hoysala architecture

» Prelims: Architecture styles from South India

Context:

- Recently, experts from the International Commission on Monuments and Sites, visited the Hoysaleswara temple of Halebidu.
- * The Hoysala structure is an aspirant for the tag of World Heritage Site, which is given by UNESCO. Experts will be soon submitting a report to UNESCO.

Hoysaleswara Temple:

- Hoysaleswara temple is a 12th-century temple dedicated to Lord Shiva.
- It is the largest monument in Halebidu, a town in the state of Karnataka, and the former capital of the Hoysala Empire.
- The temple was built on the banks of a large man-made lake and sponsored by King Vishnuvardhana of the Hoysala Empire.
- Its construction started around 1121 CE and was completed in 1160 CE.
- The Hoysaleswara temple is a Shaivism tradition monument, yet reverentially includes many themes from Vaishnavism and Shaktism tradition of Hinduism, as well as images from Jainism.
- The temple was carved from soapstone.
- Numerous smaller friezes narrate Hindu texts such as the Ramayana, the Mahabharata and the Bhagavata Purana.
- These temples have a plan called the stellate plan.
- The star-like ground plan is a distinct feature of Hoysala architecture.



Image Source: Glorious Karnataka

Indian Art and Culture - Salient aspects of Art Forms, Literature and Architecture from ancient to modern times.

2. Sittanavasal Murals

» Prelims: Sittanavasal caves

Context

- Recently, the Archaeological Survey of India has undertaken several conservation measures of Sittanavasal rock cave temple.

Details:

- Sittanavasal Cave is a 2nd-century Tamil Srama a complex of caves in Sittanavasal village in Pudukottai district of Tamil Nadu, India.
- The monument is a rock-cut monastery or temple. Created by Tamil Srama a, it is called the Arivar Koil.
- The Sittanavasal Cave is listed as one of the Adarsh Smarak Monument by the Archaeological Survey of India.
- Jain temples in Sittanavasal have sculptures and inscriptions in Brahmi and 'vattaezhuthu', from the third century AD.
- Early Tamil inscriptions from the ninth century AD of the Jain monk Ilan-Gautaman, are also present here.
- The design elements in the Arivar Kovil hint at its possible earlier existence as a Saivite shrine.

Murals of Sittanavasal:

- Sittanavasal rock cave temples contain remnants of notable frescoes from the 7th century.
- The artwork on the ceiling of the sanctum and the ardha mandapam of Arivar Kovil is an early example of post-Ajanta cave paintings of the fourth to sixth centuries, done using the fresco-secco technique.
- The ceiling paintings show 'bhavyas' (exalted souls who work to achieve moksha or spiritual liberation) enjoying themselves in a pool, full of blooming lotuses.
- The most important mural is the exquisite composition, Samava-saran, a lotus tank with a disciple collecting flowers and animals and fish frolicking.
- These beautiful animated figures, with their broad hips, slender waists, and elaborate ornaments, recall the beauty of the Apsara of mythology; their pose and expression suggest rhythm and dynamic movement.
- The pillars of the verandah (added by the Maharaja of Pudukottai at the instance of then Diwan Alexander Tottenham in the 1900s), were brought from Kudumiyamalai.
- The colours are a mixture of plant dyes and mineral elements such as lime, lamp black, and clay pigments such as ochre for yellow and terre verte for the greyish-green tints.
- This is the only place in Tamil Nadu with Pandya paintings.
- At least three-fourths of the art is already damaged due to unrestricted public access and general exposure to the elements and vandalism.

Ajanta Murals v/s Sittanavasal Murals:

- The Ajanta murals are painted in the tempora style, using the dry technique. A base is prepared on the rough walls and then covered with a coating of lime plaster. Paint is applied on a dry background.
- Sittanavasal murals have been painted with vegetable and mineral dyes that are applied to a thin wet surface of lime plaster. Once the paint dries new paint cannot be applied on it, as in the Ajanta technique.
- At Ajanta, paintings depict mostly Buddhist themes, whereas the Sittanavasal depict Jaina themes.
- Like in Ajanta there are murals of courtesans also.

Indian Art and Culture - Salient aspects of Art Forms, Literature and Architecture from ancient to modern times.**3. Buddhist Caves in Bandhavgarh Tiger Reserve**

- » Prelims: Buddhist Cave Architecture

Context

- The Archaeological Survey of India (ASI) earlier this year discovered Buddhist caves, stupas and Hindu temples at the Bandhavgarh Tiger Reserve in Madhya Pradesh.

Details:

- The ASI discovered 26 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.
- The Varaha sculpture is among the many monolithic sculptures of the 10 incarnations of Lord Vishnu discovered by the ASI.



Image Source: Indian Express

- The exploration took place 84 years after the last such effort in 1938.
- The caves and some of their remains had Chaitya [rounded] doors and stone beds typical of Mahayana Buddhism sites.
- The ASI also 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.
- Inscriptions also mention kings such as Bhimsena, Pothasiri and Bhattadeva.
- The remains of 26 temples date to the Kalachuri period between the 9th and 11th centuries. In addition to this, two Saiva maths have also been documented.
 - * The Kalachuri dynasty, which spread over parts of Gujarat, Maharashtra and Madhya Pradesh, is also associated with the earliest Ellora and Elephanta cave monuments.
- Some remains of the Gupta period, such as door jambs and carvings in caves, have also been found.

Indian Heritage and Culture; Salient aspects of Art Forms

4. UNESCO lists 50 iconic Indian textiles

- » Prelims: Iconic heritage textile crafts of India.

Context

- UNESCO published a list of 50 exclusive and iconic heritage textile crafts of India.

Details:

- UNESCO's "Handmade for the 21st Century: Safeguarding Traditional Indian Textile" mentions the history and legends behind the textiles, description of the complicated and secret processes in their making, causes for reducing popularity and also recommends various strategies for their preservation.
- As per UNESCO, the key challenge to protecting the Intangible Cultural Heritage of the South Asian region is the lack of proper inventory and documentation.
- The publication of UNESCO aims to bridge this gap and lists 50 textiles as exclusive and iconic heritage textile crafts of India by undertaking extensive research.

Some important textiles documented include:

- Toda embroidery and Sungadi of Tamil Nadu
- Himroo weaves of Hyderabad in Telangana
- Bandha tie and dye weaving of Sambalpur in Odisha
- Khes from Panipat in Haryana

- Chamba rumals of Himachal Pradesh
- Thigma or wool tie and dye of Ladakh
- Awadh Jamdani from Varanasi in Uttar Pradesh
- Ilkal and Lambadi or Banjara embroidery from Karnataka
- Sikalnayakanpet Kalamkari from Thanjavur in Tamil Nadu
- Kunbi weaves from Goa
- Mashru weaves and Patola from Gujarat
- Himroo from Maharashtra
- Garad-Koirial of West Bengal

IAS टेबलेट कार्यक्रम

सर्वोत्तम व्याख्यान की
कहीं भी और कभी भी उपलब्धता



500 से अधिक घंटों का प्रारंभिक और मुख्य परीक्षा के पाठ्यक्रम को आवृत करता हुआ व्याख्यान



हमारे मार्गदर्शकों द्वारा प्रत्येक छल हेतु मार्गदर्शन और व्यक्तिगत प्रतिपुष्टि



मानक पुस्तकों सहित समग्र और अद्यतन अध्ययन सामग्री



पुनरीक्षण नोट्स के साथ चर्चित मुद्दों पर सप्ताह में दो बार लाइव वेबिनार व्याख्यान



साप्ताहिक वेबिनार, चर्चित मुद्दे, समसामयिकी पत्र /पत्रिका और प्रैक्टिस सेट का छल पोर्टल उपलब्ध

SCIENCE AND TECHNOLOGY

Indigenization of technology and developing new technology.

1. 5G Architecture

- » Mains: Roadmap for 5G deployment

Context

- Government recently auctioned off 5G telecommunications spectrum drawing bids exceeding a record ₹1.5 lakh crore.

Evolution of Telecommunication technology:

- The first-generation (1G) technology involved analogue signalling
- Second Generation technology was primarily based on voice and SMS, with speeds in the Kbps range.
- 3G technology witnessed changes from voice to data transmission and added multimedia messaging with speeds in the range of 2Mbps.
- 4G let users stream and download videos at speeds three times greater than 3G ranging from around 20Mbps to up to 50Mbps.

Long Term Evolution (LTE):

- The LTE standard-based generation had two distinguished aspects from its predecessors.
- 4G-capable cell phones enabled people to make calls over the Internet instead of via telephone networks.
- 4G+ (LTE advanced) provided download speeds of 200 to 300 Mbps.
- 4G's multiplexing capability, technically known as orthogonal frequency division multiplex (OFDM), provided a level of efficiency in achieving high data transfer rates while allowing multiple users to share a common channel.
- This enabled people use social media, download music in an app, and live-stream videos on mobile devices
- Since 4G's inception in the early 2010s, the number of smartphone users in the world has grown to 6.6 billion in 2022.
- For billions of smartphones and tablets along with wearables and Internet of Things (IoT) devices to work in sync with several other applications, a far superior networking and connectivity is needed and this LTE-based generation is not sufficient to handle workloads and real-time data processing of this magnitude.

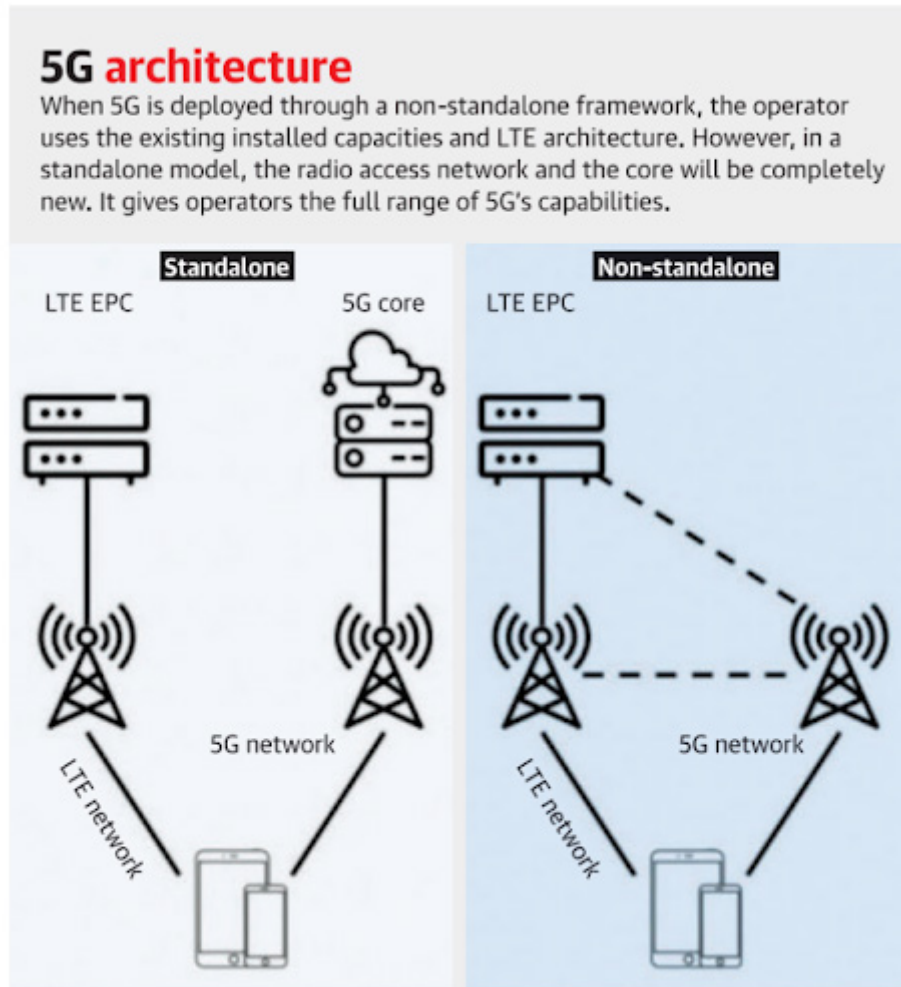
Deploying 5G:

- 5G offers low latency, greater download speeds coupled with the ability to connect multiple devices and exchange data in real-time.
- A major aspect with 5G would be the possible shift towards the Internet of Things. This could allow for the evolution of smart systems like sensor-based reading of electric metres at home and generation of electricity bills and farmers being able to monitor their crops through sensors or drones sitting at their homes
- It has a new standard called 5G New Radio (NR), which uses the best capabilities of LTE. 5G NR will enable increased energy savings for connected devices and enhance connectivity.
- 5G mobile communication will use high-frequency millimetre wave (mmWave) bands that operate on wavelengths between 30 GHz and 300 GHz compared to 0.6 GHz of 4G's LTE.
- 5G has been around since the late 2010s, but it was not deployed universally mainly due to fewer 5G-compatible devices and a delayed auctioning of the spectrum.

Non-standalone Vs Standalone Architecture:

- With the majority of 4G compatible devices in the market, telecom operators and businesses looking to deploy 5G services can either build a non-standalone (NSA) or a standalone architecture.
- In an NSA architecture, the telecom operator can use their existing installed capacities and LTE architecture to deploy 5G services while implementing a new radio access network (RAN).
- This can help operators reduce capital expenditure and lower operating costs for short-to-medium term.
- Germany used the NSA model to roll out 5G services in 2019.
- The Standalone model is a pure play 5G architecture that provides operators a full range of the fifth-generation's capability and lets them slice the network.

- In this architecture, RAN and the core are completely new, and there will be a clear separation of different network functions in line with 3GPP recommendations.
- This will simplify their network operations and improve user experience. Operators may also look to leverage network slicing opportunities by creating dedicated segments for specific users and use cases.



Nut Graf

Deployment of 5G in a standalone architecture presents an opportunity for operators to build a revenue stream. 5G could potentially make consumers connect and exchange information in a new way. The Government of India should work on overcoming infrastructure roadblocks for the timely and effective rollout of 5G.

Indigenization of Technology & Developing New Technology

2. Inflatable Aerodynamic Decelerator

» Prelims: Missions by ISRO

Context:

- Recently, The Indian Space Research Organisation (ISRO) successfully tested the Inflatable Aerodynamic Decelerator (IAD).

Details:

- IAD is a technology that could aid cost-effective recovery of spent rocket stages and safely land payloads on other planets.
- It serves to decelerate an object plunging down through the atmosphere by systematically reducing the velocity of the payload through aerodynamic drag.
- Once the IAD fell into the sea, it deflated by firing a deflation pyro valve. The pneumatic system used for inflating the IAD was developed by the Liquid Propulsion Systems Centre (LPSC), Valiyamala.

- It was designed, developed and successfully test-flown by ISRO's Vikram Sarabhai Space Centre on a Rohini-300 (RH300 Mk II) sounding rocket from the Thumba Equatorial Rocket Launching Station (TERLS).
- It has multiple applications in ISRO's future missions including its missions to Venus and Mars.
- Rohini sounding rockets are routinely used for flight demonstration of new technologies being developed by ISRO as well as by scientists from India and abroad.

Science and Technology-Indigenization of Technology & Developing New Technology

3. Hybrid propulsion system

- » Prelims: Fuels used in rocket propulsion

Context:

- Indian Space Research Organisation (ISRO) successfully demonstrated a hybrid propulsion system recently.

Details:

- ISRO successfully demonstrated a hybrid propulsion system that used solid fuel and liquid oxidiser.
- In the ground-based test, the flight equivalent 30 kN hybrid motor used HTPB-based (hydroxyl-terminated polybutadiene) aluminised solid fuel and liquid oxygen (LOX) as oxidiser.
- The hybrid motor was tested by the Vikram Sarabhai Space Centre (VSSC), with support from the Liquid Propulsion Systems Centre (LPSC) at Mahendragiri, Tamil Nadu.
- This hybrid motor potentially paves the way for a new propulsion system for the forthcoming launch vehicles.
- The motor used Hydroxyl-terminated polybutadiene (HTPB) as fuel and liquid oxygen (LOX) as the oxidiser. Unlike solid-solid or liquid-liquid combinations, a hybrid motor uses solid fuel and liquid oxidiser.
- While both HTPB and LOX are green, the cryogenic LOX is safer to handle. And unlike conventional solid motors, the hybrid technology permits restarting and throttling capabilities on the motor.
- This is considered more efficient, "greener" and safer to handle.

Science and Technology-Awareness in the fields of Space

4. Rohini RH-200

- » Prelims: Sounding rockets

Context:

- Indian Space Research Organisation (ISRO) is preparing to launch 200th successful launch of the Rohini RH-200 sounding rocket in a row.

Sounding Rockets:

- Sounding rockets are usually one or two stage solid propellant rockets primarily intended for probing the upper atmospheric regions using rocket-borne instrumentation.
- They also serve as platforms for testing prototypes of new components or subsystems intended for use in launch vehicles and satellites.
- Several scientific missions with national and international participation have been conducted using the Rohini sounding rockets.
- The launch of the first sounding rocket US made 'Nike Apache' from Thumba near Thiruvananthapuram, Kerala on November 21, 1963, marked the beginning of the Indian Space Programme.
- Later days saw the launching of two-stage rockets imported from Russia (M-100) and France (Centaure).
- In 1967, ISRO started launching a series of our own sounding rockets named Rohini from TERLS.
- RH-75, with a diameter of 75mm was the first truly Indian sounding rocket, which was followed by RH-100 and RH-125 rockets.
- Currently, operational sounding rockets include three versions namely RH-200, RH-300-Mk-II and RH-560-Mk-III. These cover a payload range of 8 to 100 kg and an apogee range of 80 to 475 km.

Rohini RH-200:

- The first and second stages of RH-200 are powered by solid motors. It uses polyvinyl chloride (PVC)-based propellant. The '200'

in the name denotes the diameter of the rocket in mm.

- The first RH-200 to use a new propellant based on hydroxyl-terminated Polybutadiene (HTPB) was successfully flown from the TERLS in September 2020.
- The rocket celebrated its 100th consecutive successful mission on July 15, 2015.
- These small rockets are launched both from the Thumba Equatorial Rocket Launching Station (TERLS) and the Satish Dhawan Space Centre, Sriharikota.

Awareness in the field of Space

5. The NASA spacecraft-asteroid collision

- » Prelims: About NASA's DART
- » Mains: Significance of DART mission and the prospects of the kinetic impact technique

Context:

- NASA's Double Asteroid Redirection Test (DART) spacecraft collided with the space rock named Dimorphos on 27th September 2022.

DART (Double Asteroid Redirection Test) spacecraft:

- NASA's DART mission is aimed at testing a method of planetary defense against near-Earth objects.
- DART is a joint project between NASA and the Johns Hopkins Applied Physics Laboratory (APL).
- DART Spacecraft is about 600 kilograms.
- The DART mission was launched in November 2021 from Vandenberg Space Force base in California through a SpaceX Falcon 9 rocket.
- The spacecraft uses the "kinetic impact technique" to deflect the trajectory of space objects which is also called the "kick" method.
- The DART spacecraft also carried a high-resolution DRACO (Didymos Reconnaissance and Asteroid Camera for Optical navigation) camera to observe the collision and its impact.
- Further, a small Light Italian CubeSat for Imaging of Asteroids (LICIACube) which was built by the Italian Space Agency was also ferried along with DART.

* LICIACube is equipped with a camera and it relays pictures of the impact.

The mission:

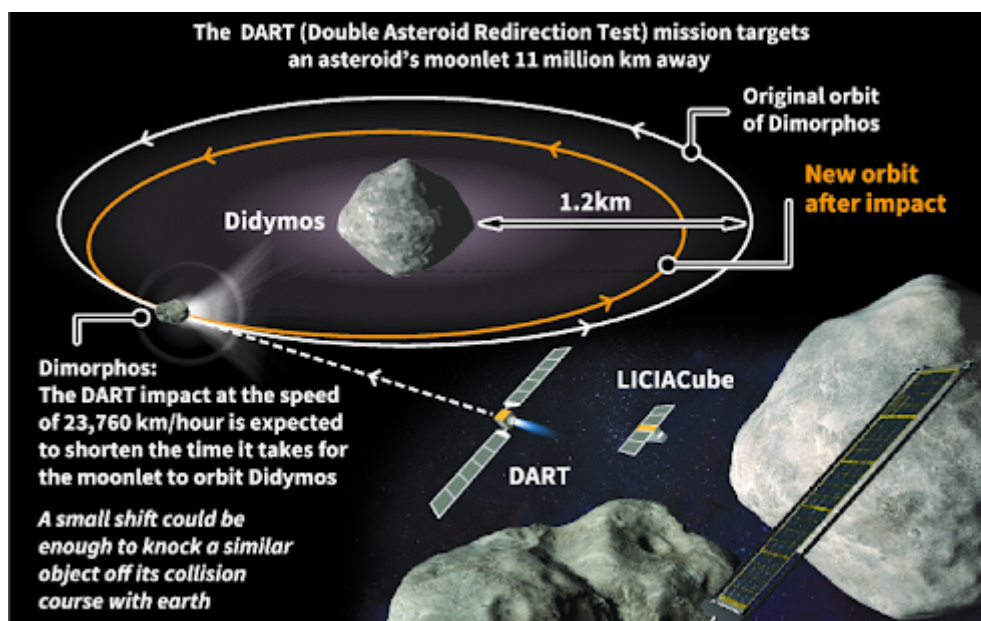


Image Source: The Hindu

- The objective of the mission was to crash the DART spacecraft into the space rock named Dimorphos which is about five billion kilograms in mass.
- The mission is regarded as a “suicide mission” as the spacecraft will be completely destroyed.
- Dimorphos is a moon of a slightly larger asteroid called Didymos.
 - * Didymos is about 780 m at its widest, whereas Dimorphos is about 160 metres.
 - * Scientists chose the Dimorphos as the target because of its relatively shorter orbit around Didymos. The deviation in this orbit would be more noticeable and easier to measure.

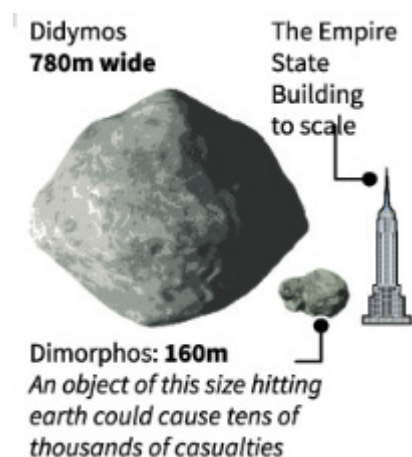


Image Source: The Hindu

- The spacecraft crashed at a speed of about 23,760 kilometres per hour with momentum sufficient enough to slash the angular momentum of Dimorphos, making it speed up and move closer to Didymos.
- This kinetic impact technique used has successfully deflected the trajectory of the pair of space rocks.
- This mission has demonstrated the ability to redirect a potentially dangerous asteroid from its impact on the earth.
- Further, NASA also tracks and monitors close to 26,115 asteroids whose orbits are dangerously close to the earth.

Future prospects of the kinetic impact technique:

- China is expected to employ the technique to deflect an earth-crossing asteroid named 2020 PN1 sometime in 2026.
- One of the key challenges of mining rare earth elements has been the high environmental costs associated with it.
 - * Rare earth elements such as yttrium, niobium, rhodium, palladium, osmium, iridium and scandium are crucial for developing green energy technologies.
 - * However, the “kick” method can be used to deflect asteroids and move them into a convenient position for space mining.
 - * NASA’s Asteroid Redirect Mission (ARM), which has now been shelved, aimed to bring a 20-tonne space rock near earth to study and mine.
- Also, collecting samples from space objects play an important role in space studies. There can be a technique devised to collect the space debris after the collision of spacecraft.
 - * The robotic Soviet Luna 16 in the 1970s, U.S. Apollo missions and China’s first lunar sample-return mission, Chang’e 5 have brought back lunar soil.
 - * Japan Aerospace Exploration Agency (JAXA)’s Hayabusa 1, 25143 Itokawa, the Hayabusa 2 and 162173 Ryugu, and NASA’s OSIRIS-Rex to near-earth asteroid Bennu are missions to extract and return samples from asteroids.
 - * Similarly, NASA’s Stardust spacecraft returned with the dust collected from comet Wild-2 captured by an aerogel-based sample collector in 2004.

Nut Graf:

The successful demonstration of the kinetic impact technique by the DART mission has not just shown the ability of mankind to save humanity from a potentially catastrophic collision of an asteroid but has also fueled space mining technologies which can unlock a new potential of the space economy.

Awareness in the fields of Space

6. Dark Sky Reserve

- » Prelims: Dark Sky Reserves
- » Mains: Significance of setting up a Dark Sky Reserve in India

Context:

The Department of Science & Technology (DST) of India, is looking to set up the country's first Dark Sky Reserve in the cold desert regions of Ladakh.

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.
- As per the International Dark Sky Association (IDSA), Dark Sky Reserves comprises a core area with minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core areas.
- The key objectives of the Dark Sky Reserves are to:
 - * Promote astronomy tourism in a sustainable and environment-friendly manner
 - * Facilitate astronomical observations
 - * Protect nocturnal species which rely on darkness to hunt and forage
 - * Use of various scientific methods to preserve the night sky from ever-increasing light pollution.
- The International Dark Sky Association (IDSA) has specified five designated categories of Dark Sky Reserves namely International Dark Sky parks, communities, reserves, sanctuaries and Urban Night Sky Places.

Dark Sky Reserve in India:

- The country's first-ever "Dark Sky Reserve" will be located at Hanle in Ladakh as a part of Changthang Wildlife Sanctuary.
- Hanle Dark Sky Reserve (HDSR) will be situated at a height of over 4,500 metres above sea level.
- For this purpose a tripartite Memorandum of Understanding (MoU) was signed between the Indian Institute of Astrophysics (IIA), Ladakh Autonomous Hill Development Council (LAHDC) Leh, and the UT administration.
- The Department of Science and Technology and experts from IIA in Bengaluru will be providing scientific and technological support in developing the facility.
- The 22-km radius around the Hanle observatory, where the core Dark Sky Reserve will be established, will have restrictions imposed on outdoor lighting.
 - * Vehicles will be barred from using high-beam headlights and households in the region would be urged to use curtains of darker shades, install light reflecting shields and switch off all unwanted illumination.
- The establishment of the Dark Sky Reserve will help promote Astro- tourism which will help boost local tourism and the overall economy of the region.

DARK SKY RESERVES AROUND THE WORLD

Country	Name	Year, area (sq kms)
 France	Alpes Azur Mercantour	2019, 2,250
	Cévennes National Park	2018, 3,600
	Pic du Midi	2013, 3,112
	Regional Natural Park of Millevaches in Limousin	2021, 3,350
 United Kingdom	Cranborne Chase	2019, 981
	Exmoor National Park	2011, 181
	Moore's Reserve	2016, 1,627
	North York Moors National Park	2020, 1,440
	Yorkshire Dales National Park	2020, 2,180
 Wales	Brecon Beacons National Park	2013, 1,347
	Snowdonia National Park	2015, 2,132
 Australia	River Murray	2019, 3,200
 New Zealand	Aoraki Mackenzie	2012, 4,367
 Germany	Rhön	2014, 1,720
	Westhavelland	2014, 1,529
 US / Mexico	Greater Big Bend International Dark Sky Reserve	2022, 38,850
 US	Central Idaho	2017, 3,668
 Canada	Mont-Mégantic	2007, 5,300
 Ireland	Kerry	2014, 700
 Namibia	NabimRand Nature Reserve	2010, 2,022

Reasons for choosing Ladakh as the location for the reserve:

- Ladakh is a unique cold desert situated at over 3,000 metres above sea level with high mountainous terrains.
- The region is known for its long and harsh winters with temperatures dropping to -40°C, making the major portion of the Union Territory highly inhabitable.
- As the metros, cities and peripheral areas experience a significant amount of light pollution, the areas that offer a view of clear skies on cloudless nights are diminishing.
 - * However, the climate conditions along with limited vegetation, high elevation and large areas of Ladakh with sparse populations make it the perfect area for long-term astronomical observatories and dark sky places.
- The main aim of the Dark Sky Reserve is to promote astronomy tourism in a sustainable and environment-friendly manner and various scientific methods can be employed to preserve the night sky from ever-increasing light pollution.

Image Source: Indian Express

Nut Graf:

The establishment of the country's first Dark Sky Reserve in the cold desert regions of Ladakh has gained a lot of significance as the establishment of this facility will help in sky gazing, identification of constellations, locating the pole star and also promote Astro- tourism.

Science and Technology-developments and their applications and effects in everydaylife

7. CRISPR Technology

- » Prelims: About CRISPR technology
- » Mains: The process involved in CRISPR technology and, its associated advantages and concerns

Cont

After 10 years since its development, the CRISPR technology has made progress in providing key solutions to various problems of health.

Background

- CRISPR, which is a genome-editing technology, has started to deliver its potential to improve the quality of human life.
- In the last three years especially, various clinical trials have been undertaken for therapeutic interventions using CRISPR for treating diseases such as thalassaemia or sickle cell anaemia and they have reported positive outcomes.
- The Indian government has also approved a 5-year project to develop CRISPR technology to treat sickle cell anaemia which is highly prevalent among the tribal populations of the country.

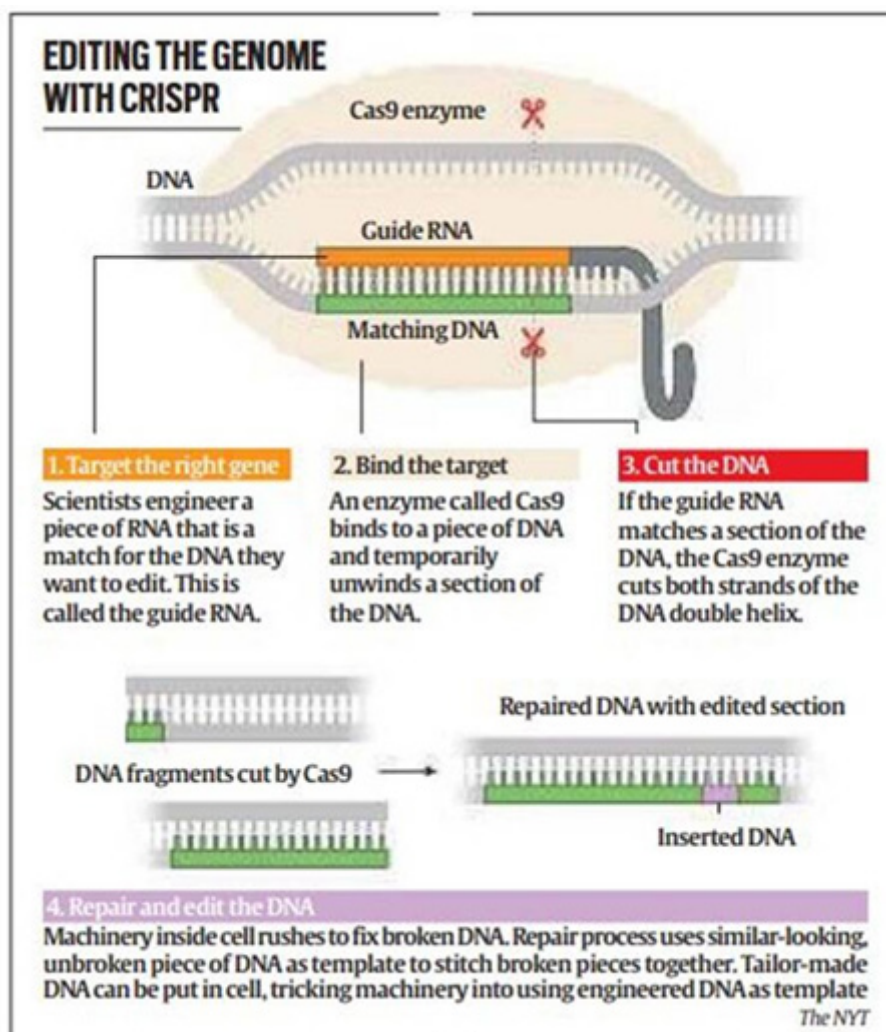
CRISPR Technology

Image Source: Indian Express

- CRISPR technology allows scientists to essentially cut-and-paste DNA, raising hope of genetic fixes for disease.
- CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats, which refers to the clustered and repetitive sequences of DNA found in bacteria, whose natural mechanism to fight some viral diseases is replicated in this gene-editing tool.
- 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.
- CRISPR technology is simple, and accurate as compared to other gene-editing techniques and it does not involve the introduction of any new gene from the outside.

The process involved in CRISPR Technology

- A particular sequence of genes which is the cause for the deformity or defect is identified.
- Once identified, an RNA molecule is programmed to locate this sequence on the DNA strand and a special protein named Cas9 (CRISPR associated protein 9) which is regarded as a “genetic scissors” is used to cut the DNA strand at the specific points and remove the bad sequence.
- A DNA strand, when broken, has a natural tendency to regrow and heal itself thereby giving a chance for the bad sequence to regrow. Hence, the scientists intervene in this auto-repair process and supply a correct sequence of genetic code which binds to the broken DNA strand, thereby rectifying the defect.

Advantages of CRISPR Technology

- The entire process of CRISPR technology is programmable and is highly efficient.
- The technology can help find permanent solutions to various diseases which are genetic and hereditary in nature such as sickle cell anaemia, eye diseases, colour blindness, several types of cancer, diabetes, HIV, liver and heart diseases.
- The technology can also be employed to treat deformities caused due to abnormalities in gene sequences such as stunted or slow growth, speech disorders, or inability to stand or walk.
- CRISPR technology could help improve agricultural crops by increasing the yield, making the crops resistant to disease, improving taste, and other traits.
 - * Countries like Japan have been studying the usage of the CRISPR-based technology in commercial cultivation which helps improve tomato variety
 - * Even in India, various researches have been undertaken on CRISPR-based enhancements for various crops including rice and banana.

Ethical concerns

- Critics have expressed ethical concerns regarding the potential of the CRISPR technology to induce dramatic changes in individuals.
 - * In 2018, a researcher in China claimed that genes of a human embryo were altered to prevent the infection of HIV and this move caused widespread concern in the scientific as well as human rights community about creating a “designer baby”.
- Further, scientists around the world have also expressed concerns about the misuse of the technology and its far reaching consequences.
- Additionally, the technology is not 100% accurate and there are chances of errors which have the potential to be inherited by successive generations as well.

DEFENCE AND INTERNAL SECURITY

Defence Equipment

1. **INS Vikrant**

- » Prelims: INS Vikrant
- » Mains: Key features of INS Vikrant and the significance of its induction

Context:

- INS Vikrant has been commissioned into the Indian Navy.

Background:



- INS Vikrant is India's first indigenously designed and built aircraft carrier.
- The ship is named after India's first aircraft carrier Vikrant, which played a crucial role in the 1971 war.
- INS Vikrant was designed by the Warship Design Bureau (WDB) of the Indian Navy and was constructed by the Cochin Shipyard Limited (CSL) which is a public sector shipyard working under the aegis of the Ministry of Ports, Shipping and Waterway.
- The 26,000 tonnes of steel used for the construction of the ship is of a unique warship grade, produced in India for the first time by the Steel Authority of India Limited (SAIL), in collaboration with the Defence Research and Development Laboratory (DRDL) and the Navy.

Key features of INS Vikrant:

- INS Vikrant has a displacement of over 42,800 tonnes.
- The ship is 262m long and 62m wide and is powered by four General Electric LM 2500 engines.
- INS Vikrant can reach a maximum speed of 28 Knots and endurance of 7500 Nautical Miles.
 - * This means that the ship can reach Brazil from Kochi without the need for refuelling.
- INS Vikrant can accommodate over 1600 crew members and would be able to operate 30 aircraft which include aircraft such as MiG-29K fighter jets, Kamov-31 early warning helicopters, and MH-60R multi-role helicopters, Advanced Light Helicopters (ALH) and Light Combat Aircraft (LCA-Navy).
- Short Take Off But Arrested Recovery (STOVAR) method is used to launch fighter aircraft.
 - * Further, INS Vikrant is equipped with a ski-jump for launching aircraft, and a set of three "arrester wires" for their recovery onboard.
- INS Vikrant is the first ship in India that is equipped with a 64-slice CT scan machine onboard along with ultrasound and digital X-ray machines and two purpose-built operation theatres.
- The reverse osmosis plants in the ship can produce more than 4 lakh litres of water every day.

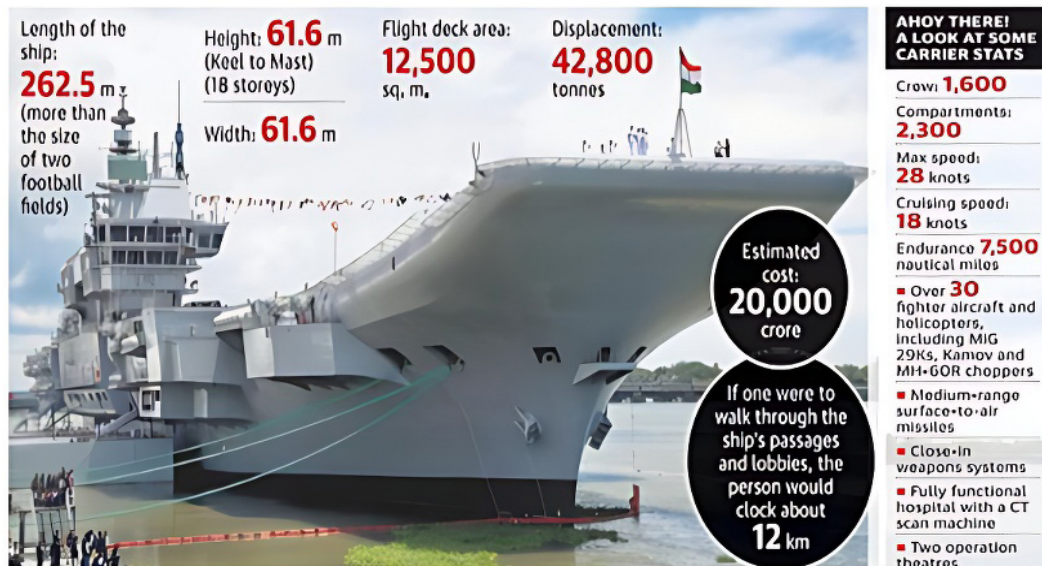


Image Source: The Hindu

Significance of the commission of INS Vikrant:

- With the induction of INS Vikrant into the service, India joined the league of countries such as the U.S., the U.K., Russia, France and China, that have the capability to design and build aircraft carriers with a displacement of over 40,000 tonnes.
- The Prime Minister of India said that "If the goals are distant, the journeys are long, the ocean and the challenges are endless – then India's answer is Vikrant."
- The induction of the ship will provide a significant boost to India's naval capabilities in the Indo-Pacific and the Indian Ocean region.
- The ship will play a crucial role in achieving India's vision of "a free, open and inclusive Indo-Pacific" and "SAGAR or the Security and Growth for All in the Region"
- The indigenous design and development of the ship is a remarkable step towards achieving atmanirbharta or self-reliance in defence.
 - * The construction of INS Vikrant required a large number of indigenous equipment which has helped to develop ancillary industries and generate employment opportunities for over 15000 people in the country.
- The warship-grade steel used in the construction was earlier imported by India and now India has gained the capability to produce it indigenously and will be used in the construction of all warships in the country henceforth.
- The Indian naval ambition is to have three aircraft carriers in service. With INS Vikramaditya and INS Vikrant already in service, the experience gained from building INS Vikrant can help more capable and advanced indigenous carriers in a shorter time frame.

Nut Graf:

In recent years, there is renewed interest worldwide especially among advanced countries to develop, design and deploy new generation aircraft carriers. In this context, the induction of INS Vikrant into India's Navy is a significant step for ensuring self-reliance, and maritime security as well as helping India in global trade, which is maritime-based to a large extent.

Cyber Security

2. India's cyber infrastructure

- » Mains: Issues with cyber security

Context:

- National Crime Records Bureau's (NCRB) 'Crime In India 2021' report on cybercrime.

Cyber-crime:

- Any offences committed against individuals or groups of individuals to harm their reputation or cause physical or mental trauma through electronic means can be defined as Cybercrime.
- In India, cybercrime is increasing with the increased use of information and communication technology (ICT).
- Internationally, both governmental and non-state actors engage in cybercrimes, including espionage, financial theft, and other cross-border crimes.
- Cybercrimes crossing international borders and involving the actions of at least one nation-state are sometimes referred to as cyber warfare.

Highlights of the report:

- As per the report, there has been a steady spike in cases of cybercrime in the last five years, from 12,317 cases in 2016 to 50,035 cases in 2020.
- Over 70% of the cases were reported from Telangana, Uttar Pradesh, Karnataka, Maharashtra and Assam.
- The average rate of cybercrime incidents is 3.9 per one lakh population. It is highest in Telangana at 27/lakh followed by Assam at 13.8/lakh population.
- Police probes with respect to cybercrime were completed only in about 33% of the registered cases.
- Major motives behind these crimes–Fraud in 60.8 percent of cases, sexual exploitation in 8.6 percent of cases and extortion in 5.4 percent of cases.
- A total of 15 cases of ‘cyber terrorism’ were lodged across the country in 2021.

Addressing the shortfall in cyber infrastructure:

- Despite the steady spike in cybercrime cases, the capacity of the enforcement agencies to investigate cybercrime remains limited.
- There is no separate procedural code for the investigation of cyber-related offences. It is necessary to have a distinct code for electronic evidence as they are different in nature compared to traditional crimes.
 - * Comprehensive guidelines issued by the Bureau of Indian Standards for the identification, collection, acquisition and preservation of digital evidence must be followed properly to ensure proper handling of digital evidence.
- There is a shortage of technical staff for the investigation of cybercrime.
 - * A regular police officer can only act as a first responder who could identify digital evidence and secure the scene of the crime or preserve digital evidence. It is only a technically qualified staff who could acquire and analyse digital evidence.
 - * The Information Technology (IT) Act, 2000 insists that offences registered under the Act should be investigated by a police officer, not below the rank of an inspector.
- The cyber forensic laboratories of States must be upgraded with new technologies to augment the capacity to solve cybercrimes.
 - * The Centre shall focus on upgrading the State laboratories by providing modernisation funds.
 - * States should get their cyber labs notified as ‘Examiner of Electronic Evidence’ by the union government to enable them to provide expert opinions on electronic records.
- ‘Data localisation’ provisions for all kinds of data shall be included in the proposed Personal Data Protection law to empower enforcement agencies for timely access to the data of suspected Indian citizens.
 - * Most cyber crimes are transnational in nature with extra-territorial jurisdiction. The collection of evidence from foreign territories is difficult and time-consuming.
- India must develop its own agency to identify and remove online Child Sexual Abuse Material (CSAM). Indian police still get reports on online CSAM from a non-profit agency in the U.S.

Conclusion:

- The primary responsibility to create the necessary cyber infrastructure lies with States as ‘police’ and ‘public order’ come under State List. Legislation such as the IT Act puts further responsibility on the central government to evolve uniform statutory procedures for the enforcement agencies.

Nut Graf:

Despite the efforts and advances in cyber security much needs to be done to plug the infrastructural deficit. The Union government and State governments must work in coordination and frame statutory guidelines to facilitate the investigation of cybercrime and also need to commit sufficient funds to develop the required cyber infrastructure.

Defence equipment

3. Light Combat Aircraft- Mk2

» Prelims: LCA- Mk2

Context

- Recently, the Cabinet Committee on Security sanctioned the development of the Light Combat Aircraft (LCA) Mk2.

Details:

- The Cabinet Committee on Security sanctioned the development of the LCA Mk2 at a total development cost of ₹9000 crore including the ₹2500 crore that has already been spent.
- The roll out of LCA-Mk2 is planned by 2024 and the target is to complete flight testing by 2027.
- Indian Air Force (IAF) has given commitment to procure six squadrons of LCA-Mk2.

LCA-Mk2:

- It is a 4.5 generation aircraft which will be used by the Indian Air Force.
- It is a replacement for the Mirage 2000 class of aircraft.
- It has got a bigger engine and can carry 6.5 tonnes of payload.
- The technology is already developed in Light Combat Aircraft (LCA).
- The Mk2 features enhanced range and endurance, including an onboard oxygen generation system for the first time.
- It also has the ability to carry heavy stand-off weapons of the class of Scalp, Crystal Maze and Spice-2000.
- The Mk2 is 1,350 mm longer, featuring canards and can carry a payload of 6,500 kg compared with the 3,500 kg the LCA can carry.
- It is designed by the Aeronautical Development Agency of the Defence Research and Development Organisation (DRDO)
- It is being manufactured by India's state-owned Hindustan Aeronautics Limited (HAL)
- The LCA-Mk1A is scheduled to be delivered to the IAF by early 2024, 83 of which have been contracted with HAL.

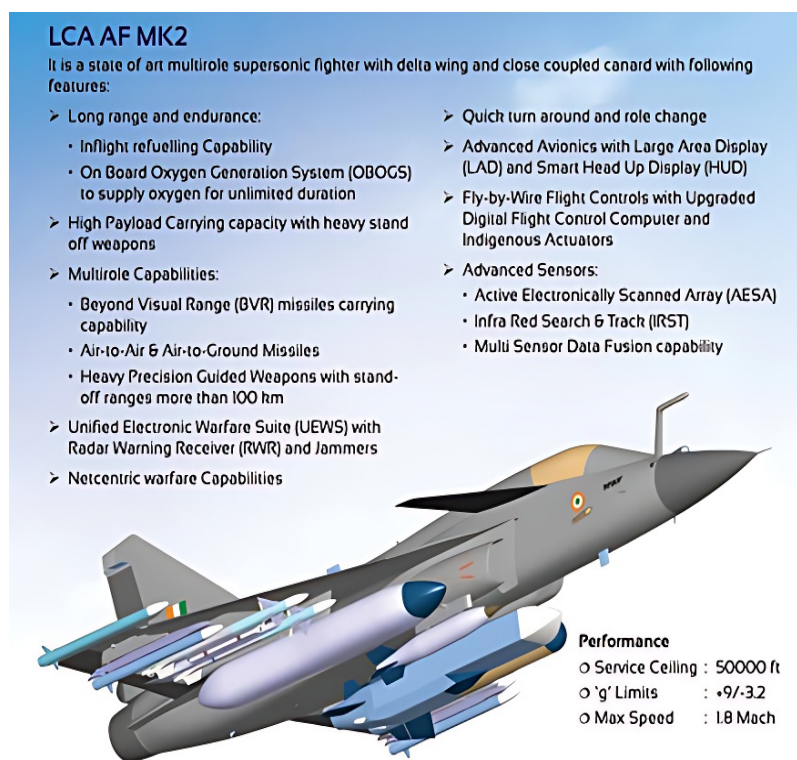


Image Source: Airpowerasia

Various Security Forces & Agencies & Their Mandate

4. Greyhounds

- » Mains: Significance of Greyhounds in Left wing extremist states

Context

- Andhra Pradesh does not have a training centre for the Greyhounds, 8 years after its bifurcation.

About Greyhounds:

- Greyhounds is a police special forces unit of the states of Andhra Pradesh and Telangana formed in 1989 by Indian Police service officer K.S. Vyas to combat the growing Maoist threat in the region.
- They specialise in counter-insurgency operations against Naxalite and Maoist terrorists and trained specifically for deep forest pursuit and combat.
- Greyhounds with the help of paid informants at the village level have managed to arrest or kill several top Maoist terrorists.
- Greyhounds from Andhra Police and Telangana Police continue to operate jointly even after the bifurcation of Andhra Pradesh.
- They generally operate as small units of 15-30 commandos each that conduct combing operations in jungles.
- All Greyhounds commandos are under the age of 35 years in order to ensure agility, strength and stamina. When a member of the force turns 35, they are automatically transferred to civil police.

Role model for all Left Wing Extremism-affected States:

- Greyhounds inspired the creation of other similar forces in Left Wing Extremism-affected States.
 - * Odisha developed the Special Operations Group;
 - * Maharashtra has C-60; and
 - * West Bengal created the Counter Insurgency Force.
 - * Experts say that the CoBRA battalion of the Central Reserve Police Force, which is engaged in anti-Maoist operations in Chhattisgarh, is also fashioned on the lines of the Greyhounds.

Status of Greyhounds after Bifurcation:

- Andhra Pradesh Reorganisation Act has provisions on sharing the men and material of Greyhounds by Andhra Pradesh and Telangana.
- The Act also specified that Andhra Pradesh would have to set up its own base and training centre as both the training centres of the Greyhounds were located in Hyderabad, Telangana.
- In 2014, the Union Ministry of Home Affairs sanctioned ₹209 crore for setting up the centre in Andhra Pradesh.
- The Andhra Pradesh Cabinet has approved a full fledged training centre-cum-residential facility at Jagannadhapuram village in Visakhapatnam which remains untouched due to rehabilitation and resettlement issues.
- At present, 18 companies of Greyhounds contingent are in operational base at Thimmapuram in Visakhapatnam which was a makeshift arrangement after bifurcation. About 10 remaining ones of Andhra Pradesh are still based in Hyderabad.

Way Forward:

- The Union Government is exerting pressure on the State for a quick solution. It is time for the State to resolve the issue as soon as possible.
- Some part of 385 acres of approved land can also be used as the training centre for Octopus (Organisation for Counter Terrorist Operations), another elite counter terrorism unit of the Andhra Pradesh police.

Nut Graf:

Greyhounds force was envisioned to think alike in terms of combat and assault and be well trained in guerilla and jungle warfare. Over the years, with its many successes, this special police force became the root cause for the downfall of Left Wing Extremism in Andhra Pradesh.

Organized Crime

5. Operation Megh Chakra

- » Mains: Impact of Child Pornography on society

Context

- Recently, the Central Bureau of Investigation(CBI) cracks down against child sex abuse material, raids 56 locations across country as part of Operation 'Megha Chakra'.

Background:

- CBI had launched an exercise code-named "Operation Carbon" in November 2021, searching 76 locations against circulation and sharing of child sexual abuse material.
- CBI booked the accused persons under the relevant provisions of the IPC and the Information Technology Act, for allegedly being part of the syndicates that uploaded, circulated, sold and viewed such material.
- Later, the CBI requested several countries for information sharing and collection in accordance with the Mutual Legal Assistance Treaties (MLATs) on people responsible for the offense.
- The investigation had revealed more than 50 groups with more than 5,000 offenders including the nationals of about 100 countries, also including Turkey, Poland, Sudan, South Korea, Uganda, Kuwait, Italy, Germany, Spain, Australia and Romania.

Operation Megha Chakra:

- Based on the inputs received from the Interpol's Singapore special unit based on the information received from the authorities in New Zealand, the CBI conducted searches several locations across the country as part of a pan-India drive against the circulation and sharing of child sexual abuse material.
- The operation is targeted at cloud storage facilities used by the peddlers to circulate audio-visuals of illicit sexual activities with minors, thus earning the code 'Megha Chakra'.
- A preliminary scrutiny of the seized electronic devices allegedly revealed a huge quantity of child pornography material stored in them.

Child Sexual Abuse Material (CSAM):

- 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 CyberTipline.
- 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.
- Three of the top four countries were in South Asia, raising concerns about the online safety of children in the region.
- Bangladesh comes in fourth with a share of 3.3%.

Laws for Pornography in India:

- After the Supreme Court's order, the Department of Telecommunication banned several websites containing child pornographic material.
- As per the Information Technology (IT) Act, 2002, it is punishable to show children any pornographic content.

Offence	POCSO Act, 2012	2019 Bill
Use of child for pornographic purposes	· Maximum: 5 years	· Minimum: 5 years
Use of child for pornographic purposes resulting in penetrative sexual assault	· Minimum: 10 years · Maximum: life imprisonment	· Minimum: 10 years (in case of child below 16 years: 20 years) · Maximum: life imprisonment
Use of child for pornographic purposes resulting in aggravated penetrative sexual assault	· Life imprisonment	· Minimum: 20 years · Maximum: life imprisonment, or death.
Use of child for pornographic purposes resulting in sexual assault	· Minimum: Six years · Maximum: Eight years	· Minimum: Three years · Maximum: Five years
Use of child for pornographic purposes resulting in aggravated sexual assault	· Minimum: Eight years · Maximum: 10 years	· Minimum: Five years · Maximum: Seven years

Image Source: India Today

Impact of Pandemic on CSAMs:

- The Covid pandemic and mass lockdown led to an unprecedented rise in screen time. Pedophiles who work online exploited the situation looking for bored children which led to an increase in CSAMs.
- Limited access to community support services, child care and educational personnel who often play a key role in detecting and reporting cases of child sexual exploitation also resulted in the rise in cases.

Ways to keep children safer online:

- Protecting one's identity by avoiding the sharing of personally-identifying information through social networks and online forums which can lead to unwanted attention and harassment about a sexual assault.
- Report inappropriate images received through text message or online to help law enforcement stop a perpetrator in action.
 - * The National Centre for Missing and Exploited Children (NCMEC) urges people to report CSAMs found online across the world annually, on their online platform CyberTipline.
- Using a secure Internet connection.
- Checking privacy settings, such as location services and contact information, when using social media.
- Laying the groundwork for open communication can encourage children to share about any unusual online conversations or activities down the road.

Nut graf:

Child sexual abuse and exploitation has a significant impact on the health and well-being of children and adolescents worldwide. CBI along with agencies across the world are sharing information to combat child pornography by adopting new technologies and methods.

Institutional Framework to Tackle Challenge of Internal Security**6. Unlawful Activities Prevention Act, 1967 (UAPA)**

- » Prelims: About Unlawful Activities (Prevention) Act (UAPA)
- » Mains: Multidimensional challenges posed by unlawful organisations and the significance of UAPA

Context

- The Union government declared the Popular Front of India (PFI) and its front organisations, as "unlawful associations" under the Unlawful Activities (Prevention) Act (UAPA).

Details:

- Recently, the National Investigation Agency (NIA) searched and raided several locations across the country and arrested at least 45 people linked to the Popular Front of India (PFI) organisation.
 - * PFI was formed as a successor to National Development Front (NDF) in 2006.
 - * The PFI, which emerged in the aftermath of the ban on the Students Islamic Movement of India (SIMI), has projected itself as an organisation that fights for the rights of minorities, Dalits, and marginalised communities.
 - * In 2009, a political outfit named the Social Democratic Party of India (SDPI) evolved out of the PFI, with the aim of taking up the political issues of Muslims, Dalits, and other marginalised communities.
- The NIA had claimed that the PFI has been involved in "recruiting youth to proscribed organisations like ISIS" and PFI is accused of providing training to its members to carry out acts of terror.
- The ban however, has left out the SDPI (Social Democratic Party of India), the political arm of the PFI.

Reasons for the ban:

- The Ministry of Home Affairs banned PFI by invoking UAPA, claiming that the PFI and its affiliates pose a "major threat to internal security of the country" and are connected to terrorist organisations like ISIS.
- The State governments of Uttar Pradesh, Karnataka and Gujarat had previously recommended a ban on the PFI.
- More than 1,400 criminal cases have been registered against leaders and activists of PFI and its affiliates across the country over the years.

- The enforcement agencies allege that the PFI's funding source was also dubious. During the investigation, the Income Tax Department found that deposits with respect to 36 of the 85 bank accounts of the PFI were not supported by the respective financial profile of account holders.
- According to the Union Ministry of Home Affairs, the SIMI (Students Islamic Movement of India) and Jamaat-ul-Mujahideen Bangladesh (JMB), both of which are outlawed organisations, have leaders among the PFI's founding members.
- PFI had a number of occasions where it had connections with international terrorist organisations like the Islamic State of Iraq and Syria (ISIS).

Unlawful Activities (Prevention) Act (UAPA):

- The UAPA is an enhancement of the TADA (Terrorist and Disruptive Activities (Prevention) Act), which was allowed to lapse in 1995 and the Prevention of Terrorism Act (POTA) was repealed in 2004.
- The Act mentions special procedures to handle terrorist activities, among other unlawful activities in the country as it aims to effectively prevent unlawful activities in India.
- According to the Act, the union government may designate an organisation as a terrorist organisation and individuals as terrorists if they:
 - * Commit or participate in any acts of terrorism
 - * Prepare for terrorism
 - * Promote terrorism
 - * Involved in terrorism.
- The Act assigns absolute power to the central government, by way of which if the Centre deems an activity as unlawful then it may, by way of an Official Gazette, declare it so.
- Further, under UAPA, both Indian and foreign nationals can be charged.
- As per the provisions of the Act, investigation of cases can be conducted by officers of the rank of Deputy Superintendent or Assistant Commissioner of Police or above.
 - * The Bill additionally empowers the officers of the NIA, of the rank of Inspector or above, to investigate cases.

Significance of the 'ban' under UAPA:

- The Ministry can now set up a tribunal under the UAPA to try the case where PFI could defend its case against the ban.
- The declaration of the PFI and its affiliates as "unlawful associations" grants law enforcement agencies the right to search the premises of such organisations, arrest members, examine their books of account, confiscate assets and freeze accounts.
- Section 7 of the UAPA gives the government the power to "prohibit use of funds" by an "unlawful association".
- Section 8 of the UAPA gives powers to the Centre to "notify any place which in its opinion is used for the purpose of such unlawful association". The "place" here includes a house or a building, or a part thereof, or even a tent or a vessel.

Challenges:

- PFI does not maintain a record of its members, it is challenging for authorities to identify PFI members and take action against them.
- With the aid of technology, these outlawed groups and their members are able to operate secretly and covertly while carrying out their propaganda and radicalization efforts.

Nut Graf:

PFI has been alleged in various anti-national activities such as raising funds from abroad to support terrorist attacks, setting up training camps to provide armed training and radicalising people to join outlawed groups like ISIS. Banning PFI under UAPA gives the authorities power to check and curb any illegal activities and also serve as a deterrent to others who might be inclined to follow such a path.

ENVIRONMENT AND ECOLOGY

Environmental Pollution and Degradation

1. Ban on Single Use Plastics

» Mains: Need and impact of banning single-use plastics

Context:

- Recently, the Union Ministry of Environment, Forest and Climate Change notified the Plastic Waste Management Amendment Rules, 2021.

Introduction:

- India has banned the manufacture, import, stocking, distribution, sale, and use of single-use plastic (SUP) items with low utility and high littering potential since July 1, 2022.



- As a party to the UN Environment Assembly India has signed a resolution to draw up an agreement in the future that will make it legally binding for signatories to address the full life cycle of plastics, from production to disposal.

Why are single-use plastics harmful?

- Plastic pollution is the harmful outcome of dumping single use plastics as waste which are non-biodegradable.
- Single Use Plastics cause major harm to the environment and are toxic to the ecosystems and the organisms living in those ecosystems.
- There is a greater likelihood of single-use plastic products ending up in the sea than reusable ones.

Global Commitment:

- All countries face a major environmental challenge due to pollution caused by single-use plastic items.
- The UN Environment Assembly adopted a resolution piloted by India on single-use plastics pollution in 2019, recognising the urgent need for the global community to address this issue.
- Bangladesh was the first country to ban thin plastic bags in 2002; New Zealand banned plastic bags in July 2019; China has issued a ban on plastic bags in 2020 with a phased implementation.

Plastic waste management rules in India:

- Under the Plastic Waste Management (Amendment) Rules 2021, the manufacture, import, stocking, distribution, sale and use of carry-bags made of virgin or recycled plastic less than 75 microns has been banned with effect from September 2021.

- A number of items are banned, including earbuds with plastic sticks, balloon sticks, plastic flags, candy sticks, ice cream sticks, polystyrene (thermocool) for decorations, plates, cups, glasses, cutlery such as forks, spoons, knives, straws, trays, wrapping or packaging films around sweet boxes, invitation cards, cigarette packets, plastic or PVC banners less than 100 micron, stirrers, etc.
- The Union government took the initiative to ban their usage which is conveyed through the "Clean and Green" Campaign which focuses on enhancing cleanliness and taking environment-friendly measures.
- The advisory on banning SUPs is in alignment with the objectives of the Swachh Bharat Mission Urban 2.0 which is implemented by the Ministry of Housing and Urban Affairs.
- From December 31, 2022, plastic carry bags whose thickness is less than 120 microns will be banned.
- India has also taken steps to promote innovation and create an ecosystem for accelerated adoption and availability of alternatives across the country.
- To prevent the movement of banned single-use plastic items between States and Union Territories, border checkpoints have been established.
- The Central Pollution Control Board (CPCB) has launched a grievance redressal application to empower citizens.
- Plastic Waste Management Amendment Rules, 2022 has provisions for Extended Producer Responsibility (EPR). The guidelines provide a framework to strengthen the circular economy of plastic waste.

Challenges:

- Participation of all stakeholders for effective engagement and actions is crucial for the success of the ban.
- Previously almost 25 Indian States had banned plastic at the state level but they had a very limited impact due to widespread use of these items.
- Now the challenge is to see how the local level authorities will enforce the ban in accordance with the guidelines.
- It is difficult to take accountability of non-branded items as the majority of them belong to the informal sector.

Way Forward:

- Social media and other media should be effectively used to create awareness among consumers.
- Research and development should be promoted to find sustainable alternatives with public and private participation.
- Greener alternatives to plastic such as compostable and biodegradable plastic shall be considered a sustainable option.

Nut Graf

India is taking steps to overcome unmanaged plastic pollution in the spirit of 'Azadi ka Amrit Mahotsav'. The solution to this problem is not the responsibility of the government alone, but of industries, brands, manufacturers and consumers. However, in the absence of workable alternatives, the feasibility of plastic ban seems difficult right now.

Environment Degradation

2. India's growing water crisis

- » Prelims: World Water Development Report and World Water Day
- » Mains: Water crisis in India and its associated issues

Context:

- UNESCO has recently released the United Nations World Water Development Report of 2022.
 - * WWDR is the UN's flagship report on water and sanitation issues which focuses on a different theme each year.
 - * WWDR is published by UNESCO, on behalf of UN-Water.

Details:

- The report highlights the concerns about the sharp decline in the freshwater available in streams, lakes, aquifers and other human-made reservoirs.
- The report also notes that there is impending water stress and various regions across the world are witnessing water scarcity.
- Much before, in 2007, the theme of World Water Day (observed on the 22nd of March every year) was "Coping with water scarcity".
- Further, the latest Water Report of the Food and Agriculture Organization (FAO) also pointed out the consequences of a silent crisis on a global scale, with lakhs of people facing the brunt of water scarcity.

- According to the Water Scarcity Clock which is an interactive web tool, more than 200 crore people across the world are witnessing high water stress and the numbers are expected to rise.

Increasing water stress in India and its associated concerns:

- As per the Global Drought Risk and Water Stress map (2019), the major parts of India, especially in the west, central and a few areas of peninsular India are experiencing high water stress and water scarcity.
- A NITI Aayog report named the “Composite Water Management Index” (2018) has also pointed out the worst water crisis in the country, with over 60 crore people experiencing severe water shortages.
- Usually, in places that are experiencing high water scarcity, water is transferred to these areas from the upper catchments or water is drawn from stored surface water bodies or aquifers.
 - * However, this kind of policy usually gives rise to sectoral or regional competition.
- The issue of rural-urban transfer of water is a similar issue which is of global concern.
 - * There has been an increase in the transboundary transfer of water between rural and urban areas in several countries since the early 20th century.
 - * According to a study in 2019, urban water infrastructure imports around 500 billion litres of water per day across a total distance of over 27,000 km worldwide.
 - * A minimum of 12% of the large cities in the world rely on inter-basin transfers.
- A United Nations report on “Transboundary Waters Systems – Status and Trend” published in 2016 connected the issue of water transfer with many Sustainable Development Goals proposed to be achieved from 2015 to 2030.
 - * The report highlighted the risks associated with water transfer in three categories namely biophysical, socio-economic and governance.
 - * The South Asian region which includes India has been placed under the category of high biophysical and the highest socio-economic risks.

The usage of water in urban areas:

- As per the data from the Census 2011, the urban population in India constituted 34% of the overall population distributed in about 7,935 towns of all classes and it is said that the urban population proportion in India will breach the 40% mark by 2030 and the 50% mark by 2050 (World Urbanization Prospects, 2018).
 - * The urban population constituted 50% of the overall worldwide population by the end of the 20th century.
- Despite India's rate of urbanisation being comparatively slow, it is still urbanising at a swift rate and the share of the urban population is significant.
 - * This has resulted in an increase in the use of water in the urban areas and with increased migration towards these areas the per capita use of water will also increase significantly.
 - * Improved standards of living are also another factor for an increase in water usage.
- According to the urban water management trajectory:
 - * In the initial stages when a city is small – the key concern is with the water supply which is resolved in most cases by sourcing the water locally and the use of groundwater.
 - * As the city grows – the water management infrastructure begins to develop and the reliance now shifts to surface water.
 - * As the city grows further – water sources also shift further towards the hinterlands and most of the time the allocation of urban water is increased at the expense of water for irrigation.
- The supply of water to urban areas has now become a subject of inter-basin and inter-state transfers of water.
- The case of Ahmedabad
 - * Over 80% of the water supply in Ahmedabad was met from groundwater sources until the mid-1980s.
 - * As the depth to groundwater level has reached 67 metres in confined aquifers, Ahmedabad now relies on the water from the Narmada canal.
 - * This has marked a shift from local groundwater to canal water supply from an inter-State and inter-basin transfer of surface water.

The existing risk of rural-urban dispute:

- The reliance on groundwater continues especially in the peri-urban areas in large cities that have switched to surface water sources.
 - * While surface water transfer from rural to urban areas is visible and can be measured, the recharge areas of groundwater aquifers are spread over large areas which often extend beyond the city boundaries.

- Irrespective of the source being surface or groundwater, urban areas are largely dependent on rural areas for raw water supply, which in the future can trigger a rural-urban conflict.
- As per various studies on cities like Nagpur and Chennai, there is an imminent challenge of rural-urban water disputes that the country is going to face in the near future as the shortage of water continues to increase on account of climate change.
- Currently, the rural-urban water transfer is not an ideal situation as the water is transferred at the cost of rural areas and the agricultural sector. Further, in urban areas, most of this water is in the form of grey water which cannot be reused thereby contributing to water pollution.

Recommendations:

- Through a system perspective and catchment scale-based approach, water sharing between rural and urban areas can be reallocated with a key focus on development, infrastructure investment, fostering a rural-urban partnership and adopting an integrated approach to water management.
- The existing institutional mechanisms can be strengthened to provide an opportunity to develop flexibility in water resource allocation by making various adjustments in the urbanising areas.
- As the country is celebrating its 75th anniversary of Independence, it is time to analyse, monitor and conserve its water resources and at the same time, and also not compromise on the development process.

Nut graf:

The water management and water transfer techniques currently in place pose an imminent threat of igniting several rural-urban water disputes as the water scarcity increases which is further aggravated by climate change. This warrants increased efforts towards creating a win-win situation for the sharing of water between the urban and rural areas.

Biodiversity in India

3. Spotted Deer (Chital)

» Prelims: Chital or Spotted Deer

Context:

- The Madhya Pradesh Forest Department has denied various reports which claim that chital or spotted deer are being transported from Rajasthan to the Kuno National Park as prey to newly acquired Cheetahs.

Chital or Spotted Deer:

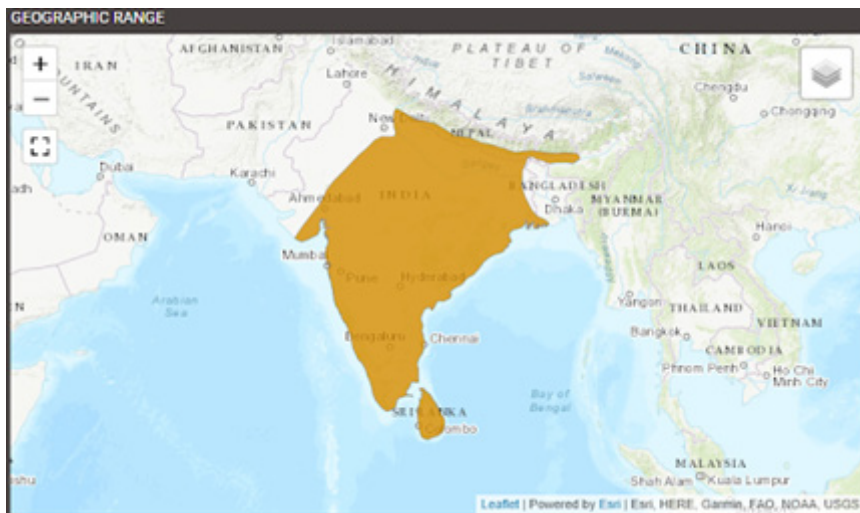


Image Source: www.iucnredlist.org

- Chital is an Asiatic deer species, belonging to the family of Cervidae.
- This Deer species is native to the Indian subcontinent. Besides India, it is also found in countries like Nepal, Bhutan, Bangladesh, and Sri Lanka.
- The key feature of this species is its spotted skin.
- IUCN status: Least Concern
- It is also listed under the Schedule III of the Wildlife Protection Act, 1972.

Conservation

4. Reintroduction of Cheetahs in India

- » Prelims: About Cheetahs
- » Mains: Significance of reintroduction of Cheetahs in India and its associate concerns

Context:

- Eight Cheetahs from Namibia were released into the quarantine enclosures at Kuno National Park in Madhya Pradesh.

Details:

- The Cheetahs brought into the country as a part of Re-introduction of Cheetahs programme will undergo quarantine for over a month in the dedicated enclosures of Kuno National Park under the watch of the Prime Minister.
- Post the quarantine Cheetahs will be moved to a “predator-proof” holding facility that will also host live prey before releasing them into the wild. This would help the animals to get used to Indian conditions.
 - * All Cheetahs will be radio-collared and their movements would be tracked through a GPS.
- India has also negotiated an agreement with South Africa to bring in Cheetahs but the agreement is yet to be signed.

Asiatic Cheetah:

- The cheetah is the fastest land animal, which has the fastest running speed record of 93 and 98 km/h (58 and 61 mph).
- It is considered to be a big cat and belongs to the Felidae family.
- Asiatic Cheetahs are currently found only in Iran with less than 100 individuals left.
- Asiatic Cheetahs have a very small population base and are listed as Critically Endangered species in the (IUCN) Red List of Threatened Species.
- Asiatic cheetahs used to be found from Punjab in the north to the Tirunelveli area in southern Tamil Nadu in the south, and from Gujarat and Rajasthan in the west to Bengal in the east.
- Cheetahs were declared extinct in India in 1952.
- Cheetah is listed in Schedule 2 of the Wild Life (Protection) Act 1972, even though it was extinct long back before this law was even framed.



Reintroduction of Cheetahs in India:

- Although the project is a decade long, the project gained momentum after the Supreme Court in January 2020 allowed the Union Government of India to go ahead with the plan.
- The Union Ministry of Environment had in the 19th meeting of the National Tiger Conservation Authority released the “Action Plan for Introduction of Cheetah in India”.

- The National Tiger Conservation Authority (NTCA) has now decided to bring 50 African Cheetah from Namibia within 5 years.
- Kuno Palpur National Park (KNP) in Madhya Pradesh is the first site to host these cheetahs.








Concerns with Cheetahs Relocation Project:

- When the area they've picked already has a resident population of leopards and transient tigers, African cheetahs aren't necessary to play the position of top predator.
- The Supreme Court's 2013 decision to suspend efforts to bring African cheetahs into India, specifically at Kuno National Park in Madhya Pradesh.
 - * The grasslands in Kuno would be much smaller as compared to what were available in the source country. This could constrict the space available for the cheetahs to move around.
- The stated goal of executing its ecological role at any considerable scale to have a genuine on-ground impact cannot be met with such a small number of cats at very few sites.
- There are clearly far more cost-effective, efficient, faster, and inclusive ways to maintain India's grasslands and other open habitats.

Experts argue that the importation of African Cheetahs, at a cost of \$40 million, is unnecessary, given the risk of infections that haven't been adequately addressed.

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HEALTH ISSUES

Health related issues

1. **Pradhan Mantri TB Mukh Bharat Abhiyaan**

- » Mains: Policies on Tuberculosis eradication

Context:

- Recently, the President of India Droupadi Murmu virtually launched the Pradhan Mantri TB Mukh Bharat Abhiyaan.

Introduction:

- 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.

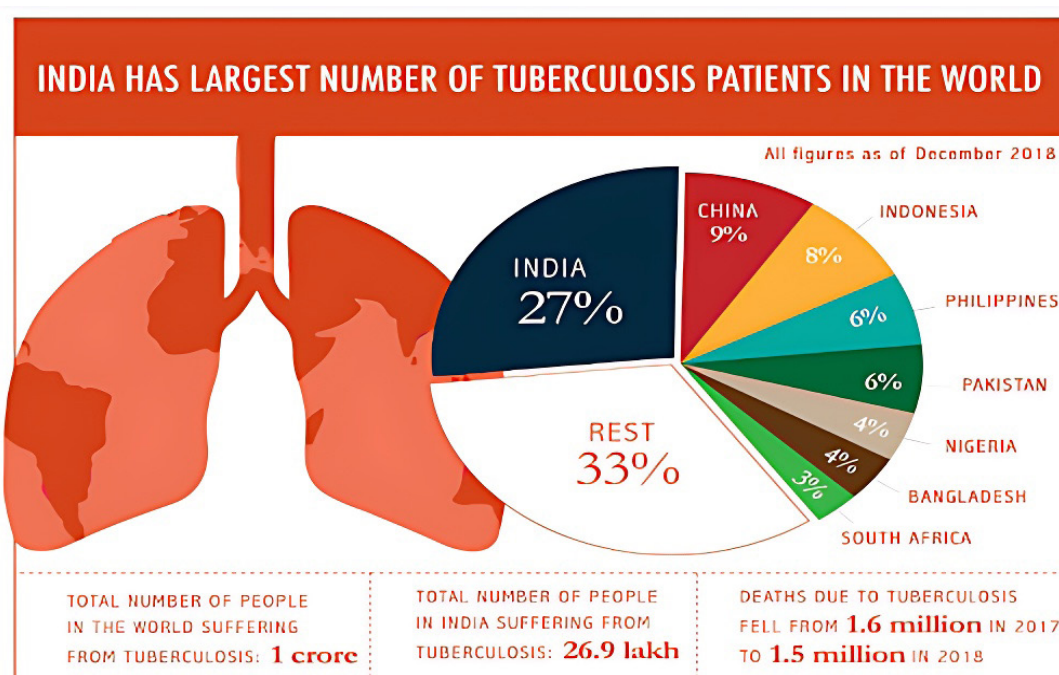


Image Credit: The Print

- TB usually affects the most economically productive age group of society resulting in a significant loss of lives, working days and income resulting in poverty.
- The Union Ministry of Health and Family Welfare is implementing a National Strategic Plan with the goal to achieve SDG End TB targets by 2025.

Pradhan Mantri TB Mukh Bharat Abhiyaan:

Objectives:

- 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.
- The 'Ni-kshay Mitra initiative' was also launched which forms a vital component of the Abhiyaan.
 - * The Ni-kshay Mitra portal provides a platform for donors to provide various forms of support to those undergoing TB treatment.
- The minimum period of commitment for providing additional support to the TB patient shall be one year.
- This program includes co-operative societies, corporates, elected representatives, individuals, institutions, non-governmental organisations, political parties who can support by adopting health facilities (for individual donors), blocks/urban wards/districts/states for accelerating response against TB.

- The State and district administration will support Ni-kshay Mitras in prioritising districts and provide guidance on critical gap analysis and district-specific needs.
- The support provided to the patient under this initiative is in addition to the free diagnostics, free drugs and Ni-kshay Poshan Yojana provided by National TB Elimination Programme (NTEP) to all TB patients notified from both the public and private sectors.

Expected Output of the Initiative:

- This will increase the active awareness and involvement of society in the fight against tuberculosis.
- The involvement of the community also helps in the reduction of stigma.
- Additional support to the TB patient shall also result in the reduction of out-of-pocket expenditure.
- Improved nutrition will result in better treatment outcomes.

Way Forward:

- The approach to eradicating TB requires a multi-sectoral response to address the social determinants like nutritional support, living and working conditions, and an increase in access to diagnostic and treatment services.
- Although the efforts of the government are yielding significant results, the community and the institutions in the society can play a critical role in filling gaps and addressing social determinants, thereby contributing to the national goal.

Nut graf:

This Abhiyan is in line with PM Modi's call to end TB in the country by 2025, five years ahead of the SDG target of 2030 at the Delhi End TB Summit in March 2018. This is the right step towards garnering community support for a patient-centric health system.

Issues relating to development and management of Social Sector/Services relating to Health

2. COVID nasal vaccine

- » Mains: Nasal vaccine.

Context:

- The Central Drugs Standard Control Organisation has approved Bharat Biotech's nasal vaccine for primary immunization against COVID-19 in the 18-plus age group.

Details:

- It is approved for restricted use in the situation of emergencies.
- It is a ChAd36-SARS-CoV-S recombinant vaccine that can be nasally administered.
- The vaccine is a powerful potential tool to fight the COVID-19 virus and prevent further infections.

Nasal Vaccine:

- A nasal vaccine is administered either through the nose or mouth. It works on the mucosal lining thereby triggering an immune response at the entry points of the virus.
- Therefore, it prevents the infection right at the initial point further blocking its spread. This is called sterilizing immunity in scientific terms, implying that the virus is effectively prevented from causing infection to the host.
- It was explained in the journal Nature, that although the current COVID-19 vaccines have reduced the severity of the disease and prevented hospitalization, it is incapable to block mild illness and transmission.
 - * This is because they are injected into the muscle. These antibodies/cells circulate in the bloodstream but are not present at desired levels in the nose and lungs to provide rapid protection. Moreover, during the time of circulation, the virus can spread further, and the infected person might get ill.
- Potential of Nasal Vaccine:
 - * The efficiency of the vaccine is still unclear and is dependent on the further efficacy of the study.
 - * Both Bharat Biotech and CanSino (a Chinese drug maker) have announced the accomplishment of successful trials, but have not released data yet.
 - * The article released by the University of Washington has made the following observations:
 - » The two clinical trials of the vaccine were conducted in India.
 - » The phase 3 trial was conducted on nearly 3,100 unvaccinated people and a booster trial with about 875 vaccinated individuals showed safe, effective, and positive results.

Nut graf:

The prompt publication of trials and a speedy rollout of a nasal vaccine can be of extreme help in the fight against the virus. It can also prove to be a breakthrough in the vaccination of children against the novel virus. However, its usage for children is yet to be approved.

Issues relating to development and management of Social Sector/Services relating to Health

3. Essential medicines list

- » Mains: Policies to reduce out-of-pocket expenditure on Healthcare in India

Context:

- The National List of Essential Medicines (NLEM), 2022 was released recently.

Introduction:

- NLEM was updated for the first time since 2015.
- 384 drugs have been included in this list with the addition of 34 drugs, while 26 from the 2015 NLEM have been dropped.
- NLEM has changed antimicrobials, keeping in mind the resistance pattern, including drugs that are part of national missions.

What are Essential Medicines?

- According to the World Health Organisation, essential medicines are those that satisfy the priority health care needs of a population.
- They are selected with due regard to disease prevalence and public health relevance, evidence of efficacy and safety and comparative cost-effectiveness.
- They are intended to be available in functioning health systems at all times, in appropriate dosage forms, of assured quality and at prices individuals and health systems can afford.

What is the National List of Essential Medicines (NLEM)?

- NLEM is a list released by the Ministry of Health and Family Welfare.
- The medicines listed in the NLEM are sold below a price ceiling fixed by the National Pharmaceutical Pricing Authority (NPPA).
- It is a dynamic list that takes into account any changing profile of diseases, newer drugs available in the market, and changing treatment protocols.
- It is created to rationalise the use of limited resources for drugs needed the most by the greatest number of people.
- The Union Ministry of Health and Family Welfare prepared and released the first National List of Essential Medicines of India in 1996 consisting of 279 medicines. This list was subsequently revised in 2003, 2011, 2015 and 2022.

Key Changes in 2022 NLEM:

- A total of 384 drugs across 27 categories are on the list. 34 drugs are freshly added and 26 drugs from the 2015 NLEM list have been dropped.
- Major anti-cancer drugs, hydrochloride, HCl trihydrate, lenalidomide and leuprolide acetate as well as psychotherapeutic drugs, nicotine replacement therapy and anti-parasitic drugs like ivermectin, mupirocin (topical antibiotic), and meropenem (antibiotic) are on the list.
- It also includes four drugs that are still under patent — bedaquiline and delamanid, used in the treatment of multiple drug-resistant tuberculosis, dolutegravir used to treat human immunodeficiency virus (HIV) infection, and daclatasvir used in treating viral infections such as Hepatitis C.
- Endocrine medicines and contraceptives like fludrocortisone, ormeloxifene, insulin glargine and teneligliptin (for diabetes control) have also been added to the list.
- Montelukast, acting on the respiratory tract, the ophthalmological drug latanoprost and cardiovascular medicines dabigatran and tenecteplase are on the list too.
- Omissions include commonly used gastrointestinal drugs ranitidine, sucralfate, white petrolatum (for treating skin conditions), atenolol and methyldopa (for high blood pressure).

Criteria for the addition of drugs to the list:

- The drugs have to be useful in treating diseases which are a public health problem in India to be added to NLEM.
- They have to be licensed/approved by the Drugs Controller General (DCGI), have proven efficacy, a safety profile based on

scientific evidence, are comparatively cost-effective, and are 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.

When is a medicine deleted from NLEM?

- If it gets banned in India.
- If reports of concerns about drug safety emerge.
- If medicine with better efficacy and better cost-effectiveness becomes available.
- If the disease, for which a particular medicine is recommended, is no longer a national health concern.
- In the case of antimicrobials — if the resistance pattern has rendered an antimicrobial ineffective. Know more about Antimicrobial Resistance in the link.

Significance of having NLEM:

- NLEM promotes rational use of medicines considering three crucial aspects which are cost, safety and efficacy.
- It also helps in optimum utilisation of healthcare resources and budget, drug procurement policies, health insurance, improving prescribing habits, medical education and training and drafting of pharmaceutical policies.
- The NLEM is a dynamic document and is revised on a regular basis considering the changing public health priorities as well as advancements in pharmaceutical knowledge.
- Prices of medicines under NLEM every year are increased or decreased as per the Wholesale Price Index, meaning the prices of these medicines cannot be increased unreasonably.

Nut graf:

The Union government has adopted the updated NLEM with several changes based on recommendations of the Standing National Committee on Medicines. The updated list makes several antibiotics, vaccines, anti-cancer drugs and many other important drugs more affordable, and significantly reduces the 'out-of-pocket' expenditure on health care.

HISTORY

Modern India History-Significant Personalities

1. Periyar E.V. Ramasamy

- » Mains: Social reform movements

Context:

- Periyar E.V. Ramasamy's birth anniversary on September 17 is celebrated as Social Justice Day by the state of Tamil Nadu.

Introduction:

- Erode Venkatappa Ramasamy was a respected Indian social activist and politician who started the Self-Respect Movement and the political party Dravidar Kazhagam.
- He fought against Brahmanical dominance, oppression of women and caste prevalence.
- He later came to be called "Periyar", which in Tamil means 'respected one' or 'elder'. He was also popularly referred to as Thanthai Periyar.
- In 2021, the Tamil Nadu government started to celebrate the birth anniversary of Periyar as 'Social Justice Day'.

Concepts propounded by Periyar:

- Periyar promoted the principles of rationalism and self-respect and opposed the exploitation and marginalisation of the people of South India and the imposition of what he considered Indo-Aryan India.
- Periyar is often referred to as an iconoclast, for the rebellious nature of his ideas and the vigour with which he acted.
- He strongly opposed Kula Kalvi Thittam introduced by the then Chief Minister C. Rajagopalachari. Kula Kalvi Thittam proposed to impose on schoolchildren a method of education, wherein students would learn their family's profession as part of the school curriculum. Periyar felt that it would encourage divisions based on caste.
- Periyar's vision was about inclusive growth and freedom of individuals. He presented rationalism as a solid foundation for thinking along these lines.
- He advocated 'Priesthood for all castes' to change the caste dynamic in society.

Modern History

2. How India adopted its military flags and badges based on Lord Mountbatten's suggestions

- » Prelims: The evolution and adoption of flags and ranks adopted by the Indian military after Independence

Context:

- The adoption of a new Naval Ensign has brought flags and ranks adopted by the Indian military after Independence into the limelight.

Background:

- The transformation from British-era flags and ranks took place when India became a Republic and a new, Indian pattern of flags of Army, Navy and Air Force, and also the Regimental Flags of the Army and badges of ranks of all three services were adopted on January 26, 1950.
- Documents accessed from the National Archives of India reveal that the former Viceroy and Governor General of India Lord Louis Mountbatten, played a key role in suggesting new flags and rank badges.
- A note containing the recommendation and suggestions of Lord Mountbatten was handed over to Nehru which was later passed on to the then Governor General C. Rajagopalachari.

Recommendations by Lord Mountbatten:

- The note starts by saying that the word "Royal" shall be dropped from India's Army, Navy and Air Force after India becomes Republic.
- Mountbatten had recommended against the use of terms such as "State" or "Republican" to replace the word "Royal" as it would lead to a situation where in the the forces of India would psychologically feel separated from the other services within the Commonwealth nations.
- He had recommended that the Crown should be replaced from the insignias and is to be replaced by the "three lions of Ashoka".

- With respect to the naval ensign, Mountbatten had recommended that India should continue to have the red cross which was seen in all Commonwealth navies but replace the "Union Jack" with the Indian national flag.
- Further, for the Indian Air Force, he had recommended the use of light blue Flag which has Union Jack and red, white with the blue roundel being replaced with one having the national flag.
- He also recommended that the existing uniforms should be altered as little as possible.
- Mountbatten suggested that the "Crown" worn on badges of ranks of Majors and above should be replaced by the "three lions of Ashoka" and that the "Star of the Order of the Bath" should be replaced by "Star of India" or a different form of a star while retaining the crossed sword and baton on the badges of ranks of Generals.
- By saying that the existing stripes of rank in the Navy and Air Force are the same across the world, he suggested retaining the stripes.
- He also recommended changes in the cap badges and buttons of uniforms.

Indian government's response to the recommendations:

- Jawaharlal Nehru told the then Defence Minister Baldev Singh that he agreed with the recommendations made by Mountbatten that there should be as little change as possible.
- C. Rajagopalachari also agreed to Mountbatten's suggestions.
 - * While Rajagopalachari initially differed with the opinion of replacing the "Star of the Order of Bath" he later accepted that the five pointed "Star of India" would be a correct replacement.
- Later, the recommendations of Lord Mountbatten were virtually accepted and implemented with effect from January 26, 1950.

Modern History-Significant personalities

3. Annabhau Sathe

- » Prelims: About Annabhau Sathe

Context:

- A statue of Annabhau Sathe was unveiled at the All-Russia State Library for Foreign Literature in Moscow, Russia.

Annabhau Sathe:

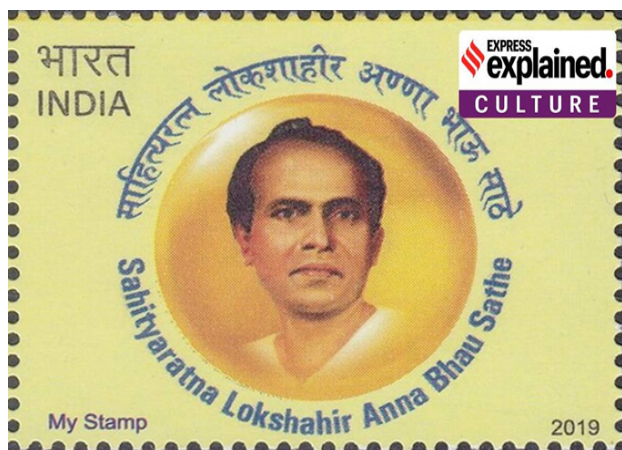


Image Source: Indian Express

- Tukaram Bhaurao Sathe, who was later known as Annabhau Sathe, was born in a dalit family on August 1, 1920 in the Wategaon village in Satara district of Maharashtra.
- Later, upon reaching Mumbai he worked as a porter, a hawker and as a helper in a cotton mill.
- Annabhau Sathe participated in the workers' strike under the leadership of Lal Bawta Mill Workers Union in 1934
- He got to know R.B. More who was an associate of Dr. B.R. Ambedkar in the famous "Chavdar Lake satyagraha" at Mahad, and joined the labour study circle.

- Annabhau Sathe was inspired by the Russian works of Maxim Gorky, Anton Chekhov, Leo Tolstoy and Ivan Turgenev.
- Annabhau Sathe wrote his first poem on the menace of mosquitoes in the labour camp.
- Annabhau Sathe went on to form the "Dalit Yuvak Sangh", a cultural group and started writing poems on workers' protests and agitations.
- In 1943, a group named "Lal Bawta Kala Pathak" was formed by Annabhau Sathe along with Amar Sheikh and Datta Gavhankar which travelled across Maharashtra undertaking various programmes on caste atrocities, class conflict, and workers' rights.
- In 1939 Annabhau Sathe wrote his first ballad named "Spanish Povada".
- His famous works include: Aklechi Goshta, Stalingradacha Povada, Mazi Maina Gavavar Rahili, Jag Badal Ghaluni Ghav, Bangalchi Hak and Maza Russiacha Pravas.
- Annabhau Sathe is also regarded as Lok Shahir (balladeer)

Modern Indian history –significant Personalities

4. The statue of Netaji Bose

- » Prelims: Facts about Netaji Subhas Chandra Bose and India Gate Canopy
- » Mains: Contributions of Netaji Subhas Chandra Bose

Context:

- The statue of Netaji Subhas Chandra Bose at the India Gate was recently unveiled by the Prime Minister of India.

Details:

- A jet black granite statue of Netaji has been placed under the Grand Canopy to the east of India gate.
- The 28 feet statue weighing over 65 tonnes has been carved out of a monolithic block of granite of over 280 tonnes.
- The statue has been placed at the same place where the hologram statue of Netaji was unveiled on Parakram Diwas (January 23, 2022) which marked Netaji's 125th birth anniversary.

India Gate Canopy:

- The canopy was constructed along with the rest of the grand monument in the 1930s by Sir Edwin Lutyens.
- This canopy structure is inspired by a sixth-century pavilion from Mahabalipuram.
- The canopy once housed a statue of King George V which was later moved to a Coronation Park near the Inter-State Bus Terminus by the Yamuna in North Delhi in 1968.

Subhas Chandra Bose and his contributions:

- Netaji Subhas Chandra Bose was Born on 23rd January 1897 in Cuttack to a wealthy family.
- Bose was a brilliant student and even cleared the Indian Civil Services (ICS) examination conducted in England. However he did not join the service as he did not want to serve the British government.
- He returned to India in 1921 and joined the Indian National Congress.
- Over the next two decades, Netaji Subhas Chandra Bose devoted his life to the nationalist movement, gained considerable political influence and became one of the most powerful leaders of the freedom struggle.
- Netaji Bose also started a newspaper called "Swaraj".
- He was the President of the All India Youth Congress and also the Secretary of the Bengal State Congress. In 1924, he became the CEO of the Calcutta Municipal Corporation. In 1930, he became the Mayor of Calcutta.
- Bose authored the book "The Indian Struggle" which covers the Indian independence movement from 1920 to 1942.
- Netaji's charisma and personality inspired youths into the freedom struggle and continues to inspire Indians.
- Netaji was elected as the Congress president in the Haripura session in 1938, where he tried to push for swaraj as a "National Demand" and opposed the idea of an Indian federation under British rule. He also contested for re-election in 1939 and defeated Dr. Pattabhi Sitaramayya who was backed by Mahatma Gandhi.
- In 1939, Bose resigned from the presidency of the Congress and formed the All India Forward Bloc as a faction within the Congress party.
- S.C. Bose was arrested in 1940 before he could launch a protest to remove the monument dedicated to the victims of the Black Hole of Calcutta, an incident when a number of European soldiers died while imprisoned in 1756.
- When the 2nd World War broke out, Netaji Bose escaped to Germany via Afghanistan and the Soviet Union. He had been placed under house arrest by the British government.
- In Berlin (Germany), he founded the Free India Legion and the Azad Hind Radio.
- In 1943, he left Germany for Japan after accepting the leadership of the Indian National Army (INA) which was formed in 1942 and predominantly consisted of British Indian POWs.
 - * The INA's strength increased with many expatriate civilian Indians joining it inspired by Bose's leadership.
 - * Netaji proclaimed to the volunteers there, "Give me blood and I will give you freedom."
- After his arrival in Singapore, Bose announced the formation of the provisional government of the Azad Hind in October 1943

- The INA declared war against Britain and the USA in October 1943 and the “Dilli chalo” campaign was launched.
 - * However the campaign ended in Imphal as the British and British Indian armies, along with American air support were able to defeat the Japanese forces and the INA and push them out of Kohima.
- When Japan surrendered in 1945, Bose wished to go to Manchuria (in Japanese-occupied China) to contact the approaching Soviet troops. He took a Japanese bomber plane from Saigon in Vietnam to reach Manchuria. The plane made a stop at Taiwan for refueling. But, soon after take-off, it crashed ultimately leading to Bose's death.
 - * The news of Subhas Chandra Bose's death was met with skepticism in India as many believed he would come back to gain independence for the country.
 - * Various inquiries were conducted by the government to find out what exactly happened on the fateful day of August 18, 1945.

Modern Indian history-significant Personalities

5. Arattupuzha Velayudha Panicker

- » Prelims: About Arattupuzha Velayudha Panicker and his contributions

Arattupuzha Velayudha Panicker

- Arattupuzha Velayudha Panicker is a 19th century social reformer from the Ezhava community of Kerala.
- Panicker was born in a family of merchants in Kerala's Alappuzha district.
- He is regarded as one of the most influential persons in the 19th century social reformation movement in Kerala which led to a significant destruction of the existing caste hierarchy and social order in Kerala.

Contributions of Arattupuzha Velayudha Panicker

- Velayudha Panicker is known to have constructed two temples in Arattupuzha (1852) and Thanneermukkom (1854).
 - * Both the temples were dedicated to Lord Shiva and were open to members of all castes and religions.
- His protests for the rights of women belonging to backward communities of Kerala is said to be one of his major contributions and played an important role in raising the dignity of women belonging to the lower strata.
 - * These protests included the ones that secured women the rights of wearing lower garment that extended beyond the knees, upper body cloth, mukkuthi or nose-ring, and other gold ornaments.
- Arattupuzha Velayudha Panicker also undertook the first-ever strike by agricultural labourers in the state.
- He also set up the first Kathakali Yogam for the Ezhava community and other backward communities.
- Arattupuzha Velayudha Panicker was an expert in Kalaripayattu which is said to be one of the oldest traditional martial art forms of the country apart from being an expert in wrestling, swimming and horse riding.
- He was accorded the title of “Panicker” by the King of Travancore in 1869.
- Arattupuzha Velayudha Panicker was murdered by a group of upper-caste men in 1874.
- The Kerala State government opened the Arattupuzha Velayudha Panicker Research Foundation and Cultural Centre in 2005.

SOCIAL JUSTICE

Issues Related to STs

1. Scheduled Tribes list

- » Mains: Development of Scheduled Tribes

Context:

- Recently, the Union Cabinet approved a proposal to add several tribes to the list of Scheduled Tribes (ST) in various States.

Introduction:

- As per Census 2011, there are about 705 ethnic groups listed as Scheduled Tribes under Article 342.
- The STs constitute 8.6% of the population.
- The sex ratio among Scheduled Tribes is 990 females per 1,000 males.
- Madhya Pradesh has the highest Scheduled Tribe population (14.7 %) and Meghalaya has the lowest (2.5%).

Recent addition to the ST list:

- The Union Cabinet under the chairmanship of Prime Minister Narendra Modi approved the addition of four tribes to the list.
- The Hatti tribe in the Trans-Giri area of Sirmour district in Himachal Pradesh, the Narikoravan and Kurivikkaran hill tribes of Tamil Nadu, and the Binjhia tribe in Chhattisgarh, which was listed as ST in Jharkhand and Odisha but not in Chhattisgarh, were the communities added to the list.
- The Cabinet also approved a proposal to bring the Gond community, residing in 13 districts of Uttar Pradesh, under the ST list from the Scheduled Caste list.
- This includes the five subcategories of the Gond community: Dhuria, Nayak, Ojha, Pathari and Rajgond.
- The Cabinet approved 'Betta-Kuruba' as a synonym for the Kadu Kuruba tribe in Karnataka.
- In Chhattisgarh, the Cabinet approved synonyms for tribes like the Bharia (variations added include Bhumia and Bhuyian), Gadhma (Gadwa), Dhanwar (Dhanawar, Dhanuwar), Nagesia (Nagasia, Kisan), and Pondh (Pond).

Procedure for addition or deletion of communities from the List:

- The process to include tribes in the ST list begins with the recommendation from the respective State governments or Union Territory administration, which are then sent to the Tribal Affairs Ministry, which reviews and sends them to the Registrar General of India for approval.
 - * A State government may choose to recommend certain communities for addition or subtraction from the list of SCs/STs based on its discretion.
- This is followed by the National Commission for Scheduled Tribes approval before the list is sent to the Cabinet for a final decision.
- The final decision rests with the President's office issuing a notification specifying the changes under powers vested in it from Articles 341 and 342.
- The inclusion or exclusion of any community in the Scheduled Tribes or Scheduled Castes list come into effect only after the President assents to a Bill that amends the Constitution (Scheduled Castes) Order, 1950 and the Constitution (Scheduled Tribes) Order, 1950, after it is passed by the Parliament.

Criteria for inclusion in ST List:

- The government looks at several criteria such as
 - * Ethnological traits
 - * Traditional characteristics
 - * Distinctive culture
 - * Geographical isolation and backwardness.
- However, these criteria are not spelt out in the Constitution.
- The Supreme Court in march 2022 has advised the government to fix fool-proof parameters to determine if a person belongs to a Scheduled Tribe and is entitled to the following benefits.

- The Supreme court also expressed its doubts regarding “Affinity Test” which is used to sift through anthropological and ethnological traits to link a person to a tribe as there are chances that contact with other cultures, migration and modernisation would have erased the traditional characteristics of a tribe.
- An apex court Bench of Justices Hemant Gupta and V. Ramasubramanian referred the question of fixing the parameters to a larger Bench, pointing out that the issue was a “matter of importance” when it came to issuing caste certificates.

Benefits of the Inclusion in the ST List:

- Listed communities can derive benefits meant for STs under the existing schemes of the government such as 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 will also be entitled to benefits of reservation in services and admission to educational institutions as per the government policy.

Nut Graf:

Recent addition of various communities into ST list came as several tribes threatened to launch protests over an “inordinate delay” in their inclusion in the ST list. Newly added communities will be able to avail benefits meant for members of STs after the Constitution (Scheduled Tribes) Order (Third Amendment) Bill, 2022, becomes an Act.

Welfare Schemes for vulnerable sections

2. India Inc. needs a neurodiverse workplace

- » Mains: Issues related to persons with neurodivergent disorders.

Details:

- Various organizations have started focusing on aspects like inclusion and diversity. According to a McKinsey study in 2019:
 - * The corporations that had gender diversity were 25% more likely than other organizations to have profitability figures above average.
 - * Similarly, companies with ethnic diversity can outperform their rivals by 36%.
- Moreover, the ‘India’s Best Workplaces in Diversity, Equity & Inclusion 2021’ report highlighted that diverse work teams perform better, strengthen leadership, build trust within the organization, and can ultimately increase revenue. However, the companies are lacking in inclusivity because of the absence of workers that suffer from neurodiversity.

Neurodiversity:

- Neurodiversity in the workplace can be defined as the inclusion of people with neurodivergent conditions like autism spectrum disorders, Asperger’s Syndrome, attention-deficit/hyperactivity disorder, dyspraxia, dyscalculia, and dyslexia.
- As per Harvard Health Publishing, neurodiversity is a notion that every individual interacts with their surroundings distinctly. There is no ideal way of behaving, thinking, or learning. Moreover, these differences should not be considered disorders or defects.
- Neurodiverse persons are denied jobs because of the perception that they may react differently than non-neurodiverse people.
- Some recent trends across the world:
 - * Approximately 2 million people suffer from such neurological and developmental disorders in India.
 - * According to a Deloitte study, around 20% of the world’s population is neurodiverse.
 - * In the United States of America, 85% of people belonging to the autism spectrum are unemployed.

Neurodiversity in the Workplace:

- Corporations that embrace neurodiversity are comparatively more efficient, creative, and cultured.
- As per a study by JPMorgan Chase, professionals in its unique initiative of ‘Autism at Work’ made less number of errors and were 90 to 140% more productive than other employees.
- Moreover, teams comprising both neurodivergent and neurotypical employees are much more efficient than teams with only neurotypical employees.
- It should also be noted that Neurodivergent people have excellent attention capabilities and can focus on repetitive and complex tasks for a longer span of time.

- In another study by the University of Montreal, it was inferred that in the case of tasks involving visual patterns, the autistic person can complete their task 40% faster than a neurotypical individual.
- Furthermore, people with dyslexia have the out-of-the-box problem-solving capability as they can analyze multiple dimensions of a problem. They have average or above-average intelligence.
- Various companies like Microsoft, Deloitte, SAP, and JPMorgan Chase are incorporating neurodiversity hiring programmes in their work culture. Some examples of Indian companies are Hatti Kaapi and Lemon Tree Hotels.

Measures Ahead:

- Human Resources Management should ensure that the workplace is open and cooperative for neurodiverse people.
- Various measures can be adopted in this direction like customized interviews, day-to-day assistance, and an enabling infrastructure so that they can perform at their optimal levels.
- Moreover, various customized mentorship programs can also be used to benefit this section.

Nut Graf:

It is important to create a work environment that is conducive to the neurodiverse individual, as in this way they can realize their true potential. Moreover, it will help corporations to widen their definition of inclusiveness.

EDUCATION

Issues relating to the development and management of Education.

1. Funding public education

» Mains: Higher Education

Context:

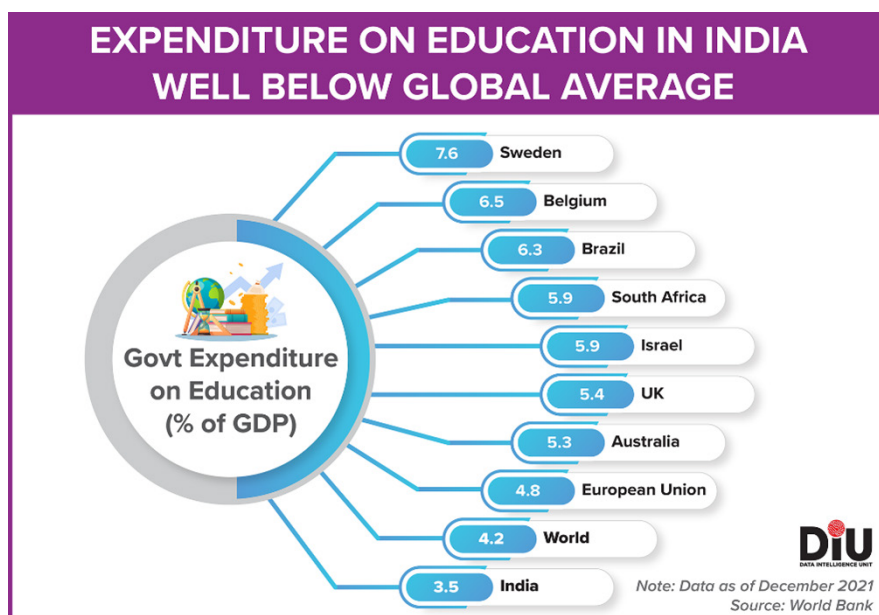
- Education Minister's reply to a debate in Lok Sabha.

The vision of National Education Policy 2020:

- According to the NEP 2020, there should be increased accessibility, equity, and inclusion in the field of education through various measures like greater opportunities for public education.
- It also assured that the autonomy of public institutions would be adequately backed by the government.
- It was also highlighted in NEP that government expenditure on the education sector was that envisaged by the 1968 policy which was 6% of the GDP. This figure has been reiterated multiple times in the past including in the 1986 policy, and the 1992 review policy on education.
- NEP quoted that increasing public spending is very essential for achieving a high-quality and equitable public education system in India. It is an immense necessity for the economic, socio-cultural, and intellectual growth and progress of the country.
- The NEP 2020 anticipates that the enrolment ratio in higher education should double by 2035.

Statistics associated with education:

- The Kothari Commission recommended that higher education should get at least 2% of GDP.
- The overall expenditure on higher education including of both the Centre and the States went down from 0.86% of GDP in 2010-11 to the meagre share of just 0.52% in 2019-20.
- The expenditure by the Union government in the higher education sector was just 0.16% in 2019-20 in comparison to 0.33% of GDP in 2010-11.



- In contrast to the threefold increase in the revenue receipt of the government, the expenditure on higher education declined from 2.60% in 2011-12 to 1.85% in 2022-23 (According to the Budget estimate).

Privatization of Education:

- The majority of higher education institutions are run on a self-financed basis and are private.
- The profit-making tendencies of private institutions have deeply penetrated the public higher education system as well. These tendencies are further exacerbated by trends like:
 - * Resource mobilization and resource use efficiency
 - * Generation of internal revenue
 - * Cross-subsidization
 - * Cost reduction
 - * Accelerated cost recovery tendency
 - * Enhancing user charges

The consequence of the privatization of higher education is a multifold increase in fees and other charges from students.

The popular belief that higher education should be entirely funded by the students (or their parents in particular) is grossly misplaced in the Indian context.

The future growth in higher education is dependent on the enrolment of the socio-economically disadvantaged groups as the economically elite section has already reached near full capacity.

Nut Graf:

Higher education in India has played a significant role in sustaining the \$2.8 trillion economy of India. But to become a \$5 trillion economy and a developed country the investment in the higher education sector should rise as a robust public education system is also the basis of a vibrant democracy.

Children and Education related issues**2. Medium of Instruction in Education**

- » Mains: Language policy in Education

Context:

- The National Education Policy's (NEP) move to teach in the mother tongue could be a landmark decision that transforms learning in India.

Introduction:

- The NEP 2020 has advocated that "wherever possible, the medium of instruction until at least Grade 5, but preferably till Grade 8 and beyond, will be the home language/mother tongue/local language/regional language" for both public and private schools.
- Over the years, educationists have emphasised the importance of learning in the mother tongue to enhance a child's learning and overcome glaring inequities, but there has been an equally steady demand for English-medium schools in several States.
- A growing number of government schools, unable to bear the pressure from parents and to stop students from migrating to private schools, are switching to English medium.

Arguments against English as a Medium of Instruction:

- The mother tongue or the first language educationally means the language which the child is using to connect to the world and to make sense of everything that's going on.
- This language helps the child to build, grow and develop in every way. The first language should be the language of the home, the language in which the child is communicating and interacting with the world around her.
- This encourages wholehearted engagement of students in the learning process and boosts their confidence.
- English as a medium of education has a severe impact on Indian education today as the vast majority of the Indian population are languishing because of their inability to learn in English.
- The English medium of education has excluded the vast majority from all opportunities except the lowest and the least-paying jobs.

Arguments in Favour of English as the Medium of Instruction:

- English as a global language opens up numerous career opportunities.
- As most technical and scientific books are available only in English and much of higher education is also imparted in English, this may hinder the access of students from government schools to STEM and higher education.

- In India, Basha schools (regional languages) have an extremely poor quality of education which makes it difficult to compete with their peers who have a much better education and proficiency in English.

Concerns with NEP:

- NEP's suggestion on the medium of instruction is weak because of a lack of will to enforce it.
- It does not tackle the issue of inequity that arises out of the medium of instruction.
- NEP's overall philosophy of the privatisation of education and marketisation with no regulatory control to the state further weakens the enforcement of the mother tongue as the medium of instruction.

Way Forward:

- English must be taught effectively as a second language in line with other non-English speaking countries. And that is the way it was taught in India till the 1980s and 1990s.
- Multilingualism gives equal status to all languages and as children come from different backgrounds, the multilingual approach is much more flexible, closer to the child, and inclusive.
- For example, in Kerala, they acknowledged that the classicised Malayalam that was being used in classrooms was not every child's Malayalam, and the language in northern Kerala is different from that of the south. So, they changed the language curriculum, making it more inclusive for all children.
- Making special funds available for English teaching at local level schools could also help. These could be some steps in making school education somewhat more egalitarian.

Nut Graf:

Instead of ad hoc decisions, the government should work on a language policy. The challenge of NEP is to implement it in letter and spirit. There is a need to create comprehensive, efficient and realistic guidelines and framework. A powerful political movement is necessary to make the language of learning a choice that is made democratically.

Issues relating to development and management of Social Sector/Services relating to Education

3. PM SHRI scheme

- » Prelims: About PM SHRI Scheme
- » Mains: Significance of PM-SHRI Scheme and the way forward

Context:

- The Union Cabinet approved the "PM Schools for Rising India" (PM SHRI) scheme

PM SHRI Scheme:

- The PM SHRI Scheme aims to turn the existing government schools into model schools for implementation of the National Educational Policy, 2020 (NEP).
- The Scheme is a Centrally sponsored scheme with a total project cost of over ₹27,360 crores.
- Through this scheme the government aims at transforming and upgrading over 14,500 schools across India.
 - * These schools will be selected from the schools run by the central government/state government/UT/Local bodies.
 - * These schools will emphasize more on discovery-oriented experiential learning.
- The PM SHRI scheme also provides a "School Quality Assessment Framework" which will be formulated for measuring key performance indicators which assess the quality of schools selected from the current academic year.
- However, schools under the scheme will be selected only if the respective State governments agree to implement the National Education Policy.

Significance of PM-SHRI Scheme:

- The teaching methods (pedagogy) employed in these schools will be more holistic, experiment-based, integrated, play-way in the formative years, learner-centred, enjoyable and flexible.
- Further, these schools will include topics such as waste recycling, water conservation, energy efficiency and adopting an organic lifestyle as a part of the curriculum.
- These schools will have advanced technology and smart classrooms and conceptual learning and usage of knowledge in real-life situations will be the focus of this Yojana.
- These schools can be role models to other schools on the lines of Kendriya Vidyalaya Sangathan and Navodaya Vidyalayas.

- These schools can inspire and prepare young people to become agents of change.
- These schools are the result of in-depth deliberation from all the stakeholders. The magnitude of consultation that took place regarding policy formulation was immense. Hence it is speculated that it will cover a vast range of dimensions to come out with great results.
- The PM SHRI initiative can become the ignition point in exploring and improving the credibility of government schools.
- This would further help in reducing the gap between the private and public funded schools.
- These schools will help children in finding out their interests, encourage them, and help them pursue a career in that particular field.

Way forward:

- The schools should be carefully selected to become PM SHRI schools.
- Also, while selecting the schools, one criterion that can be considered is the ability of the school to provide leadership to other schools in the region.
- More focus should be given to states that are either negligent or performing poorly in the field of literacy and education.
- The success of the scheme will largely depend on the response of the state government and hence the states should also come up with their own targets and the aim should be genuine upgradation rather than the political upgradation of the school.
- Teacher recruitment is a major step that should be considered by the state government as the teacher-pupil ratio is dismal in India.

Nut Graf:

PM SHRI schools can provide the right education in the right environment and help develop a knowledge society. This scheme has the potential to provide an era of high-quality education in an equitable, inclusive and joyful environment that helps in holistic and all-around development of children.

GOVERNANCE

Developmental issues, their problems and their remedies.

1. Crime in India report

- » Prelims: National Crime Records Bureau (NCRB)
- » Mains: Key findings of the “Crime in India” report (2021) of NCRB

Context:

- According to a report by the National Crime Records Bureau (NCRB), violent crimes such as rape, kidnaps, atrocities against children, robberies and murders have increased in 2021.

Details:

- The “Crime in India” report released by the NCRB highlighted that the number of violent crimes has increased across India in 2021 after declining in 2020 on account of COVID induced restrictions.
- However, the overall crime rate (crimes per 1 lakh people) reduced to 445.9 (2021) from 487.8 (2020) which is mainly due to the decline in cases registered under Section 188 of the IPC – “disobedience to order duly promulgated by a public servant”.

Key findings of the report:

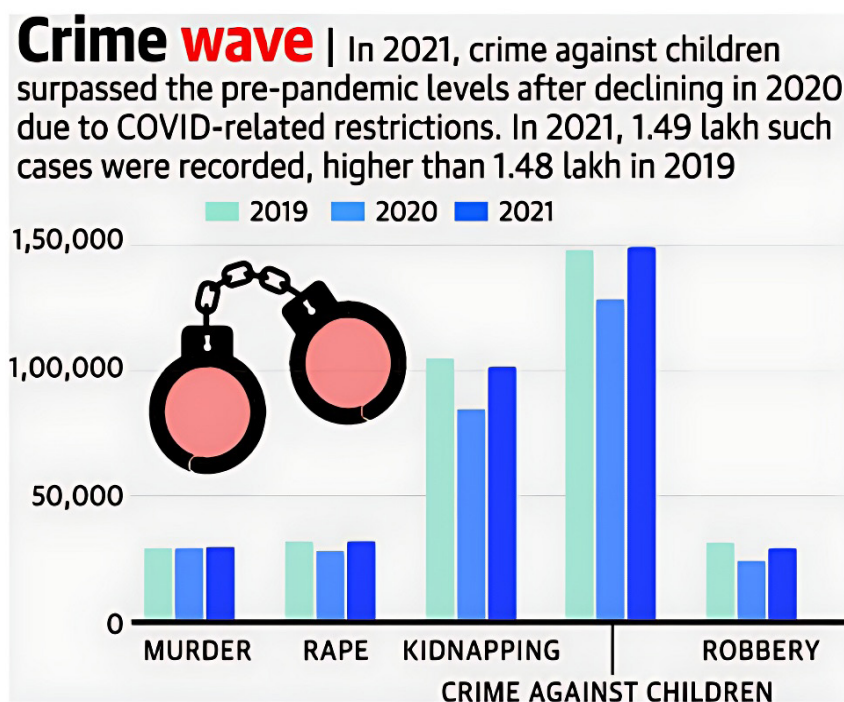
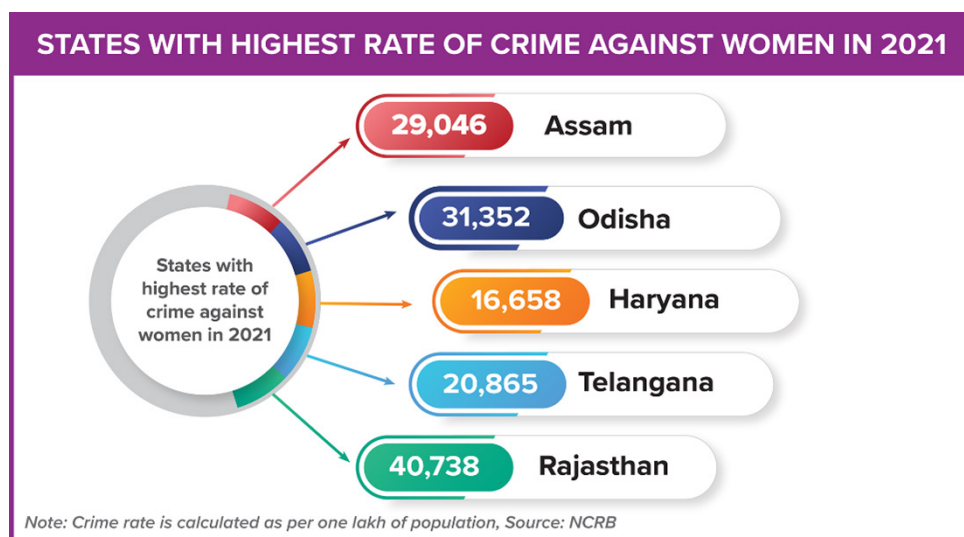


Image source: The Hindu

- Domestic violence continues to be a major issue in the country as “cruelty by husband or his relatives” accounted for over 31.8% of crimes against women in 2021 registering an increase from 30.2% in 2020 and 30.9% in 2019.



- The charge sheeting rate in 2021 has declined to 72.3% as compared to 75.8% in 2020.
 - * Further, even the conviction rate has dropped from 59.2% in 2020 to 57% in 2021.
 - * This suggests that despite an increase in violent crimes in the country, law enforcement has been less responsive.
- According to the report, the highest rate of violent crimes (per 1 lakh people) in 2021 was recorded in Assam (76.6 violent crimes per 1 lakh people), followed by Delhi (57) and West Bengal (48.7).
 - * The lowest rate was recorded in Gujarat, Andhra Pradesh and Tamil Nadu.
 - * Odisha saw the highest increase in the rate of violent crimes.
- The report pointed out that the suicide rate in 2021 with 12 per 1 lakh people was the highest in the past five years.
 - * The key reasons for suicides in the country are said to be domestic problems (33.2%) and illnesses (18.6%)
 - * Further, most of the suicide victims were daily wage earners (25.6%) and housewives (14.1%).
- The report also suggests that there is a 5.9% increase in the cases registered as cyber crimes in 2021 as compared to 2020 which indicates an increase in the use of digital devices.
 - * As cyber crimes in urban areas have declined by about 8.3% as compared to 2020, the overall increase in cyber crimes is attributed to the increase of such crimes in rural areas.
 - * This mandates the government to intervene and increase its awareness programmes in rural areas.

Nut Graf:

The increase in violent crimes, suicide rate and cyber crimes along with a drop in charge sheeting and conviction rates in the country requires immediate attention and interventions from the governments at the centre and state and other law enforcement bodies.

Issues relating to development and management of Social Sector/Services relating to Health

2. Govt's FY19 health spending dropped

- » Prelims: About National Health Accounts Estimates
- » Mains: Key findings of National Health Accounts Estimates of 2018-19 report and its associated concerns.

Context:

The release of findings of National Health Accounts Estimates of 2018-19 report.

Background

- Despite there being a reduction in the overall expenditure on health, the Government spending on health as a proportion of the total health expenditure has increased in India in recent years.

- As per the National Health Accounts Estimates of 2018-19, the government expenditure as percentage of total health expenditure has risen by over 11% points over the last five years. i.e. from 23.2% in 2013-14 to 34.5% in 2018-19.

Key findings of National Health Accounts Estimates of 2018-19

KEY NUMBERS IN REPORT					
Indicator	2018-19	2017-18	2016-17	2015-16	2014-15
Total health expenditure as percentage of GDP	3.2	3.3	3.8	3.8	3.9
Government health expenditure as percentage of GDP	1.28	1.35	1.20	1.18	1.13
Out of pocket expenditure as %age of total expenditure	48.2	48.8	58.7	60.6	62.6
Government health expenditure as %age of total expenditure	40.6	48.8	32.4	30.6	29
Social security expenditure (govt insurance schemes like PM-JAY, RSBY, state scheme) as %age of total spend	9.6	9	7.3	6.3	5.7
Private health insurance expenditure as %age of total spend	6.6	5.8	4.7	4.2	3.7
Current health expenditure as percentage of total expenditure*	90.6	88.5	92.8	93.7	93.4

**A lower percentage indicates more spending on infrastructure, equipment etc that will last for years (National Health Accounts Estimates 2018-19)*

Image Source: Indian Express

- The National Health Accounts (NHA) Estimates is an important report which provides key insights on India's total expenditure on healthcare by the government, the private sector, individuals, and NGOs and the flow of these funds.
 - NHA Estimates also provide information about the sources of healthcare spending, who manages this spending, who provides healthcare services, and which services are being utilised.
 - NHA Estimates report is prepared by the NHSRC which has been designated as National Health Accounts Technical Secretariat (NHATS) in 2014 by the Union Health Ministry.
 - The NHA estimates are prepared by using an accounting framework based on the internationally accepted standard of System of Health Accounts, 2011, developed by the World Health Organization (WHO).
- NHA Estimates of the 2018-19 shows that the government spending with respect to the country's Gross Domestic Product (GDP) reduced to 1.28% from 1.35% in 2017-18.
- Further, it shows that the total health expenditure which includes spending by both government and non-government agents also reduced to 3.2% in 2018-19 as compared to 3.9% in 2014-15.
- The NHA Estimates of the 2018-19 also highlights a huge drop in out-of-pocket expenditure by patients.
 - The out-of-pocket healthcare expenses by people accounts for about 48.2% of the total health expenses in the year 2018-19 which has reduced significantly from 48.8% in the 2017-18 and 62.6% recorded in 2014-15.
- The total government health expenditure, which includes spending by any government body for any purpose, was ₹2.42 lakh crores, and constituted about 40.6% of the total spending on healthcare.
- The Union government's share in the health expenditure stood at 11.71%, while the state governments expenditure constituted about 19.63%, local bodies 1.01%, and households (including insurance contributions) 60.11% of the current health expenditure.
 - The rest of the expenditure is from the corporates (as insurance contributions), NGOs, and external or donor funding.

Concerns

- Experts attribute the decrease in the government spending with respect to the country's GDP to the use of a wrong indicator that is internationally not comparable.
 - They feel that the current health expenditure which excludes the capital expenditure on buildings or equipment that would be utilised over multiple years is a more comparable indicator.
- India's out-of-pocket spending is still high as compared to other countries in the region. India was ranked 66th out of 189 countries, with \$100.05 per capita out-of-pocket spending in 2017.

- * Countries such as Bhutan (\$47.3), Bangladesh (\$74.77), Thailand (\$79.46), Pakistan (\$79.92), and Nepal (\$96.59) had performed well in this aspect.
- * Despite the drop, the out-of-pocket spending in India for the year 2018-19 was recorded at 2.87 lakh crores which was equivalent to 1.52% of the GDP.
- * Experts point out that the drastic reduction in out-of-pocket expenditure is not because of any increase in government spending or insurance coverage but instead it is because fewer people are seeking care which signifies existing distress in the system.

Nut Graf:

Despite there being an increase in the Government spending on health as a proportion of the total health expenditure and decrease in out-of-pocket spending in the country, people still continue to spend more than the government which requires attention.

DISASTER MANAGEMENT

Disaster and disaster management

1. Urban flooding

- » Mains: Urban floods.

Context:

- Heavy rains in Bengaluru and consequent flooding.

Details:

- Two weeks of heavy rainfall in Bengaluru has flooded the city, not sparing even the luxury layouts.
- The politicians are blaming each other for bringing a 'bad name' to Bengaluru. Many debates also turned racist and parochial, blaming migrants for the situation.
- The climate experts have cited the following reasons for the floods:
 - * Encroachment into watersheds and lakes which were transformed into private lands.
 - * Destroyed wetlands.
 - * Deforestation.
 - * Concretization of land.
 - * Expansion of the city disbanding the village panchayats and creating 6 city municipal corporations, that were consequently merged into the Bhruhat Bengaluru Mahanagara Palike (BBMP).

Comparison with western countries:

- Various cities in the United States and Europe are examples of the ruthless destruction of the environment, and unbridled construction activities that became engines of economic growth.
- These cities also saw the nexus of corrupt politicians and bureaucrats, deliberately avoiding the sustainability of the environment for short-term gains.
- These cities benefited from migration, which brought in skill and energy. However, they faced impediments in public welfare provisions similar to what India is facing at present. These challenges were:
 - * The issue of free riders, where people accepted the benefits of the growth and development without paying any taxes.
 - * The environmental depletion.
- The only point of difference between India and western countries is the time. These cities grew when climate change was not a major issue. But now when climate change is a reality, any further damage to the environment will unleash cascading disasters.

Measures Ahead:

Institutional Measures:

- The traditional and old institutions should be replaced by a constitutionally compliant organization with local governments at the helm of affairs.
- Multiple institutions should be merged as they increase the complexity of working. For instance, eleven independent authorities can be merged and subordinated to the Metropolitan Planning Committee.

Community Role:

- The community should take tough decisions as climate resilience goes beyond flood control.
- They should minimize the environmental damage. Decisions like curbing car travel and improving public transport can be helpful.
- The existing green cover should be preserved and afforestation both in the city and surrounding regions must be undertaken.
- The pavements should be de-concretized and the segregation of garbage should be the priority as unsegregated garbage clogs drain and exacerbate the floods.
- The sewage treatment plants' operational standards should be adequately enforced.

- Moreover, steps like improving 'Rajkaluves' that were demonstrated by building an eleven-kilometre channel should be taken up.
 - * Rajkaluves are channels that connect waterbodies.
 - » Restoring wetland and tank beds.
 - » Better people should be elected in authorized organizations like municipal corporations. The political choices of people can have a significant impact on efficient decision-making.

Nut Graf:

Any delay in addressing the issue of rampant and unsustainable development will result in nature reclaiming its due in the future. As the effects of global warming intensify, all the stakeholders should come together rather than blame each other. Moreover, the community should play the most important role as the disaster treats all, the rich and the poor equally.

Disaster and Disaster Management

2. Cloudbursts in India

- » Mains: Significance of relevant meteorological forecasting for better disaster management.

Context:

- A cloud burst incident in the Lasko river flowing close to the India and Nepal border in Uttarakhand has resulted in significant damages to life and property.

What are Cloudbursts?

- Cloudbursts are sudden, violent and voluminous amounts of rain in a short duration that is local in nature.
- Cloudbursts are defined by the amount of rainfall. According to the India Meteorological Department (IMD), 100 mm of rain in an hour over a region of 20 to 30 square km is called a cloudburst.
- Cloudburst is defined as a geo-hydrological hazard due to their aggressive nature and the scale of destruction.
- In India, cloudburst occurs during the time of the South-West Monsoon from the month of June.
- Cloudburst is difficult to predict since it occurs suddenly with a catastrophic force and thereby inflicts enormous losses due to inundation and erosion.

Prone Areas:

- Cloudbursts occur mostly over the rugged terrains over the Himalayas, the Western Ghats, and northeastern hill States of India due to orographic lifting together with a strong moisture convergence that can lead to intense cumulonimbus clouds taking in huge volumes of moisture.

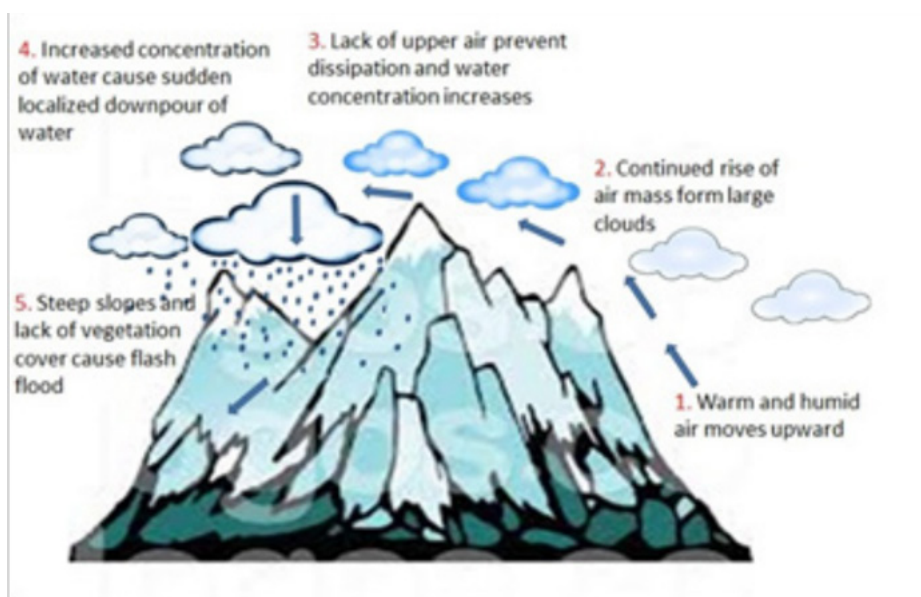


Image Source: Medcraveonline

- The heavy rainfall on steep slopes trigger landslides, debris flows, and flash floods, causing significant destruction and loss of people and property.
- Recent cloudbursts that caused significant devastation occurred over the Himalayan foothills, northeastern States and Western Ghats States.
- Strong monsoon wind surges along the coast can also result in cloudbursts, as in the case of Mumbai (2005) and Chennai (2015).
- Coastal cities are particularly vulnerable to cloudbursts since the flash floods make the conventional stormwater and flood management policies in these cities dysfunctional.
- Climate change is projected to increase the frequency and intensity of cloudbursts as the air gets warmer, it can hold more moisture and for a longer time.
- A one-degree Celsius rise in temperature may correspond to a 7-10% increase in moisture and rainfall and this increase in rainfall does not spread moderately throughout the season.

Cloudburst forecasting in India: Why it is a challenge?

- The IMD's forecasts are at an advanced stage with respect to extreme rains and cyclones. However, cloudburst forecasts still remain elusive and our efforts in monitoring and forecasting them are at the early developmental stage.
- Monitoring stations on the ground can hardly capture the cloudburst characteristics due to their highly localised and short occurrence.
- The resolution of the precipitation radars of weather satellites can be much smaller than the area of individual cloudburst events, and hence they go undetected.
- The skillful forecasting of rainfall in hilly regions remains challenging due to the uncertainties in the interaction between the moisture convergence and the hilly terrain, the cloud microphysics, and the heating cooling mechanisms at different atmospheric levels.
- Multiple doppler weather radars can be used to provide forecasts for the next three hours but they are an expensive affair, and installing them across the country may not be practically feasible.

Way Forward:

- Cloudburst-prone regions should be mapped using automatic rain gauges.
- If cloudburst-prone regions are co-located with landslide-prone regions, these locations can be designated as hazardous.
- With IMD enhancing its automatic weather stations, we may have hourly data that can help map cloudburst-prone regions.
- People in risk prone areas should be moved, and construction and mining in nearby regions should be restricted as that can aggravate the landslides and flash flood impacts.

Nut Graf:

Cloudbursts are reported frequently from across the country. Most of these events go unreported due to the lack of monitoring mechanisms, weakening our ability to understand these events in complete perspective. Immediate actions and policies to protect lives and property from cloud bursts is the need of the hour as these events will amplify with rise in global temperature.

GEOGRAPHY

Important Geophysical phenomena – Monsoon

1. Southwest monsoon begins early withdrawal in Rajasthan

- » Prelims: Monsoons in India
- » Mains: Significance of the Monsoons for India

Context

- The southwest monsoon rainfall in 2022 has started to withdraw.

Southwest Monsoon

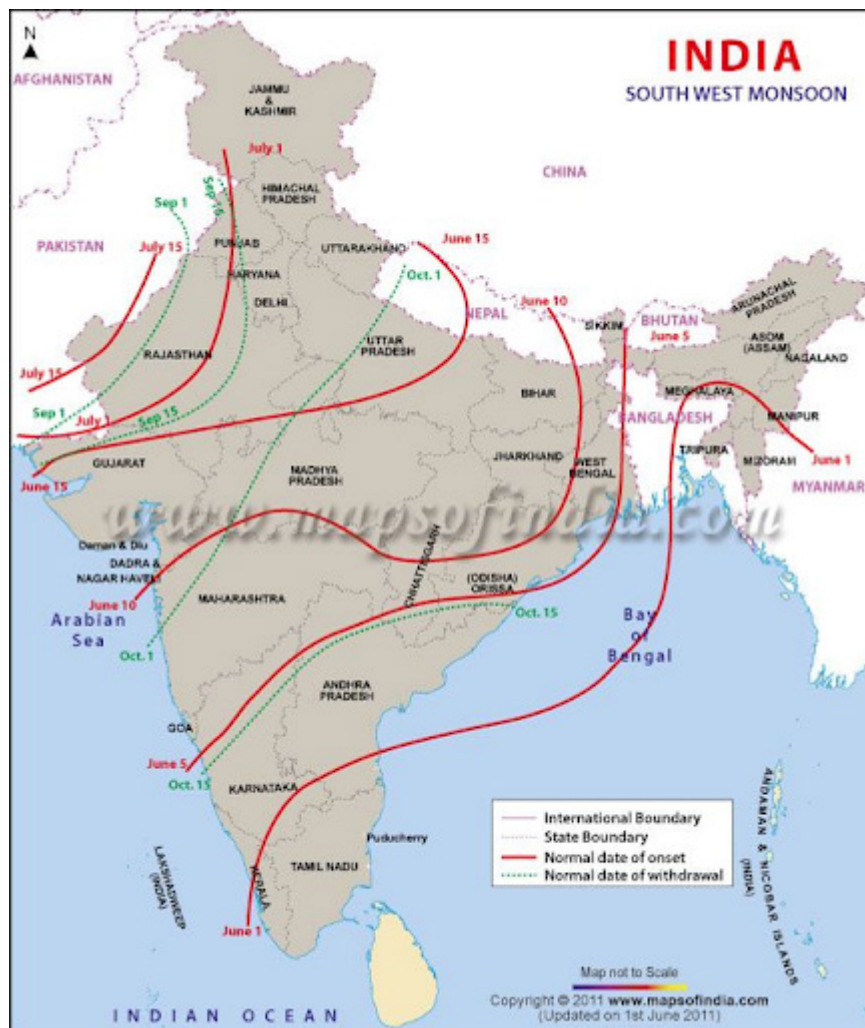
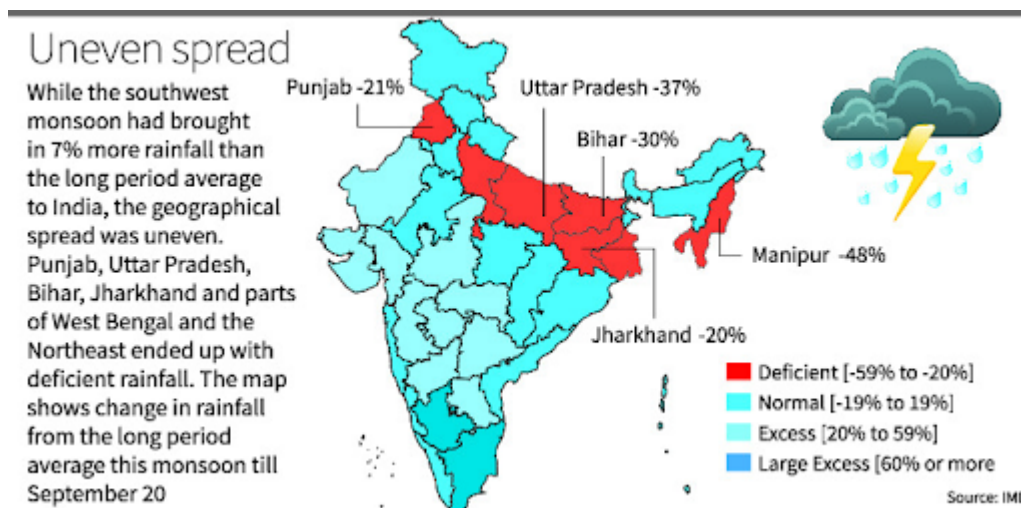


Image Source: Maps of India

- The southwest monsoon gets its name from winds that blow in a south-westerly direction towards the Indian subcontinent.
- The source of the southwest monsoon is said to be Mascarene High which is a high-pressure region located near the Mascarene Islands.
- The Southwest monsoon is significant in the context of India, as these winds bring heavy rainfall to most parts of the country.
- The southwest monsoon usually lasts between the months of June and September and contributes to over 70% of the annual rainfall of the country.
- The southwest monsoon is split into two branches namely the Arabian Sea branch and the Bay of Bengal branch.
 - * The Arabian Sea branch of the monsoon is relatively stronger than the Bay of Bengal branch monsoon.

Details:**Image Source: The Hindu**

- According to the India Meteorological Department (IMD), the southwest monsoon has started to retreat from the southwestern region of Rajasthan and Kutch.
- The IMD suggested that the withdrawal of the monsoon was identified based on several meteorological conditions like:
 - * The prevailing anti-cyclonic circulation i.e. opposite conditions of a cyclone
 - * The lack of rainfall in the last few days
 - * The water vapour imagery reflecting the prevailing dry weather conditions in the region
- The monsoon withdrawal is a long-drawn process that is expected to extend until mid-October and the rain post the withdrawal is classified as "post-monsoon rainfall".

Monsoon distribution in 2022:

- Monsoon rainfall in India has been surplus by around 7% in 2022 though with extreme inequity.
- Rains in Central India were surplus by 20% and in southern India by 25%, with several instances of flooding in Kerala, Karnataka and Madhya Pradesh.
- Large parts of Uttar Pradesh, Bihar, Odisha have seen large deficits.
- The east and northeast of India have reported a 17% shortfall and the northwest 2%.
- This has impacted sowing of the kharif crop.
- Paddy planting has been impacted with sown area 5.51% lower than last year. The Centre is expecting a minimum of six-million tonne shortfall in rice production which is likely to elevate inflation.

What led to excessive rains in southern and central India?

- Heavy rains in central India and the southern peninsula are due to La Nina.
- While, El Ninos are linked to reduced rains over India, La Ninas indicate surplus rainfall.
- India is witnessing 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.

Changes in monsoon patterns:

- As per IMD, between 1989 and 2020, five states namely, UP, Bihar, West Bengal, Meghalaya and Nagaland have shown significant decreasing trends in Southwest Monsoon rainfall.
- A significant increasing trend in the frequency of heavy rainfall days has been observed over Saurashtra and Kutch, southeastern Rajasthan, northern Tamil Nadu, Andhra Pradesh and adjoining areas of southwest Odisha, and parts of many other states.
- Monsoon is surplus in India since 2019 except a slight dip in 2021.
- 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.

- Monsoon in 2022 is already in surplus by about 6%.
- Three years of above-normal rain in four years is unprecedented in more than a century of IMD's record keeping.

Implications of changing monsoon patterns:

- Shifting monsoon patterns with deficits in certain regions and increased rainfall in a short period of time resulting in surface runoffs has created acute water shortage in the country.
- Cycles of droughts and floods have become more common in many parts of India.
- Poor monsoon rains result in less crop output and necessitates import which increases food shortage and inflation.
- Variation in monsoon has also resulted in the incidence of vector borne diseases such as malaria, dengue.

Conclusion:

- Climate change has resulted in erratic monsoon patterns in India. With a warming climate, more moisture will be held in the atmosphere, leading to heavier rainfall, consequently, inter-annual variability of the monsoon will increase in future. Reliable and sustainable prediction of monsoon forecasts is crucial in order to prepare the country for this change.

Nut Graf:

The southwest monsoon is extremely important in the Indian context as it plays a crucial role in determining the yield of the country's Kharif crops, ensuring an adequate amount of water reserves in the country and also sustaining the overall economy of the country.

SOCIAL ISSUES

Role of women and associated issues

1. Participation of women in Science & Research in India

- » Mains: Analysis of the participation of women in academia and research in Indian and comparing it with the participation in the corporate sector.

Background:

- In 1933, Kamala Sohonie had reached out to Sir C.V. Raman to take up research in physics under his guidance. However, it is said that Sir C.V. Raman, who was then the director of the Indian Institute of Science, Bangalore, rejected her request because "she was a woman".
 - * Kamala Sohonie was later provided admission to the institution after she protested against the discrimination on the condition that her work would not be recognised till the director was satisfied with the quality of her research and that her presence did not distract any of her male colleagues.
- In 1937, Professor D.M. Bose, then Palit Professor of Physics at Calcutta University, was unwilling to induct Bibha Chowdhuri into his research group as he felt that there were no suitable research projects to assign to women.
 - * However, determined Bibha Chowdhuri made her way into the research group and her work on cosmic rays in determining the mass of mesons is widely appreciated.
- Even in international institutes and organisations, there have been several instances where it is believed that women are less capable than men in scientific research. This can be understood in the statement of a professor at Pisa University who said that "physics was invented and built by men."

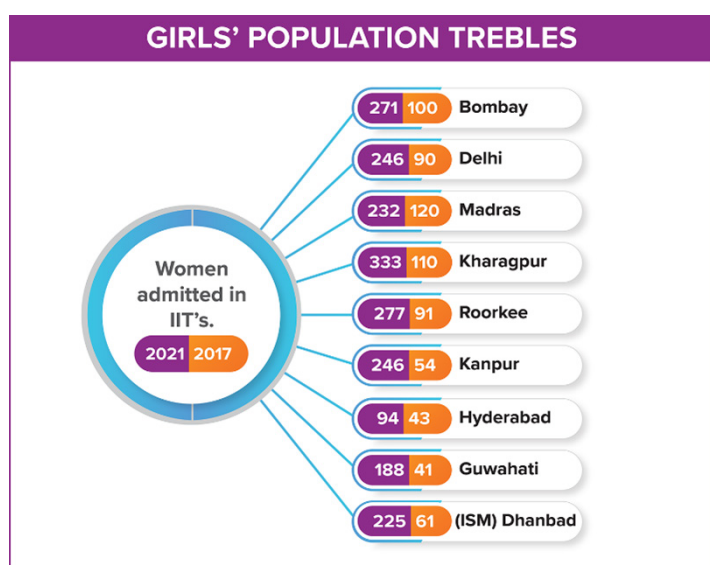
Government initiatives:

- The Indian government has undertaken various efforts to improve women's participation and address the issues of gender inequality and discrimination.
- In this context, the major focus is on incentivising women to take up higher education. The major initiatives of the government include:
 - * Gender Advancement for Transforming Institutions (GATI) – GATI is an innovative Pilot Project launched by the Department of Science and Technology that aims to promote gender equity in science and technology.
 - » GATI project envisages to develop an enabling environment for equal participation of women in Science, Technology, Engineering, Mathematics, and Medicine (STEMM) disciplines at all levels and address key challenges.
 - * Knowledge Involvement in Research Advancement through Nurturing (KIRAN) – KIRAN is an initiative launched by the Department of Science and Technology in 2014 which enables gender parity in science by nurturing research careers of women scientists and also prevents women from giving up research due to family reasons.
 - * Other key initiatives include the Women Scientists Scheme, Consolidation of University Research for Innovation and Excellence in Women Universities (CURIE) and Indo-U.S. Fellowship for Women in STEMM.
- Further, universities and research institutes are setting up creches to help scientist mothers to carry on with their research work uninterrupted.

Participation of women in STEM (science, technology, engineering, and mathematics):

- There is an under-representation of women in STEM disciplines worldwide.
- As per the UNESCO data on a few selected countries, India has occupied the lowest rank with only 14% female researchers working in STEM areas.
 - * However, India is not lagging far behind as various advanced countries have also performed poorly in this aspect.
 - » Example: female researchers working in STEM areas in Japan is only 16%, in the Netherlands it is 26%, in the U.S. it is 27% and 39% in the U.K.
 - * The highest participation of female researchers was seen in countries like Tunisia, (55%), Argentina (53%) and New Zealand (52%).
 - » Countries like Cuba (49%), South Africa and Egypt with 45% have also performed very well.

- In India, women among the graduate population in STEM account for nearly 43% which is one of the highest in the world. However, only about 14% of women get into academic institutions and universities. Further, the participation of women in research is also lower.
- The participation of women as faculty in universities and research institutes is very low and the participation percentage drops further as there is an increase in the hierarchy of the position held.
 - * As per a survey by the University Grants Commission, 7 out of the 54 central universities; 52 of the 456 State universities; 10 of the 126 deemed universities; and 23 of the 419 private universities have female vice-chancellors.
- The total number of women fellows in major science academies of India is
 - * 7% for the Indian Academy of Sciences (IAS) founded in 1934
 - * 5% for the Indian National Science Academy (INSA) founded in 1935
 - * 8% for the National Academy of Sciences India (NASI) founded in 1930
- The number of women employees at Indian Institutes of Technology (IITs) is also very low.
 - * Example: At IIT Madras only 31 out of 314 professors (10.2%) and in IIT Bombay only 25 out of 143 professors (17.5%).



Women participation in the corporate sector:

- The participation of women in leadership and decision-making positions in the corporate or the private sector is better when compared to the prospects in academics.
- The number of women in senior management positions in the corporate sector in India is 39%, which is better than the global average.
- The number of women CEOs in Fortune 500 companies is about 15% and the number of women as board members has posted a significant growth from 15% in 2016 to 19.7% in 2022.

Reasons for the disparity in corporate sector and academic sector:

- The process of selection and promotion in the private sector is usually based on merit and is more result oriented with a definite structure as compared to academic institutes.
- Further, various initiatives such as flexible work hours, maternity benefits, and sections that are operated only by women which promote the participation of women in the private sector were adopted long ago.

Nut Graf:

India has undertaken significant efforts in the last century to address the issues of gender discrimination and equality in the workforce. However, women are still under-represented in the academia and research sectors. Various programmes initiated by the Government in this context are expected to bridge the gender disparity by 2047.

Population and associated issues

2. Ageing population challenge

» Mains: Challenges associated with the ageing of the population and various remedial measures

Background:

- The life expectancy (the average number of years that an individual is expected to live) in the country has increased by more than two times since Independence.
 - * The life expectancy was around 32 years in the late 1940s and currently it is about 70 years.
- At the same time, the fertility rate in the country has decreased to about two from six children per woman.
- However, this has created a new challenge with respect to the ageing of the population.
 - * The proportion of the elderly (individuals aged 60 years and above) in India was seen to be 9% of the total population in 2011.
 - * According to the National Commission on Population, this proportion is expected to reach 18% by 2036.

Recommendations on addressing the challenges of the ageing population:

Pensions:

- According to various studies and research, there is an increase in mental health issues such as depression among the elderly.
- According to a survey, among individuals aged 60 and above, about 30% to 50% (depending on gender and age group) had shown symptoms of depression.
 - * This share is higher among women than men and increases with the increase in age.
- It is widely believed that depression is strongly correlated with poverty, poor health and loneliness.
- Extending cash benefits through old-age pensions is expected to help individuals cope with various health issues and it is expected to act as a first step towards ensuring a dignified life and safeguard the elderly from destitution and deprivations.
- In India, there are a few essential schemes of non-contributory pensions for the elderly, widowed women and disabled persons under the National Social Assistance Programme (NSAP) which is administered by the Ministry of Rural Development.
 - * However, these schemes are limited to individuals from below the poverty line (BPL) and the central contribution to old-age pensions under NSAP has stagnated at only ₹200 per month since 2006 with widows getting ₹300 per month.
 - * Various states have extended these assistance programmes to achieve almost universal coverage (75%-80%) of widows and the elderly.

Extending the beneficiary targets:

- "Targeting" social benefits schemes has always been a challenge in India as restricting them to BPL families has not yielded results as there are several errors in the BPL lists.
- Further, experts feel that targeting is not the ideal way to deal with the ageing population as these individuals experience deprivations even in relatively well-off households.
- Furthermore, targeting involves complicated formalities like the periodical renewal of certificates, submission of BPL certificates and other documents for getting benefits, etc.
 - * Adherence to these formalities is difficult for the elderly, especially those who come from remote areas with little education.
- Therefore extending benefits to all widows and elderly or disabled with simple and transparent "exclusion criteria" is said to be a better approach.
- Also, the eligibility can be self-declared, with the task of periodic verification being entrusted to the local administration or gram panchayat.

Widening the net and budget allocations:

- Widening the beneficiary base would require increased allocation to the pension budgets as social assistance schemes in the country have low budgets.
- Experts believe that there is a need to increase these allocations as the social assistance schemes are worth expanding.

Revamping NSAP:

- The southern States have performed better in terms of universal coverage of social benefits. However, some States are struggling to ensure near-universal social security pensions.
- The centre by revamping the NSAP can help the states to perform much better.

- The allocation for NSAP has been just ₹9,652 crores (less than 0.05% of India's GDP) which has more or less remained stagnant for about 10 years.

Other benefits:

- The elderly population also requires support in terms of improving health care facilities, extending disability aids, assistance with daily tasks, recreation opportunities and a chance to have a good social life.

Nut Graf:

As the share of the elderly population in India is expected to increase rapidly in the coming years, there is a need for revamping the existing social assistance programmes by extending the allocation for the pension schemes and increasing the beneficiary base to ensure a decent quality of life for these individuals.

Issues related to women.

3. Gender pay gap

- » Mains: The gender pay gap issue- concerns and Recommendations

Context

- The Third International Equal Pay Day was observed on the 18th of September.

Details:

- India has shown immense improvement in economic growth with a commensurate development in labour market outcomes.
- However, the pandemic has created a disproportionate impact on women workers in terms of income and job losses. A large number of women have left their jobs and reverted to full-time care of children and the elderly.
- According to the International Labour Organization's Global Wage Report 2020–21, the massive downward pressure was inflicted on the total wages of women in contrast to that of men. This implies that pre-existing gender pay gap has further widened.

Trends in wages of men and women:

- In 1993-94 Indian women on an average earned 48% less than their male counterparts.
- However, according to labour force survey data from the National Sample Survey Office (NSSO) the wage gap declined to 28% approximately.
- As per the preliminary estimates of the Periodic Labour Force Survey (PLFS) 2020-21, there is an increase in the gap by 7% during the span of 2018-19 to 2020-21.

Factors responsible for Gender pay gaps:

- The basic factors include education, skills, and work experience.
- The major factor that is responsible for the persisting wage gap is discrimination based on gender/sex. Gender-based discrimination includes within its ambit:
 - * Undervaluation of women's work, especially in feminized enterprises and occupations
 - * Payment of lower wages to women even for work of equal value.
 - * The motherhood pay gap. It refers to the practice of giving lower wages to mothers in comparison to non-mothers.

Efforts taken to reduce Gender pay gaps:

- International Level:
 - * United Nations has placed the challenge of eliminating various forms of gender inequality at the heart of its actions.
 - * The ILO's Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) has provided an international legal framework for promoting gender equality. It has also adopted the principle of 'equal pay for work of equal value'.
- India:
 - * India is one of the first countries to adopt the Minimum Wages Act in 1948.
 - * In 1976, the Equal Remuneration Act was adopted.
 - * India undertook comprehensive reforms in 2019. It adopted the legislation as well as enacted the Code on Wages.
 - * Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005: This law has considerably benefited rural women and has immensely helped in reducing the gender wage gap both directly and indirectly.

- » It raised the pay levels of women workers who participated in the programme.
- » It also benefitted women engaged in agricultural occupations as MGNREGA contributed in enhancing agricultural wages in the country thereby contributing to rapid rural economic growth.
- Moreover, the Maternity Benefit Act of 1961 was amended in 2017, to increase the 'maternity leave with pay protection' from twelve weeks to twenty-six weeks for all women that worked in establishments with 10 or more employees. This will be beneficial for the motherhood pay gap, especially in the formal economy.
- The government has also provided initiatives like Skill India Mission that will provide market-relevant skills to women.

Nut graf:

Even after various efforts, India's labour market is still bound by asymmetries like the widening gender pay gap. To achieve full and productive economic growth, it is very important that the participation of women in the workforce increases along with ensuring equal pay for equal work.

Population and Associated Issues

4. Declining Fertility Rate

- » Mains: Socio-cultural and economic implications of declining fertility rate in India

Context

- The newly released World Population Prospects notes the global decline of the fertility rate from three in 1990 to 2.3 in 2021.

Introduction:

- Population across the world, in terms of numbers, has been steadily increasing, despite the consistent decline in average global fertility over the past 7 decades.
- As per World Population Prospects 2022, the average number of children per woman in the reproductive age group has declined by 50%, from an average of five children per woman in 1951 to 2.4 children in 2020.

Disparity in Growth Rate:

- Poorer countries are transitioning a lot faster than the richer nations.
- Britain took 130 years to transition from a fertility rate of 05 per woman in 1800 to 02 in 1930, whereas South Korea took 20 years from 1965 to 1985 to achieve the same.
- Sub-Saharan African countries are expected to contribute more than half the population growth after 2050 and grow through 2100.
- Most advanced economies have their fertility rate below the replacement rate of 2.1, with South Korea reporting the lowest at 1.05 children per woman.

Fertility Rate in India:

- 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 05 years as per National Family Health Survey (NFHS-5) data.
 - * TFR is the average number of children a woman would have by the end of her childbearing years if she bore children at the current age-specific fertility rates.
- India's fertility rate was six per woman at the time of Independence, with the government launching the family planning programme in 1952, it was reduced to 4.9 in 1976.
- As per NFHS-05, only 05 States have a fertility rate above the replacement rate: Bihar (3), Meghalaya (2.9), Uttar Pradesh (2.4), Jharkhand (2.3), and Manipur (2.2).
- Sikkim and Andaman and Nicobar Islands have the lowest fertility rates in India.
- The steady dip in fertility rates has been explained as an effect of increased use of contraception, more years of average schooling, better health care, and an increase in the mean marriage age of women.
 - * There is a significant increase in the current use of any modern contraceptive method, which stands at 56.5 percent in 2019-21 against 47.8 percent in 2015-16.

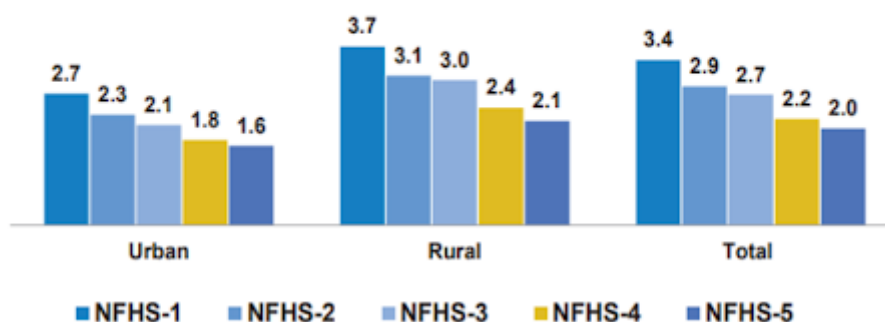
Total fertility rate for the three years before the survey

Image Source: NFHS-5 Report

Economic Implications of Declining Fertility Rate:

Positive Implications:

- Lower fertility rates can be viewed as both a cause and consequence of economic development in countries which are in the earlier stages of demographic transition.
- Women's education improves with lower fertility, which in turn lowers the fertility of the next generations.
- Better infrastructure development leads to better health care, and education and fertility drops and income rises.
- The spiral of lower fertility leads to a higher working-age population than that of the dependent age groups which boosts income and investment.
- The falling fertility rate will also lead to lower pressure on land, water and other resources and would also contribute to achieving environmental goals.
- A lower fertility rate will have a positive effect on inflation through higher wages due to the lower labour supply.

Negative Implications:

- In the last stage of the demographic transition, the huge working-age population moves to old age, supported by fewer workers.
- Japan was the first country to experience the implications of falling fertility rates. The increasing dependency ratio has led to near zero GDP growth since the 1990s, and it is facing fiscal challenges to meet rising social security costs.
- Other Asian countries such as South Korea are now reporting lower fertility than Japan.
- The impact of fertility drop on productivity is also highly debated. While a higher level of education and technological advancement in areas including artificial intelligence could increase the productivity of the lower working age population.
- 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.
- There will be increased pressure on public finance due to a high dependency ratio.

Dealing with fertility decline:

- The fall in fertility around the globe needs scientific and sustainable policies for mitigation.
- Labour market reforms with more encouragement to working women to have more children and non-working mothers to enter the labour market could arrest the fall in labour participation and fertility rate.
- Countries across the globe are experimenting with policies to boost fertility.

* For example, Germany is allowing more parental leave and benefits to boost births. Denmark offers state-funded IVF for women below 40 years.

Nut Graf:

The below replacement level fertility rate results in a smaller dividend window than expected. Therefore, countries need to focus on measures to ensure sustained labour supply despite lower fertility. Although India's working-age population will continue to grow, it would need to keep an eye on fertility dips.

MISCELLANEOUS

Important Reports, Indices.

1. Human Development Index

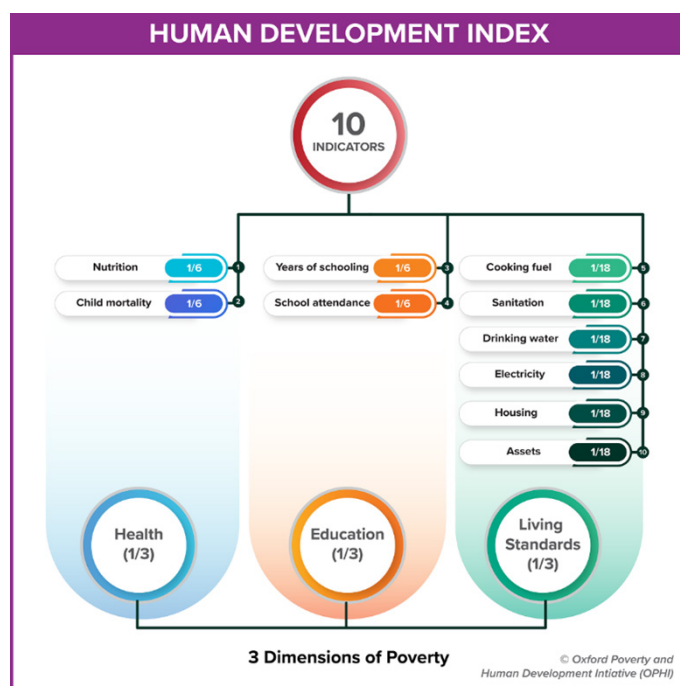
» Prelims: HDI and UNDP

Context:

- United Nations Development Programme (UNDP) recently released its Human Development Report 2021-2022.

Human Development Index (HDI) 2021:

- The Index is part of the Human Development Report 2021-2022 released by the UNDP.
- The HDI measures the average achievement of a country in three basic dimensions of human development calculated using four indicators
 - * A long and healthy life – calculated based on 'life expectancy at birth'.
 - * Education – based on 'mean years of schooling' and 'expected years of schooling'.
 - * A decent standard of living based on 'Gross National Income (GNI) per capita'.



India and HDI:

- India ranks 132 out of 191 countries in the 2021 Index.
- India registered a decline in its score over two consecutive years for the first time in three decades.
- The drop is in line with the global trend since the outbreak of the COVID-19 pandemic during which 90% of the countries have fallen backwards in human development.
- Performance in human development has declined due to various reasons such as the COVID-19 crisis, the war in Ukraine and environmental challenges.
- 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.
- India's HDI score of 0.633 places it in the medium human development category, lower than its value of 0.645 in 2018.
- The drop in HDI can be attributed to falling life expectancy at birth — from 70.7 years to 67.2 years.
- India's expected years of schooling stand at 11.9 years, and the mean years of schooling are at 6.7 years.

- The GNI per capita level is \$6,590.

Gender Inequality Index:

- Globally, gender inequality has worsened especially due to the COVID-19 pandemic. It has increased 6.7% globally.
- However, India has shown a slight improvement in its Gender Inequality Index value as compared to the 2020 index (0.490 vs 0.493), after gender inequality worsened between 2019 and 2020 (0.486 vs 0.493).
- The index measures inequality in achievement between women and men in three dimensions — reproductive health, empowerment and the labour market.

GIST OF YOJANA SEPTEMBER 2022: J&K AND LADAKH

1. Counter Terrorism Scenario in J&K

Background:

- Jammu and Kashmir (J&K) is one of the most picturesque regions of the country. However, the region has been afflicted by the problem of cross-border terrorism, separatist violence and armed militancy for more than 30 years.
- However, since the early 1990s, this militancy has transformed radically as various internal and external dynamics have impacted it, such as the driving role of Pakistan's Inter-Services Intelligence (ISI), evolution of Kashmir's separatist politics, influence of terrorist groups and the emergence of social media.
- This makes the militancy in J&K today a qualitatively different challenge to the security establishment than it was in 1989 when scores of Kashmiri youths crossed the Line of Control (LoC) to train in Pakistan-occupied J&K (PoK) and joined the ranks of terrorist outfits.

Latest developments

- The 5th of August 2022, marked three years since the Union Government revoked the special status of J&K and created two new Union Territories (UTs) of J&K and Ladakh.
- This change is said to be a landmark moment for the region, marking a break from the past to herald a new administrative and security approach to this strategically-important region.
- Several initiatives implemented by the J&K UT administration and security-establishment since then demonstrate that there is hope for a better future.
- At present, the Indian security establishments extend their firm control of the situation in J&K. Security agencies have kept up the pressure on militants through dynamic operations and have cut off the support from terror ecosystems.
- Despite there being some evolving and emerging challenges from the Counter-Terrorism (CT) perspective, security forces are confident of tackling them effectively.

Current Terrorism Outlook for the Region

Table 1: Terrorist Strength in Kashmir Valley

Region	Pakistani Terrorists	Local Terrorists	Total
North Kashmir	60	17	77
South Kashmir	18	68	86
Total	78	85	163

- The current residual strength of the terrorists operating in the region is a key indicator of the improved security situation in the region.
- The numbers during the early 1990s were in the thousands. However, the situation has changed significantly. Current terrorist strength in Kashmir stands at about 163.
- These individuals mainly belong to the three terrorist groups namely Lashkar-e-Taiba (LeT), Jaish-e-Mohammed (JeM) and Hizbul Mujahideen (HM).
- It is also seen that the role of Pakistani terrorists has now been reduced to guiding and motivating the local terrorists.
- South Kashmir remains the main hub of militancy while North Kashmir has been a key entry point for Pakistani Militants through the LoC.

Tackling Cross-Border Militant Infiltration

- Pakistan-based terrorist organisations have used the mountainous terrain in north Kashmir to sneak into the Kashmir Valley.
- Militants enter through the south of Pir Panjal range, Jammu-Samba-Kathua plains and the hilly Rajouri-Poonch areas.
- To counter this infiltration, security forces have set up a highly-effective three-tiered counter-infiltration grid.

- * The Indian Army forms the first tier on the LoC, followed by the second tier of paramilitaries such as the Central Reserve Police Force (CRPF), and the third comprises the J&K Police (JKP).
- * Further, the security forces have deployed Anti Infiltration Obstacle System (AIOS) fencing and have enhanced surveillance through the use of drones, night-vision equipment, and hand-held thermal imaging devices.
- These efforts combined have contributed to the infiltration levels going down significantly. As seen in the below table:

Table 2: Cross-border Infiltration in J&K

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
Infiltration attempts	222	229	183	93	349	323	339	171	62	58	5
Successful infiltration	121	97	65	33	112	120	143	130	36	36	3

Crackdown on Terrorist Groups and their Ecosystem

- The security agencies have increased the pressure on the terrorist groups in the region through several Counter-Insurgency (CI) operations.
- The elimination of the top militant leadership and disruption of their subversive plan has yielded great results.
- Army officials also highlight that due to sustained CI operations terrorist groups are joining hands and are now operating together.
- A crucial part of the security crackdown is the punitive action against the subversive elements of the ecosystem that support the terrorists that include the network of Over Ground Workers (OGWs) and terrorist sympathisers.
- Security agencies have targeted the OGWs who help the militants by providing multiple services such as recharging mobile phones, providing shelter and informing the terrorists about the security forces movements.
- Since 2019, J&K Police have arrested more than 900 OGWs under the Public Safety Act and Unlawful Activities (Prevention) Act.
- Countering terrorist finances has been another key area of focus. The National Investigation Agency (NIA) has launched several investigations into the cases of terrorist financing.
 - * The MHA has set up a Terror Monitoring Group, comprising representatives of security agencies like NIA, Central Bureau of Investigation, Intelligence Bureau and JKP and financial agencies like Central Board of Direct Taxes, and Central Board of Indirect Taxes and Customs to closely monitor terrorist financing cases
- Several soft measures such as exercising maximum restraint, avoiding pellet guns and minimising collateral damage during the CI operations and protest demonstrations have also helped the cause by gaining the trust and respect of the civilians in the region.

Emerging Counter Terrorism Challenges

- Radicalisation and Terrorist Recruitment: Increase in the local terrorist recruitment in areas such as Pulwama, Shopian, Kulgam and Awantipora have been a key cause of concern. Radicalisation of the local youth has been the main cause for recruitment.
 - * The Indian Army's "Sahi Raasta" initiative aims to tackle the issue of radicalisation by bringing the youth on the right track through national integration tours, sports training programmes and festivals, and skill development workshops.
- Hybrid terrorists and virtual terrorist outfits: With increased CI ops and neutralisation of many active militants, terrorist masterminds have changed their strategies.
 - * With the advent of modern technologies in cyberspace such as the dark web, the militants are using technological advancements to achieve their agenda.
 - * These new set of terrorists are regarded as "Hybrid terrorists". In response, the security agencies are enhancing their human and technical intelligence capabilities to counter this terrorist recruitment.
- Pakistan's information warfare: The ISI is working hard to spread disinformation on social media platforms as Pakistan's material and financial support to terrorist groups such as LeT and JeM have attracted global scanner.
 - * This information warfare campaign by Pakistan is a significant challenge because it exploits any minor incident to create a false narrative against India and its security forces.
 - * Countering these narratives will require a comprehensive national effort anchored in India's democratic credentials.
 - * Indian Army's Srinagar-based Chinara Corps is implementing a counter-response, but its efforts need national amplification.

2. Sustainable Tourism

Introduction

- Tourism has gained extensive recognition as an important industry in the district of Ladakh in view of its potential for the creation of employment opportunities and generation of income on a vast scale.
- The tourism sector has a direct impact on the socio-economic sector of the region and many others working in allied industries such as transportation, lodging, catering, cottage industry, etc.
- However, tourism causes a major strain on the natural resources of the sensitive ecosystem and extreme climate change impacts are also endangering the lives here.
 - * The glaciers are melting rapidly, and snowfall has decreased dramatically over the past two decades.
 - * Rainfall has also become irregular.
 - * Flash floods due to cloud bursts in the Leh-Ladakh region are also casting doubt on Ladakh's long-term sustainability.
- The unprecedented increase in tourism has led to "over-tourism" in these locations, which has an immediate negative impact on natural resources, cultural legacy, and quality of life. This awareness has sparked debate on sustainable tourism.

Tourism potential

- Jammu, Kashmir and Ladakh are the three distinct regions. The potential for tourism from both domestic and foreign visitors is enormous in all three regions.
- Its effects are apparent in the service sector industries such as transportation, hospitality, horticulture, handicrafts, and small-scale manufacturing.
- Kashmir is famously referred to as "paradise on earth" and has long been a major tourist attraction.
- The region is also known as the "Switzerland of the East" because of its abundance of snow capped mountains, rivers, and freshwater lakes.
- There is a plethora of products that can be purchased in the region which attracts visitors.
 - * Each district has a lot to offer to the visitors, including abundant natural resources, adventure tourism (such as river rafting and mountain climbing), numerous trekking routes, pilgrimage tourism, wildlife tourism, heritage tourism, ethnic food festivals, and cultural events, handicrafts, etc.

Government initiatives

- The Ladakh Government has undertaken the task of waste management with the goal to safeguard the environment.
- The Central Government is also working towards making Ladakh a tourist destination with a focus on aspects of adventure, culture, and responsible tourism.
- Seven projects worth Rs 594 crores have been sanctioned for J&K and Ladakh under Swadesh Darshan and PRASHAD Schemes, under the Ministry of Tourism
 - * These are expected to make Ladakh a high-value, low-impact tourism destination that fosters sustainable and inclusive growth for the local community.
- Through the promotion of tourism in Ladakh, the aim is to create employment for the locals and promote Ladakh's culture and products to tourists from India and the rest of the world.

Sustainable Tourism

According to United Nations World Tourism Organisation (UNWTO), sustainable tourism should:

- Make the best use of environmental resources, which are crucial to tourism development, while maintaining crucial ecological processes and aiding in the preservation of natural heritage and biodiversity.
- Respect the socio-cultural authenticity of host communities, preserve their built and living cultural heritage and traditional values. and promote intercultural understanding and tolerance.
- Ensure long-term economic viability, distributing socio economic advantages to all stakeholders in a balanced way, including chances for permanent employment and income generation, social services for host communities, and aiding in the reduction of poverty.



Way forward

- The tourism industry in places like Ladakh depends on presenting an image of a pristine natural place, but most visitors in these regions show little regard for the sensitive ecosystem and cultural sensitivities of the region.
- Each year they generate tonnes of waste, endangering the environment and human health as well as ruining the beauty of the place.
- At present, the strategy should be the reduction in significant risk of pollution and environmental degradation, and promote sustainable tourism.
- The potential of high-end tourism and wildlife conservation is yet to be harnessed through a scientific understanding and efficient planning.
- Without a proper understanding of the delicate interlinkages of different landscape components, the rapid development of tourism may affect the unique ecosystems of the region.
- It is crucial to consider the sustainability prospects for tourism growth in these regions as threats to the socio-cultural heritage, intensive use of finite resources, and negative externalities, as elsewhere, could have other detrimental effects.
- J&K and Ladakh must strive to develop into Eco-Tourism hotspots because uncontrolled tourism contributes to the ecological imbalance brought on by climate change.
 - * Eco Tourism is ethical travel to unspoiled areas that protects the environment, promotes community development, and educates both locals and visitors.
- The UT may take inspiration from Bhutan, which has pledged to “absorb more carbon than we release and to be a net sink for global greenhouse gases”.

3. **Blooming Business of Lavender**

Lavender



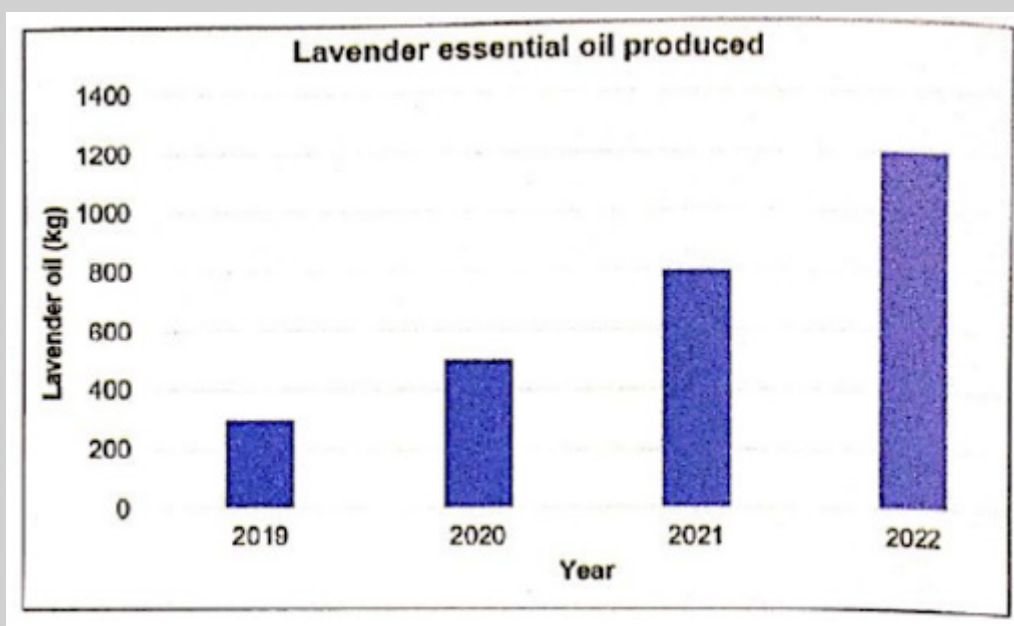
Image Source: Freepik

- *Lavandula angustifolia* Mill or the “True Lavender” is a small, non-hardy perennial evergreen subshrub.
- It is commercially cultivated in many parts of the world.
- Lavender is mainly cultivated for its essential oil, obtained by the hydro-distillation of its attractive flowering spikes.
- Lavender is commercially one of the best-known essential oil-bearing plants grown for essential oil and dry flowers.
- The variety of lavender is highly suitable for cultivation in the rainfed regions of the temperate regions of India, including Kashmir valley and temperate regions of the Jammu division.

Aroma Mission

- The Aroma Mission was Launched in 2016 to boost the cultivation of Lavender in the region.
- Council of Scientific and Industrial Research (CSIR) and the Indian Institute of Integrative Medicine, Jammu (IIIM Jammu), are the nodal agencies of the mission.
- Aroma Mission aims to make India a hub of opportunities in the domain of aroma products by developing and disseminating aroma-related S&T.
- CSIR-IIIM introduced lavender to the farmers of different districts of J&K like Doda, Ramban, Kishtwar, Kathua, Udhampur, Rajouri, Pulwama, Anantnag, Kupwara and Bandipora.
- Under the CSIR Aroma Mission, CSIR-IIIM has provided free Quality Naming Material (QPM) and an end-to-end technology package for cultivation, processing, value addition, and marketing of the lavender crop to the farmers.

Significance and Achievements of the Aroma Mission



- Lavender cultivation has employed large numbers of farmers and young entrepreneurs in the geographically remote regions of J&K.
- A new industry around lavender cultivation has developed in the region with over 1000 farming families cultivating lavender on more than 300 acres of land.
- Women are primarily employed in the Lavender fields for harvesting and processing of flowers. This has increased the income of women in the region.
- Many young entrepreneurs have started small-scale businesses through the value addition of Lavender oil, hydrosol, and dried flowers.
- Lavender oil produced in J&K has a market price of around Rs 10,000/- per kg in the Indian market and the dry lavender flowers fetch a price between Rs 1000 to Rs 1500.
- The net annual income of lavender farmers has increased many folds from around Rs 40,000/- to Rs 60,000/- per hectare to almost Rs 3,50,000/- to Rs 6,00,000/- per hectare.
- The production of lavender is said to be in an incipient stage and is expected to increase manifold in the coming years.
- The production of lavender oil in J&K will help import substitution and save foreign reserves.
- The Aroma Mission is attracting Startups and agriculturists from across the country.

4. Universal Health Coverage in J&K

Introduction

- In the post-pandemic period, the proverb "prevention is better than cure" has become very relevant.
- The Sustainable Development Goal (SDG-3) reiterates the importance of prevention by introducing the concept of "Good Health and Well-Being"
 - * Universal Health Coverage (UHC) under SDG target 3.8 is a strategic priority of the World Health Organization (WHO) and it builds on the platform to provide a blanket of assuring end-to-end range of essential health services, from health promotion to prevention, treatment, rehabilitation, and palliative care.
- Despite "Health" being listed as a State Subject in the 7th Schedule of the Constitution, the Ministry of Health and Family Welfare (MoHFW) still invests a lot of resources in the State systems.

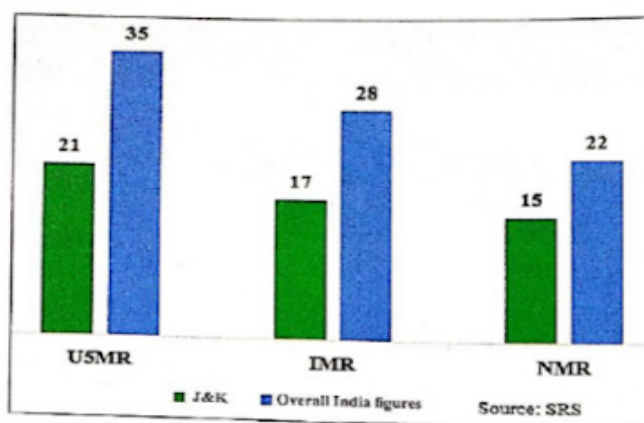
Various initiatives by MoHFW

- Through the National Health Mission (NHM) the Ministry has developed a robust grass-root level cadre of health workers such as the ASHA (Accredited Social Health Activists) workers.
- Additionally, the expansion of the network of ANMs (Auxiliary Nurse Midwives) and other field health staff to support have put in place an all-encompassing coverage system.

- The Ayushman Bharat-Health and Wellness Centre (AB-HWC) of NHM, has been a flagship programme of the Government of India and is the biggest intervention in strengthening primary level healthcare in recent years.
- The Ayushman Bharat Digital Mission (ABDM) is said to be the most ambitious health sector intervention of the decade.
- The Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) which seeks to provide free inpatient department (IPD) expenses coverage for BPL patients throughout the country with an annual cover of Rs 5 lakh, is also a landmark scheme in J&K.

Health coverage achievements in J&K

- The response of the populace across the region towards community-based interventions has been overall positive, which is reflected in the Health Management Information System (HMIS) and RCH Portal.
- These portals have ensured sustained monitoring and evaluation of fieldwork, along with providing an idea of the sheer volume of services that have been delivered which have resulted in improved health outcomes for the UT of J&K which includes reduced Infant Mortality Rate and Neonatal Mortality Rate.



Indicator (NFHS5)	J&K (%)	Overall India (%)
Mothers who had at least 4 antenatal care visits	80.9	58.1
Institutional births-	92.4	88.6
Births attended by skilled health personnel	95.1	89.4
Children aged 12-23 months fully immunised	86.2	76.4

- Early detection of diseases closer to home is being made possible in J&K by ensuring population-based screenings at HWCs for major Non-Communicable diseases such as Diabetes and Common Cancers.
- Screening has been further expanded to include a range of diseases including Ophthalmic care, ENT care, Elderly care, and Palliative care.

5. Kashmir: Poetry and Mysticism

The contributions of Kashmir in the field of literature

- In the evolution and development of literary, criticism, metaphysics and poetics in Sanskrit, Kashmir holds an important place as being the birthplace or residence of several prominent literary critics, theoreticians, philosophers and commentators.
- The list includes names such as Panini, Chandracharya, Bharata, Kshemendra, Abhinavagupta, Vasugupta, Somananda, Somadeva, Bilhana, Kalhana, Patanjali, Anandavardhana and many others.
 - * Panini's Astadhyayi is the basis of Sanskrit grammar
 - * Bharata's Natyashastra is the foundational text for theorising on dramaturgy.

- The poetic theories of aucitya, guna, rill and dhvani are the contributions of Kashmir to Indian poetics.
- From Buddhism to Shaivism to Sufism, Kashmir's literary and cultural landscape has enriched the corpus of mysticism and literature in India.
- The great philosopher Abhinavagupta lived in Kashmir in the 11th century and his name has become inseparable from the philosophy of Kashmir Shaivism.
 - * This system of philosophy teaches the concepts of abhas-vad (intuition) and pratyabhijna (recognition).
 - * Abhinavagupta also added the ninth rasa, "shanta rasa" to the typology of eight rasas enumerated by Bharata in Natyashastra.
 - * His other compositions include Tantraloka, Abhinavabharati, commentary on the Bhagavad Gita titled Gitartha Samgraha and Parmarthasara
- There was a robust spiritual environment wherein saint-poets such as Lal Ded flourished and composed vaakhs (four-line stanzas).
 - * In contemporary Kashmiri poetry, Bimla Raina has preserved the tradition of the singing of Lal-Ded's vaakhs.
- Sheikh Noor-ud-din Noorani was a master in the rishi or reshut parampara of Kashmir wherein his mystical thought blended the values of Kashmir Shaivism and Sufism.
 - * He composed four-to six-line poems known as shruckh in Kashmiri and is also credited with translating the Holy Quran into Kashmiri.
- The tradition of great women saints and mentors is preserved in the verses and dargahs in Kashmir.

The first all-women Sufi band was formed in 2015 in the region and they call themselves "Yemberzal" and are dedicated to preserve the Sufiana mausiqi, the tradition of Sufi music and Kashmiri classical music.

GIST OF KURUKSHETRA SEPTEMBER 2022 ISSUE:

TRIBAL LIFE AND CULTURE

1. Tribal Development Strategies

- Schedule Tribes constitute 8.6 percent of the total population of the country according to the 2011 Census.
- ST population grew from 6.9 percent in 1961 to 8.6 percent in 2011 and 92% of the ST population lives in rural areas.
- Because of their traditional lifestyles, remoteness of habitations and dispersed population, their socio-economic progress remained skewed on various development parameters.

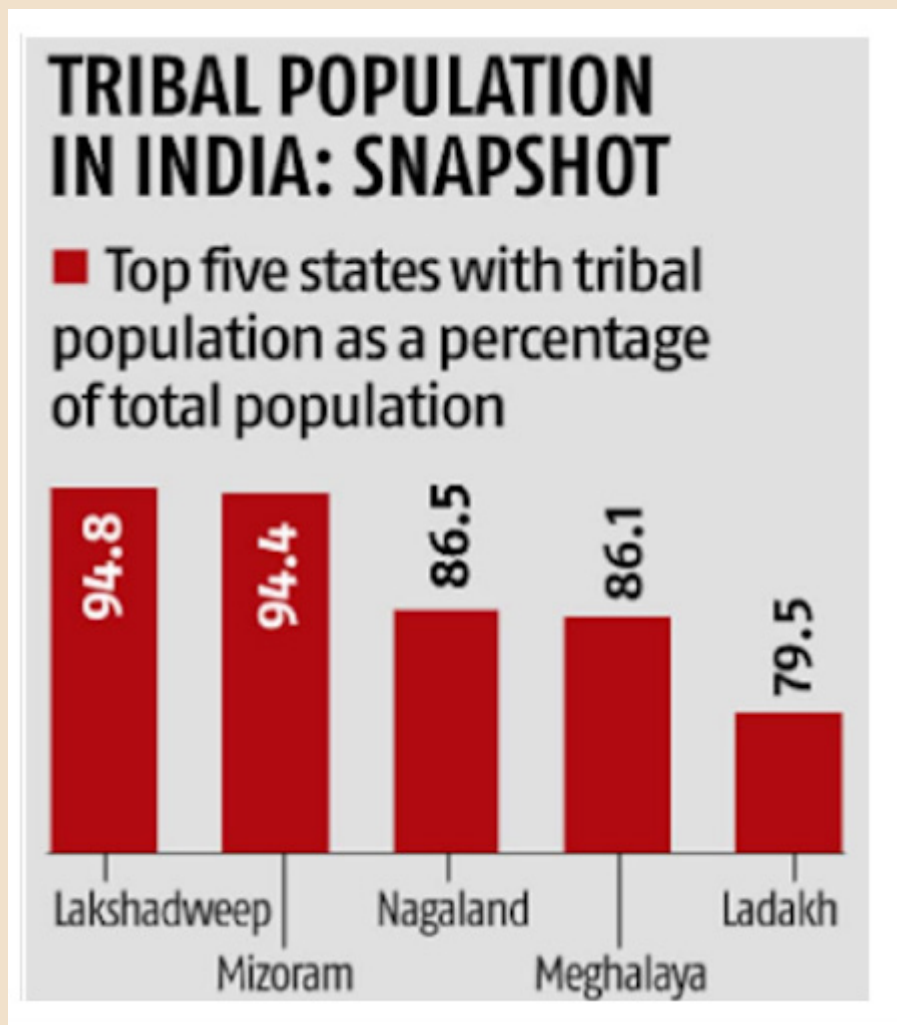


Image Source: Business Standard

Constitutional Safeguards:

- Recognising the special needs of ST's, the Constitution of India has made special safeguards to ensure social and economic justice and also protect them from possible exploitation.
- Fundamental Rights ensure their holistic development whereas the Directive Principles of State Policy prompt the State to create a conducive environment that its citizens can enjoy.
- The Constitution has also laid down special provisions for areas which have a predominance of ST population in its Fifth and Sixth Schedule.

S. N.	Article/Schedules	Provisions in Brief
1	14	Equality before the law or the equal protection of laws
2	15	Government not to discriminate against any citizen on the grounds of religion, race, caste, sex, place of birth
3	15(4)	States can make any special provisions for the advancement of any socially and educationally backward classes of citizens including STs
4	16(4)	Reservation of appointments or posts by States
5	38	State to strive to promote the welfare of its people by securing and protecting a social order
6	46	State to promote educational and economic interests of all the weaker sections including STs
7	164(1)	States with a large proportion of ST population (Bihar, Madhya Pradesh and Odisha) shall have a Minister-in-charge of tribal welfare.
8	275(1)	Grants-in-aid for promoting the welfare of the STs and for raising the level of administration of the scheduled areas
9	330, 332 & 335	Reservations of seats for STs in the Lok Sabha, the State legislative assemblies and services
10	340	State to appoint a Commission to investigate the conditions of the socially and educationally backward classes
11	342	State to specify tribes or tribal communities as STs
12	275(1)	Grants from the consolidated funds of India each year to be released for promoting the welfare of STs
Schedule		
13	Fifth	Prescriptions outlined for the administration of Scheduled Areas and the setting up of Tribal Advisory Councils for monitoring and advising the matters relating to welfare of the tribal community [Article 244(1)]
14	Sixth	Administration of Scheduled areas in the States of Assam, Meghalaya, Tripura, and Mizoram by designating certain areas as Autonomous Districts and Autonomous Regions and also by constituting District Councils [Article 244(2)].
Constitutional Amendments		
15	73 rd & 74 th Amendments & Panchayats (Extension to the Scheduled areas Act 1996)	Major shift towards empowering and enabling the scheduled tribes to look after their own interest and welfare through their own initiative. PESA provides a constitutional, legal and policy framework to ensure sustainable autonomous tribal governance.

Image Source: Kurukshetra

Development Plans and Programmes:

- Development of tribes of India has remained a central theme in various perspective Five-Year Plans and Annual Plans.
- Five Year plans laid emphasis on sustainable economic development, with the focus on reducing inequalities in society based on respect and understanding of their culture and traditions.
- The Fifth Plan (1974-78) launched the Tribal Sub-Plan (TSP).
 - * TSP aims to bridge the gap between the STs and the general population with respect to all socio-economic development indicators in a time-bound manner.
 - * TSP is not applicable to states where tribals represent more than 60% of the population.
 - * The Narendra Jadhav Committee was formed by the Planning Commission in 2010 in this regard.
 - * As per the recommendations of the committee the earmarking of funds for all Central Ministries/Departments taken together should be at least 8.2% of the total Plan outlay under the TSP.
- Seventh Plan (1985-90) laid emphasis on the economic development of STs by creating two national level institutions namely
 - * i) Tribal Cooperative Marketing Development Federation (TRIFED) in 1987 as an apex body for State Tribal Development Cooperative Corporations, and
 - * (ii) National Scheduled Castes and Scheduled Tribes Finance and Development Corporation.
- The Eighth Plan (1992-97) focused on problems such as suppression of rights, land alienation, non-payment of minimum wages and restrictions on the right to collect minor forest produce, etc.
- The Annual Plans post 12th FYP through NITI Aayog take care of development needs of STs in States.
- Niti Aayog issues guidelines for implementing Tribal Sub-Plans by Central Ministries/Departments.

The socio-economic status of the STs:**1. Livelihood Development**

- According to the National Sample Survey Office (NSSO) survey on poverty line, ST People living below the poverty line in 2011-12 were 45.3 percent and 24.1 percent in the rural and urban areas, respectively.
- As per the Periodic Labour Force Survey, conducted by NSSO, the Labour Force Participation Rate (LFPR) in usual status (Principal + Subsidiary) for STs during 2017-18 and 2019-20 were 41.8 and 47.1 percent.
- The India Human Development Survey shows the incidence of poverty is highest among the STs (49.6%), followed by the SCs (32.3%), and then the Muslims (30.6%).

2. Literacy Rate and Education:

- According to the Census figures, the literacy rate for STs in India improved from 47.1 per cent in 2001 to 59 per cent in 2011.
- Although STs show a declining trend in dropout rates they are still very high – 35.6% in Classes I to V; 55% in Classes I to VIII; and 70.9% in Classes I to X in 2010-11, according to the Statistics Of School Education 2010-2011.
- Special incentives such as free education in schools, exclusive residential schools for the STs are provided to address the issue of dropout.
- Special focus is laid on STs under schemes such as Mid Day meal scheme, Navodaya Vidyalaya etc.
- The Union Ministry of Tribal Affairs is setting up Eklavya Model Residential Schools (EMRSs) under every block with more than 50% Scheduled Tribe (ST) population and at least 20,000 tribal persons by the year 2022.
 - * These are being set up by grants provided under Article 275(1) of the Constitution.
 - * The objective of EMRS is to provide quality middle and high level education to Scheduled Tribe (ST) students in remote areas, and to have access to the best opportunities in education at par with the non ST population.
- By focusing on specific intervention to cater to the educational needs of STs, their quality of life is expected to improve to the level of the rest of the social groups and a visible impact by the 2021 Census.

3. Entrepreneurship and Skill Development

- Enabling entrepreneurial atmosphere along with skill development initiatives to ensure gainful absorption of educated ST persons are crucial for their development.
- Under Skill India Mission, the Union Ministry of Skill Development has been delivering short-term skills through Pradhan Mantri Kaushal Vikas Yojana, Jan Shikshan Sansthan Scheme, National Apprenticeship Promotion Scheme, and long-term skills through Craftsman Training Scheme and Industrial Training Institutes to the youth belonging to all section of the society including tribal community.
- All of the above schemes have the mandatory provision of utilisation of funds for tribals through Scheduled Tribes (ST) component.
- While resources are not an issue, the prime concern is how to encourage the participation of youth, employable STs in various vocations by mapping their needs and aspirations.

Conclusion:

- Plans and Programmes of the government have continuously facilitated the socio-economic development of ST population. However, the achievement is skewed across States.
- Government needs to popularise a tribal specific participatory self-governance system where the STs will choose their own destiny by managing their own resources and empowering themselves in the tribal-participative and tribal managed development process.
- More focus should be given to the need based training and skill upgradation.
- Intra-departmental cooperation, coordination and convergence are required for the effective implementation of schemes dedicated to the upliftment of the STs.

2. Welfare of Tribes**Introduction:**

- Government of India has been making consistent efforts to empower Scheduled Tribes (STs) from launching various welfare schemes in different sectors, providing soft loans at a highly concessional rate of interest and increasing the budgetary allocations as evident from the Union gadget 2022-23.
- The Ministry of Tribal Affairs was set up in October 1999 after the bifurcation of the Ministry of Social Justice and Empowerment to provide a more focused approach towards their integrated socio- economic development in a coordinated and planned manner.

- Schemes comprising economic, educational and social development through institution building are administered by the Ministry of Tribal Affairs and are implemented mainly by the state government administrations.

Organisations for Development of Scheduled Tribes:

- National Scheduled Tribes Finance and Development Corporation (NSTFDC) and Tribal Cooperative Marketing Development Federation of India (TRIFED) was formed to generate livelihood opportunities for STs based on locally available resources.
 - NSTFDC was intended to provide credit support for livelihood creation while the TRIFED was created with an objective to provide remunerative prices for the Forest and Agriculture Produce of tribal people.
1. National Scheduled Tribes Finance and Development Corporation:
 - NSTFDC strives towards empowerment of ST population through creation and promotion of sustainable livelihood.
 - The corporation in collaboration with the state ST corporations and banks provides concessional loans for viable projects costing upto Rs. 50.00 lakh per unit for undertaking various income generation activities.
 - Adivasi Mahila Sashaktikaran Yojana, an exclusive scheme for economic development of Scheduled Tribes women provides loan upto 90 percent for projects costing upto Rs. 2 lakh.
 - Micro Credit Scheme for Self Help Groups, a scheme for meeting small loan requirement of ST members under which the corporation provides loans upto Rs. 50,000 per member and maximum Rs. 5 Lakh per Self Help Group.
 - Corporation provides loans upto Rs. 10.00 lakh at concessional rate of interest of 6 percent per annum under Adivasi Shiksha Rin Yojana to ST students to meet expenditure for pursuing technical and professional education including Ph.D. in India.
 2. The National Education Society for Tribal Students (NESTS):
 - This is an autonomous organisation under the Ministry of Tribal Affairs. It has been registered as a Society, under the Societies Registration Act XXI of 1860 in New Delhi on 1 April 2019 to establish, endow, maintain, control and manage the schools (hereinafter called 'Eklaya Model Residential Schools') and to do all acts and things necessary for or conducive to the promotion of such schools.
 3. The National Commission for Scheduled Tribes (NCST)

Welfare Schemes for STs Administered under Ministry of Tribal Affairs

- The Ministry of Tribal Affairs administers various central sector and centrally sponsored schemes.
- Some of the prominent schemes of the Ministry are:
 - * Pre-Matric Scholarship and Post Matric Scholarship
 - * Development of Particularly Vulnerable Tribal Groups (PVTGs)
 - * Special Central Assistance to Tribal Sub-Scheme
 - * Grants to States under Article 275(1) of Constitution.
 - * National Fellowship and Scholarship for Higher Education of ST Students.
 - * Scholarship to the ST Students for studies abroad.
 - * Grant in Aid to Voluntary Organisations working for the welfare of Scheduled Tribes.
 - * Support for Marketing and Development of Tribal Products.

Schemes of Central Government

1. Pradhan Mantri Janjatiya Vikas Mission:
 - The Mission seeks to achieve livelihood driven tribal development during financial years 2021-22 to 2025-26 through formation of Van Dhan groups who have been organised into Vandhan Kendras.
 - The Minor Forest Produce gathered by tribals will be processed in these kendras and marketed through Van Dhan Producer Enterprises.
 - New haats bazaar and ware houses will be developed in next 5 years as part of "Atmanirbhar Bharat Abhiyan".
 - TRIFED would be the nodal agency for implementing the scheme.
2. Van Dhan Scheme
3. Venture Capital Fund for Scheduled Tribes
 - Announced in 2022-23 Union Budget to promote entrepreneurship among tribals who are oriented towards innovation and technology.
 - Schemes provides concessional finance and hand holding to new incubation ideas and start-up ideas by ST entrepreneurs.
4. Stand-Up India Scheme

5. Prime Minister's Employment Generation Programme

Financial Support to STs:

- There are several major centrally sponsored schemes under which credit is provided by banks and subsidy is received through government agencies with significant reservation and relaxation for the members of the Scheduled Tribe (ST) communities.
- The allocation for the welfare of Scheduled Tribes across all Ministries has witnessed an increase from Rs. 31,920.00 crore in 2017-18 to Rs. 78,256.31 crore in 2021-22.
- NSTFDC's refinance to scheduled commercial banks/regional rural banks on lending to STs is considered as priority sector lending which makes the refinance more attractive and helps in expansion of its outreach.
- Special financial assistance is ensured to States for infrastructure development in tribal dominated areas under Article 275 (1) of the Constitution.
- Budget outlay for the Financial Year 2022-2023 for the Ministry of Tribal Affairs, saw an increase of 12.32% from previous year budget.

Conclusion:

- There is a need for far greater attention to tribal development through focused, tailored, and innovative interventions at the grassroots which can harness the potential of tribal population through innovation-driven and entrepreneurship-based modern economic systems.
- The financial assistance from the government through its various schemes and institutions may not fulfil the existing gaps unless it is proportionately blended with effective contribution of private stakeholders in development and community participation.

3. Tribal Art and Culture

Introduction:

- Although India has the second-largest population of tribal people worldwide, it is difficult to define and conceptualise tribes since they exist in a variety of socio-economic milieus and because of their ongoing assimilation and acculturation with the larger social structure.
- Every tribe maintains its very own culture, dialect, and economic activities within its own ecological habitat. \

Evolution of Tribal Culture:

- Several tribes remain obscure, isolated, and alienated, while others have migrated and have undergone metamorphosis.
- The tribals contributed to many dimensions of India's ancient culture. Four major ethnicities and cultures converged to establish what we could identify as Indian civilisation—
 - * The Vedic culture of the Indo-Aryans,
 - * The Indus Valley or Harappan culture
 - * The Dravidian cultures
 - * The Mongoloid people who speak the languages of the Sino-Tibetan family.
- It can be argued that this is a very difficult and uncertain manner of classification simply because of interaction and engagement between the tribes.
- The evidence of the earliest tribal culture comes from India's Upper Palaeolithic period.
- Twelve years before the discovery of Altamira in Spain – the location of the oldest rock paintings in the world – the first known discovery of rock paintings was made in India in 1867-1868.
- Bhimbetka, Jogimara in Madhya Pradesh, Lakhudiyar in Uttarakhand, Tekkalakota in Karnataka and Kupgallu in Telangana, among other places are the examples of early rock painting sites.

Characteristics of Early Painting:

- Paintings are linear representations, in green and dark red, of huge animal figures, such as multi-legged lizard and foxes beside stick-like human figures.



Image Source: World History Encyclopaedia

- Mostly they are filled with geometric patterns.
- The subjects of paintings evolved with time and creatures like bulls, elephants, sambars, sheeps, horses, styled humans started to appear.
- The Mesolithic period has the greatest concentration of Paintings, the majority of which features hunting scenes. A common theme is presented by community dances.
- The Indus Valley Civilisation which coincided with the copper and bronze age placed great emphasis on art and culture.

Examples of Contemporary tribal art and culture:

- India has numerous tribal painting styles each with its own sets of colours and themes.
- Bhils, largest tribal group in India places high value on art. Their paintings, rich textures, steeped in rituals, symbolism and traditions, connect them to nature.
 - * Bhil Paintings are characterised by large, un-life-like shapes of everyday characters that are filled in with earthy, yet bold colours before being covered with an overlay of uniform dots in a diverse array of colours and patterns that stand out against the background.
- Warli painting is a traditional Maharashtra art form that traces its origins back to the 10th century A.D.
- The 'Saura' is a tribe from the jungles of Odisha, Jharkhand, Madhya Pradesh, Andhra Pradesh, and Maharashtra.
 - * Nature's splendour is celebrated in Saura art. The 'Tree of Life', which has human and animal inhabitants on its branches and symbolises the harmonious coexistence of humans and animals, is the basis for the majority of paintings.
 - * Idital, the primary deity of the Sauras, is honoured by the wall paintings created by the Saura people, known as 'talons' or 'lkons'. The ritualistic significance of these paintings is derived from their use of tribal folklore.

Tribal Crafts:

- Indian tribal crafts are typically ritualistic, drawing a clear distinction between the artist and the art lover.
- Each group has its own festivals, myths, taboos, rituals, music, dance and music which have profound influence on the group's art and crafts.
- The eastern Indian states of West Bengal, Odisha, Jharkhand, and Chhattisgarh are home to the ancient folk-art tradition known as 'Dhokra'.
 - * Dhokra craft objects are made using lost wax-casting technique.
 - * Each tribal region creates something distinct in design and form that carries the impression of its own mystic ideology, the life and attributes, as well as belief and reflections of its people.

Dhokra Art from West Bengal

Image Source: Craftsvilla

Tribal Dance Forms:

1. **Kalbelia:** The Kalbelia dance is performed as a celebration and an integral part of Kalbelia culture. Their dances and songs are a matter of pride and a marker of identity for the Kalbelias, as they represent the creative adaptation of this community of snake charmers to changing socio-economic conditions and their own role in rural Rajasthan society.
 - Kalbelia songs are based on stories taken from folklore and mythology and special dances are performed during Holi.
 - In 2010, the Kalbelia folk songs and dances of Rajasthan were declared a part of its Intangible Heritage List by UNESCO.
2. **Dumhal Dance:** it is performed in Jammu and Kashmir by the Watal tribe.
 - Only the female folk of the wattal are privileged to perform this dance, on specific occasions and at set locations.
 - The dancers sing in the chorus. Drums are used to assist the music. The performers move in a ritual manner and dig a banner into the ground on set occasions. Usually, the dance begins with men dancing around this banner.
3. **Hojagiri Dance:** Performed in the state of Tripura by the Reang people.
 - It is performed by women and young girls, about 4 to 6 members in a team, singing, balancing on an earthen pitcher and managing other props such as a bottle on the head and earthen lamp on the hand.
4. **Bhavada Tribal Dance:** By Kokna tribesmen from Dadra and Nagar Haveli.
5. **Gussadi:** By Raj Gonds in Telangana.

Tribal Music:

- Indian tribal music features lyrical chanting, traditional sounds and modern musical variations.
- Learning process of tribal music is inherited through generations, given the passage of time and changing tastes, variations in the current form are to be expected.
- Songs in tribal societies are mostly functional with added sanctity of a ceremonial rite.

4. Education for Tribals**Introduction:**

- Education was conceived as a means for promoting overall development of tribals and adopted as a strategy for mainstreaming them.
- Various research studies have shown the correlation between literacy and poverty.
- Despite government efforts to promote education among the Scheduled Tribes (STs), their literacy rates as compared to the national average have remained low.

Status of Education among STs:

- According to Census 2011, Overall literacy rate is 73 percent and it is 59 percent for STs.
- The overall literacy gap amongst the various groups and STs has come down from 19.77 percent in 1961 to 14.03 percent in 2011.

Year	All Social Groups			Scheduled Caste			Scheduled Tribe		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1991	64.13	39.29	52.21	49.91	23.76	37.41	40.65	18.19	29.60
2001	75.26	53.67	64.84	66.64	41.9	54.69	59.17	34.76	47.10
2011	80.89	64.64	72.99	75.17	56.46	66.07	68.53	49.35	58.96

Source: Census of India, Registrar General of India

Image Source: Semantic Scholar

- The number of students belonging to the tribal population has shown consistent growth in the periphery of school education.
- The Gross Enrolment Ratio (GER) has improved over the years and in the last five years i.e. from 2016-17 to 2020-21. GER for ST students is above the national average for the last five years at primary and upper primary level, however, it starts decreasing at secondary and senior secondary level.
- There is also consistent improvement in the last few years is the dropout rate of students. The data on dropout rates at primary, upper primary and secondary level from 2016-17 to 2020-21 indicates a decreasing trend and hence an improvement in the status of school-going tribal children at all levels.

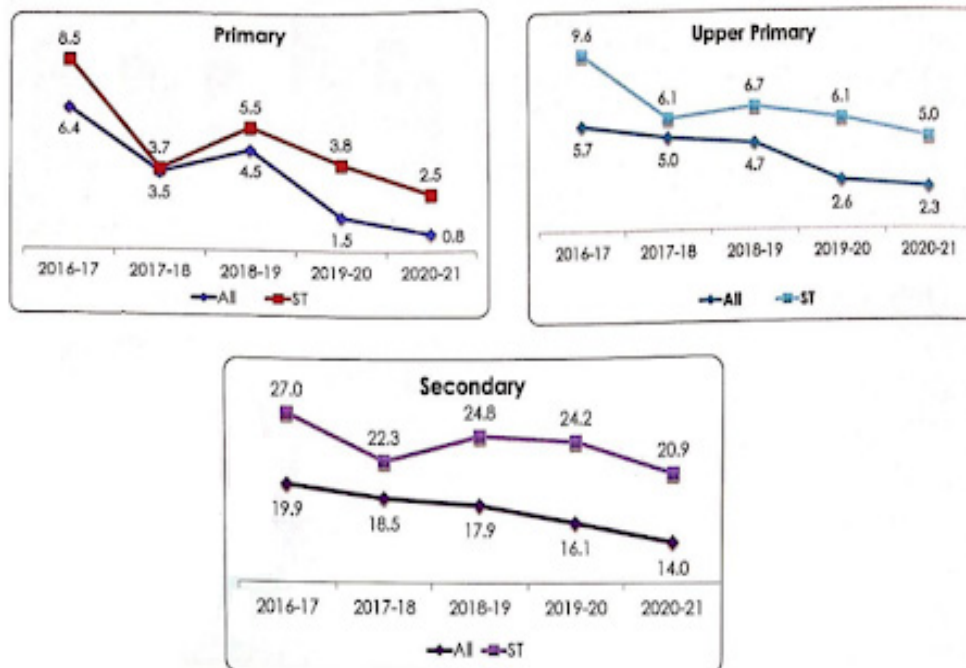


Image Source: Kurukshetra

Genesis of Educational Policies and their Focus on Tribal Education:

- After independence various commissions were constituted to study, review, analyse and recommend the desired contextual changes in the education system.
- Commissions for Tribal Education recommended the formation of Scheduled Areas and Scheduled Tribe Commission (1960 – 61) under the chairmanship of U.N Dhebar for investigating and reporting the problems of Scheduled Tribes.

- The Commission recommended educating the tribes by using vernacular language as the medium of instruction with the support of trained teachers from the tribal communities in the nearby places. The commission suggested promoting tribal culture and arts, by adding folklore, songs, etc. in the curriculum.
- The commission also identified the basic issues related to the educational backwardness of tribal communities and the drop-out of the students.
- Subsequently, the Kothari Commission also supported the recommendations and suggestions of the Dhebar Commission.
- The second National Policy on Education (NPE), 1986 gave priority to the promotion of tribal education, such as the establishment of primary schools in tribal areas; Model Residential Schools including Ashram Schools for tribal students; starting Anganwadis in tribal hamlets, etc.

Various Programmes on Education:

- Right of Children to Free and Compulsory Education (RTE) Act, 2009
- Samagra Shiksha Scheme
- The other programmes run by the Union Ministry of Education are Kendriya Vidyalayas and Navodaya Vidyalayas.
 - * Fifteen percent seats for Scheduled Caste and 7.5 percent seats for Scheduled Tribes are reserved in all fresh admissions in all Kendriya Vidyalayas.
- The Central Sector Scheme 'National Means-cum-Merit Scholarship Scheme' has the objective to award scholarships to meritorious students of economically weaker sections to arrest their drop-out at class VIII and encourage them to continue the study at secondary stage.

Schemes for uplifting the education amongst tribal communities:

- The Union Ministry of Tribal Affairs' has been implementing various schemes relating to education, health, economic empowerment, etc. in the Scheduled Tribe dominated areas of the country.
1. Eklavya Model Residential Schools (EMRSs)
 - Announced in the Union Budget of 2018-19, they are established under every block with more than 50% Schedule Tribe (ST) population and at least 20,000 tribal persons by the year 2022.
 - These are being set up by grants provided under Article 275(1) of the Constitution.
 - The objective of EMRS is to provide quality middle and high level education to Scheduled Tribe (ST) students in remote areas, and to have access to the best opportunities in education at par with the non ST population.
 - These EMRSs were to be at par with Navodaya Vidyalayas with special facilities for preserving local art and culture besides providing training in sports and skill development.
 2. National Fellowship and Scholarship for Higher Education of ST students:
 - Under the scheme, Fellowships are provided to ST students to take up higher studies after completing Post Graduation, such as M.Phil and Ph.D courses.
 3. Pre-Matric Scholarship Scheme and Post Matric Scholarship Scheme
 4. Support to Tribal Research Institutes (TRI):
 - The Union Ministry of Tribal Affairs under the scheme "Support to Tribal Research Institutes (TRI) provides grants to States/UTs to strengthen the Tribal Research Institutes (TRIs) for their infrastructural needs, Research & documentation activities and Training & Capacity Building programmes etc.
 5. Development of PVTGs:
 - The Scheme for Development of Primitive Vulnerable Tribal Groups was first introduced and implemented from 1st April 2008.
 - The Plan characterises PVTGs as the foremost defenceless among the Planned Tribes and the Plan hence looks to organise their assurance and improvement.
 - It recognizes 75 PVTGs.
 - The Scheme adopts a habitat level approach to improve the quality of life through intervention in housing, drinking water, education and health services, livelihood services and cultural aspects.

Major Challenges for Tribal Education:

- In the case of Scheduled Tribes, the remoteness of habitations, lack of travelling facilities, insufficient infrastructure facilities, illiteracy of parents, communication problem, and segregated population are the primary constraints for the educational attainment of these children.

1. Lack of Adequate Infrastructure in Schools :

- Adequate infrastructure such as gender segregated functional toilets, pucca school buildings, electricity, water, play area, library, sports facilities, and safe and conducive environment for learning are the primary requirements for retaining a child in the school.
- The schools in tribal areas are generally located in remote, hilly and in dense forests and lack above facilities which ultimately leads to children dropping out of school.

2. Low Learning Level of Children:

- The recently released results of National Achievement Survey (NAS) 2021, indicate that only 42 percent of children at Grade III are proficient in all subjects which decrease to 23 percent in class X.

3. Medium of Instruction:

- Primary education in mother tongue has huge benefits. One language dominating learning and education as a medium of instruction in a country with multiple cultures and languages can leave many illiterate and foster unproductive learning.

4. Lack of Teachers and Appropriate Pedagogy:

- Due to disproportionate teacher's deployment, schools in far flung areas and difficult terrain face shortage of teachers. Many primary schools merely have a single teacher and that teacher is not aware about the needs of tribal students.
- Real life application of knowledge and respect for tribal knowledge may make a huge difference in educational outcomes of tribal students.

Way Forward:

- The National Education Policy 2020 strongly emphasised to ensure equity and inclusion and has given a national perspective to the education of tribals.
- NEP 2020 proposed the policy strategy to identify special education Zones (SEZs) to ensure inclusion of marginal communities in quality educational space of India.
- NEP 2020 puts special emphasis on Indian Knowledge Systems, including tribal knowledge, and indigenous and traditional ways of learning.
- It provides specific courses in tribal ethno-medicinal practices, forest management, traditional (organic) crop cultivation, natural farming, etc.
- As per NEP 2020, special attention may be given to employing local teachers or those having familiarity with local languages.

Conclusion:

Universal access to quality education to all children is the key to India's continued ascent, and leadership at the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation.

5. Tourism Potential in Tribal Regions

Introduction:

- The ecological setting in which Scheduled Tribes live, along with their unique cultural attributes are facets that can be a tourism offering.
- This will aid in the preservation and promotion of the tribal culture, if planned holistically with a tailor made approach for diverse tribal regions of tourism potential.
- Monitoring the negative socio-cultural impacts of such forms of tourism and regulating tourism development plans accordingly is very important.

Tribal Tourism in India:

- Tribal tourism refers to a form of travel in which tribes allow tourists to experience authentic indigenous life (tribal habitat, heritage, history and handicrafts, culture, values and traditions) by allowing the tourists to visit their villages for them to be exposed to a culture completely different from their own.
- The intangible heritage that the tribal population possesses including the traditional knowledge system contains many positive and productive elements that are really precious for the entire humanity.
- Tourism can be a tool through which the rich cultural heritage of the tribes such as folklore, costume, jewellery and lifestyle, their sustainable ways of living, indigenous practices by tribal healers and medicinal plants can be offered as a unique attraction to the potential visitors.
- Tourism may act as a monetary incentive for cultural preservation and promotion, and can prevent cultural facets from fading into oblivion.

- These concepts are a part of the wider umbrella of Alternative Tourism which in essence means tourism activities or development that are viewed as non-traditional.

Case Study: Tribal Tourism and Museum Development in Uttar Pradesh: Tharu Tribe

- The Tharu Tribes live in fertile Terai (foothills of the Himalayas) lowlands in Uttar Pradesh and majority of the Tharu people work either as forest dwellers or are farmers.
- This tribal group also has a presence in Nepal, Bihar and Uttarakhand.
- Tharu people worship mainly their tribal Goddess (Earth) which they refer to as 'Bhumsen' in their language. They are also worshippers of Theravada Buddhism.
 - * Tharu people plant rice, wheat, mustard, corn, and lentils. They also collect minor food products from forests like wild fruits, medicinal plants, etc. They hunt deer, rabbit and wild boar and also do fishing.
 - * Their homes are decorated and coloured, Wine made by rice is quite popular in this tribe.
 - * The Uttar Pradesh Government has started a new programme connecting Tharu villages with the 'home stay scheme' of the UP Forest Department with an objective to offer tourists an experience of living in the natural Tharu habitat that contains traditional huts made of materials naturally found in the forest.
- U.P government also announced 'Tharu Janjati Museum' to preserve and promote the cultural facets. There is a huge demand for tribal artefacts, textiles, ornaments, paintings, potteries, cane and bamboo products, and organic and natural food products.
- This will aid in domestic and global propagation of the culture and tradition of the Tharu tribes, create jobs and bring economic independence and advancement in the tribal population.

Conclusion:

- The most fundamental premise of ensuring success of using tourism as a means to preserve and promote tribal heritage is to consider the opinion of tribal communities and their participation in planning and development of tribal tourism at each and every stage of tourism development. Local people should be encouraged to undertake leadership roles in planning and development with the assistance of government and business enterprises.

SCIENCE REPORTER

1. A Green Revolution in the Ice Empire

Context:

- A group of German scientists stationed in Antarctica have successfully grown the first vegetables without soil, sunlight, and pesticides in a specially designed sunless, soilless environment.

Details:

- Antarctica's long winter makes it impossible to grow food outdoors.
- Now, a group of German scientists stationed in Antarctica have successfully grown the first vegetables without soil, sunlight, and pesticides in a specially designed sunless, soilless environment.
- A variety of vegetation can now be seen – Tomato, Beet, Cucumber, Broccoli Cauliflower, Cabbage, a variety of Lettuce, and many spices.
- All of these are growing in an artificial crop field or 'Greenhouse'.
- The name of this artificial field of crops made in the Ice Empire is 'Eden ISS'.
 - * The goal of the EDEN ISS project is to advance controlled environment agriculture technologies beyond the state-of-the-art. It focuses on ground demonstration of plant cultivation technologies and their application in space.
- The crops are grown through what is being called 'Aeroponics'.
 - * It is a method by which a solution of various nutrients is spread and inserted into the roots of the various crops.

2. DNA Sequencers realizing Precise, Portable & Personalized Medical Care

Context:

- In the past few decades, DNA sequencing technology has rapidly evolved, from the discovery of double helix DNA to a plethora of biological applications such as research, agriculture, evolutionary biology, medicine, clinical microbiology, epidemiology, ecology and public health.

Details:

- Whole genome sequencing is now becoming commonplace in public health laboratories, aiding in metagenomics (mNGS), infectious disease detection; including lineage tracing, drug-resistance testing of viruses or culture isolates, microbiome studies, identification and characterization of pathogens, viruses, fungi, bacteria and antimicrobial resistance, identification of somatic mutations in cancer and unearth the genetic basis of different inherited diseases and haematological disorders.
 - * Metagenomics is the study of the structure and function of entire nucleotide sequences isolated and analyzed from all the organisms (typically microbes) in a bulk sample.
- 'First generation' sequencing: In this DNA strands are synthesized using predefined primers.
- "Second generation" sequencing or Massively parallel sequencing (MPS) or Next-generation sequencing (NGS): one can simultaneously sequence millions of genes or gene regions and DNA methylation with a single test.
 - * These techniques were characterized by the preparation of preamplified sequencing banks before sequencing.
- The "third-generation" or "long-read" sequencing or Single Molecule Sequencing (SMS) technology: sequence even a single molecule without creating amplification libraries and generate longer reads in short duration with cost-effectiveness.
- "Fourth generation" or in situ sequencing (ISS) or "Single-cell Spatial Transcriptomic" technology: A new phase sequencing that can distinguish gene expression of individual cells in their original location for revealing cellular heterogeneity.
 - * This method can simultaneously analyse the expression of thousands of genes, antisense RNA, rRNA, mRNA and non-coding RNA in pluripotent stem cells and fibroblasts.
- These technologies open new prospects for diagnosis, biomarker validation, transcriptome analysis and patient stratification for cancer treatment, oncology and cellular immunity keeping cells and tissues of the target organism intact.

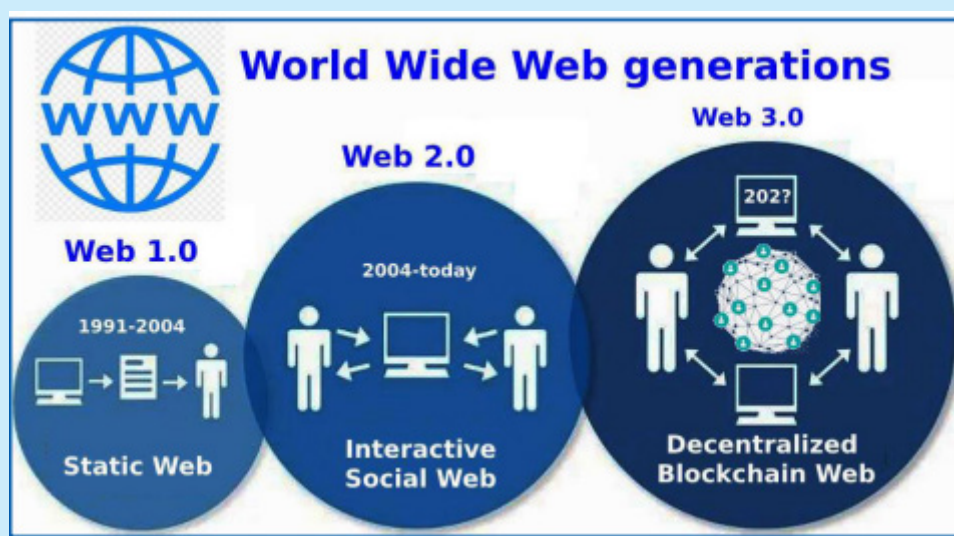
3. WEB 3 and Metaverse

Context:

- A decentralized blockchain-based Web is a vision of the near-future. Metaverse may transform it into a network of 3-D virtual worlds.

Details:

- Metaverse: It is a virtual digital world that coexists with the real world. People could assume virtual avatars and move smoothly from their real to their digital forms.
 - * Every participant has an avatar and interacts with others through their avatars, having the ability to do pretty much anything – host or attend parties and concerts, switching at will, from the role of audience to artiste; buy or sell digital land or properties; shop in virtual malls; try on a dress or suit virtually; join in ceremonies like weddings as a guest, or even as bride or groom.
- Web 1.0 or Static web: Here HTML or HyperText Markup Language – the language in which content on the Web is written and URL or Universal Resource Locator, the format in which the address of each Web page is specified. It is called a static web because it is a Read-Only Web, where the user can search for and read content, but not react or respond.
- Web 2.0 or interactive social web: Here users could generate and upload content. The Read-Only Web had become a Read/Write Web. Gradually, social media tools like Facebook, Twitter and Whatsapp, as well as still and moving visual tools like Instagram, Flickr and YouTube (and their Indian options) gave users the ability to watch, learn, search, communicate and uniquely express and display their personas.
 - * It is also called a Centralized Web. Because only a few giant corporations dominate these services like browsing freely.
- Web 3 or the Decentralized Web: To correct this increasing concentration of power in Web 2, well-wishers of web technology have been advocating a gradual loosening of this hold, by moving to a distributed model, where the enormous data generated by all of us users is spread in a transparent manner across multiple databases, rather than being a lucrative tool in the hands of a few.
 - * Where billions of Internet users would be stakeholders, not products, in an Internet owned by its users.



Source: Science reporter

Technologies for Web 3.0:

Following are the technologies at the core of the decentralized Internet of the future

- Blockchain: A technology that puts a time stamp on digital documents, which are then stored in a shared public ledger, eliminating the chance of any manipulation.
- Crypto Currency: Which bypasses traditional institutions like banks, brokerages, currency exchanges and lets people worldwide transact in or invest in, crypto currency tokens like bitcoin.
- NFT or Non-Fungible Token: They ensure that you can own a unique item without having it in physical form.
- Virtual Reality (VR) and Augmented Reality: Virtual Reality (VR) is a computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings. Augmented reality (AR) is the integration of digital information with the user's environment in real time. Unlike virtual reality (VR), which creates a totally artificial environment, AR users experience a real-world environment with generated perceptual information overlaid on top of it.
- the Internet of Things (IoT): It is the omnibus term for all those devices- headsets, AR glasses, handheld joysticks – that help one to make the transition from the real world to the virtual

4. **GSAT 24 ADVANCED COMMUNICATION SATELLITE**

Context:

GSAT 24 is a Pan India communication satellite for providing high quality television, telecommunication and broadcasting services was successfully launched

About GSAT 24:

- GSAT (Geostationary Satellite) satellites are India's indigenously developed communications satellites for video, digital audio and data broadcasting services
- GSAT 24 is a Pan India communication satellite for providing high quality television, telecommunication and broadcasting services was successfully launched on-board Ariane-5 VA257 flight from Europe's Spaceport at Kourou in French Guiana.
 - * Ariane-5 is a European heavy-lift space launch vehicle developed and operated by Arianespace for the European Space Agency (ESA).
- The satellite is configured with the primary objective to augment satellite-based DTH and VSAT services in broadcast satellite service Ku-band
- VSAT is a very small aperture terminal that is a two-way ground station that transmits and receives data from satellites.
- The entire satellite capacity is leased to M/s Tata Play by NewSpace India Limited (NSIL).
- GSAT-24 is the first demand driven mission of NSIL post space reforms.

NewSpace India Limited (NSIL):

- It is a commercial arm under Department of Space (DoS), Government of India.
- NSIL was incorporated in March 2019 and was set up to take high technology space-related activities in India.
- Under the new space policy reforms announced by the Government of India in June 2020, NSIL is to undertake operational satellite missions on a "demand-driven" model.
- They are responsible to build, launch, own and operate the satellite and provide services to customers.

5. **Weapons of mass destruction**

Context:

The ongoing Russia and Ukraine war is being considered as the first major war of the 21st century, and has piqued the interest of everyone in the weapons of mass destruction (WMD) utilized by both sides.

WMD can be classified in four key types:

1. ***Fission or atom bomb***
2. ***Fusion or hydrogen bomb***
3. ***Electromagnetic Pulse or E-bomb***
4. ***Thermobaric or Vacuum bomb***

1. Fission or Atom Bomb

- Nuclear fission: The atomic bomb works on the basis of nuclear fission. When an energetic neutron strikes an atom of high atomic weight, the atom is fragmented into two nearly equal parts and releases more neutrons and a large amount of energy. This process is termed as nuclear fission.

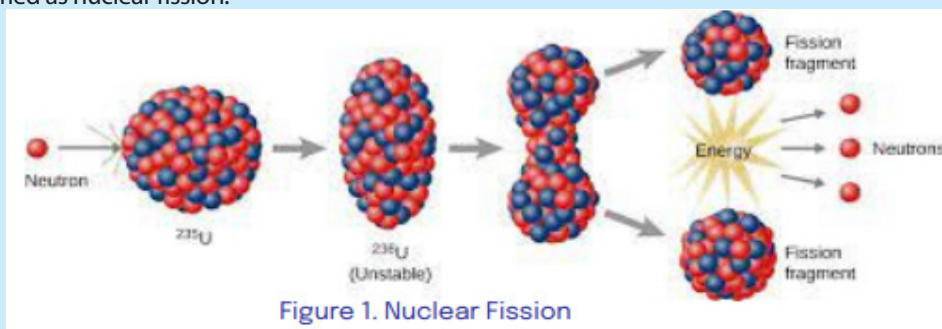


Figure 1. Nuclear Fission

Source: Science reporter

- Impact of Atomic bomb explosion:
 - * When an atom bomb explodes, not only does it release a large amount of energy, but it also spreads radiation.
 - * Fallout: Convection currents are created by the explosion, which suck dust and other materials on the ground up into a large fireball. Materials vaporized in the fireball condense to fine particles and are transported to the upper layers of the

atmosphere like troposphere or stratosphere by the winds. This radioactive material is termed as "fallout".

- » Long-lived radioisotopes of strontium and plutonium in the fallout continue to cause death and cancer and other abnormalities a long time after the explosion.

2. Fusion or Hydrogen Bomb:

- This bomb is also known as thermonuclear bomb. Nuclear fusion is the exact opposite process of fission.
- In this case, two lighter nuclei fuse together to form a massive nucleus and, in the process, release a large amount of energy and neutrons.
- The light nuclei, called the fusion fuel, are generally heavier isotopes of hydrogen like deuterium ${}^2\text{H}$ and tritium ${}^3\text{H}$.
- Fission vs Fusion comparison:
 - * Power: A thermonuclear bomb is more powerful than an atomic bomb. While the energy output of a fission bomb is in terms of kilotons, the hydrogen bomb yields energy in megatons.
 - * In addition, the device is compact, allowing it to be loaded efficiently in warheads of computer controlled and guided intercontinental ballistic missiles.

3. EMP (Electromagnetic Pulse) or E-bomb

- An E-bomb is basically a strong pulse of electromagnetic wave, targeted at bringing day-to-day life to a standstill.
- It would affect all systems governed by electricity. Neither will it demolish buildings nor harm lives, but the effects will be more overwhelming.
- **Nuclear EMP:**
 - * The concept of an E-bomb is an offshoot of the hydrogen bomb.
 - * The explosion of the hydrogen bomb emits a large amount of gamma radiation (photons). These photons collide with the atoms of gases like oxygen and nitrogen present in the atmosphere, resulting in knocking off many electrons from these atoms.
 - * The free electrons then interact with the earth's magnetic field, causing a varying electric current, which in turn, induces a powerful magnetic field.
 - * As a consequence, a strong electromagnetic pulse is created, which induces intense electric currents in conducting materials over a wide area.
- **Non-nuclear EMP:**
 - * In o EMP could be of non-nuclear origin too. There is speculation that the USA has already developed HPMs (High Power Microwaves) to be used as weapons.
 - * The exact design details are not available, but they are believed to be akin to very large microwave ovens, which generate highly concentrated, powerful microwave beams.

4. Thermobaric or Vacuum bomb

- These are non-nuclear explosive devices that cause as much or more damage than nuclear devices.
- Initially, they were used in World War II, by the Germans. The US improved the technology and used them in subsequent wars in Vietnam and Afghanistan.
- **Thermobaric weapon stages:**
 - * 1. The first stage creates a huge cloud consisting of fine metal particles and carbon-based material which invades all space and even penetrates closed spaces.
 - * 2. A second stage then ignites this cloud. As a result, a huge fireball is created along with a shock wave. The fireball sucks up all the oxygen from the atmosphere, creating a vacuum. Hence the name "vacuum bomb"

6. China eliminates Malaria, India on the edge

Context:

- China is the 40th country to be certified as malaria-free in 2021 by WHO.

About Malaria:

- Malaria is a life-threatening disease caused by Plasmodium parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes.

- It is preventable and curable.
- There are mainly five species of human plasmodium – P. falciparum, P. vivax, P. malaria, P. ovale, and P. knowlesi. The first three species are reported from India, and 2 of these species – P. falciparum and P. vivax – pose the greatest threat.
- P. falciparum is the deadliest malaria parasite and the most prevalent on the African continent.

RTS, S Vaccine:

- It is a vaccine that acts against Plasmodium falciparum, the deadliest malaria parasite globally and the most prevalent in Africa. The vaccine significantly reduces malaria and life-threatening severe malaria in children. If implemented broadly, the vaccine could save tens of thousands of lives each year.
- In October 2021, WHO recommended widespread use of the RTS,S malaria vaccine.

R21 Vaccine:

- The R21/Matrix-M pre-erythrocytic malaria vaccine candidate was developed at the University of Oxford
- Both of these use the same malaria protein, called circumsporozoite protein, to trigger immune responses.

WHO's Criteria for declaring region as malaria free:

- After maintaining zero indigenous cases for the past three consecutive years, the World Health Organization (WHO) declares a country or region malaria free.

Malaria Free declared countries between year 2020 to 2022:

- Between 2020 and 2022 a total of 12 countries were certified malaria free by WHO. These countries are: United Arab Emirates, Morocco, Turkmenistan, Armenia, Argentina, Kyrgyzstan, Uzbekistan, Paraguay, Sri Lanka, Algeria, China and El Salvador. These countries have been certified malaria free by the WHO.

India's Status:

- India reported almost three million fewer malaria cases in 2017, a 24% decrease over the previous year, according to the World Malaria Report 2018.
- With a drastic reduction of cases, India no longer figures among the top three countries. In 2017, India launched its five-year National Strategic Plan, shifting its focus from malaria 'Control' to 'Elimination' and provided a road map with targets to end malaria in 571 districts out of 678 districts in India by 2022.

7. Insulin: A century of service

Context:

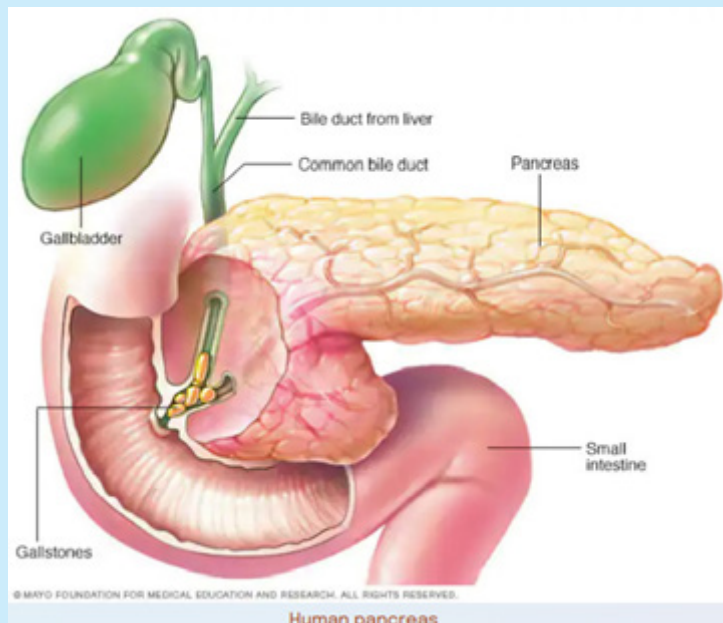
Insulin in its century-long journey in the service of humans can be said to have saved millions of lives

About Diabetes:

- Diabetes is today one of the deadliest killer diseases around the world. It is estimated that the prevalence of this disease could reach around 380 million by 2025.
- The major concern has been about the growing incidents of diabetes, particularly that of type-2 diabetes, among children and young adults.
- Till now, no cure has been found for it but for the last one hundred years insulin in various forms has remained as the mainstay of treatment to control all types of diabetes.

About Insulin:

- Insulin is a peptide hormone produced by the beta cells of the pancreas islets.
- It is considered to be the main metabolic hormone of the body, whose most important function is to regulate the metabolism of carbohydrates by promoting the absorption of glucose from the blood into the liver and the other cells to provide energy.
- The excess glucose is stored as glycogen to meet the emergency needs.

**Insulin treatment:**

- Two Canadian scientists Frederick Banting and Charles Best developed the treatment for Type one diabetes for the first time in 1923.
- Initially, Insulin for treating diabetes patients was extracted from pancrea of dogs and bovine animals.
- Later, in 1975, it was felt that these sources would not be sufficient to meet the future needs. So, during 1977-78 steps began to produce genetically engineered synthetic "human insulin".
- In 1980, it could be produced by applying recombinant DNA technology using E. coli bacteria or yeast, which ensured unlimited supply of the lifesaving drug.

DOWN TO EARTH

1. Africa's clarion call for climate justice

Context:

- Recently Gabon hosted the Africa Climate Week, the last major talks before the 27th Conference of the Parties (cop27) to the UN Framework Convention on Climate Change is held in Egypt this November to implement the Paris Agreement.

Details:

- Gabon commits to remain carbon neutral up to and beyond 2050.
- Egypt's Foreign Minister Sameh Shoukry lamented that promises made to African countries to help them fight climate change have not been fulfilled.
- African countries account for less than 4 percent of greenhouse gas emissions, yet are most exposed to climate impacts.
- Africa is committed to spending 2-3 percent of its suffering economy each year to counter climate change,
- According to the International Energy Agency, African countries have requested US \$1.2 trillion in international financial assistance by 2030 to implement their nationally determined contributions to reduce carbon emissions. So far, only "a fraction" of that money has been made available.

2. Battery Waste Management Rules, 2022

Context:

- To ensure responsible management of used batteries, the Ministry of Environment, Forests and Climate Change (MOEFCC) recently announced the Battery Waste Management Rules, 2022.
- * The new rules will replace the Batteries (Management and Handling) Rules, 2001

Features of the Rules:

Coverage: All battery types are covered by the new rules, including industrial, automobile, portable, and electric vehicle batteries.

Extended Producer Responsibility (EPR): The rules are founded on the idea of Extended Producer Responsibility (EPR), which holds battery manufacturers accountable for the collecting, recycling, and repair of used batteries as well as the use of waste-derived recovered materials in the manufacture of new batteries.

- EPR forbids the disposal of used batteries in landfills and the incineration of them, and it requires that all used batteries be collected and transferred for recycling or refurbishment.
- Producers can arrange for the collecting, recycling, or refurbishing of used batteries in order to fulfil their EPR responsibilities. They can also give permission to any other organisation.
- In order to fulfil the responsibilities of producers, it will make it possible to build up a system and centralised web site for the exchange of EPR certificates.

Waste Management: They encourage entrepreneurship and the creation of new enterprises to collect, recycle, and restore used batteries.

Reduce Dependency on Raw Materials: Reducing the need for new raw materials and conserving natural resources can be accomplished by requiring the use of a specific percentage of recycled materials in the production of new batteries.

Online Registration: Online registration and reporting, audits, and a committee for observing how the regulations are being followed and taking the necessary action to resolve any issues.

Principle of Polluter Pays: If Extended Producer Responsibility goals, requirements, and responsibilities are not met, environmental compensation will be levied.

Environmental Compensation Fund: The funds collected under environmental compensation shall be utilised in the collection and refurbishing or recycling of uncollected and non-recycled waste batteries.

3. **Greenland ice in grave danger**

How fast are the Arctic nations' ice sheets melting?

- For the past ten years, the ice loss in Greenland has been the primary cause of the annual 1 millimetre rise in the world's sea levels.
- According to the UN Intergovernmental Panel on Climate Change, by 2100, the country's ice sheet will have melted to the tune of 10-15 cm, rising sea levels.
- However, according to a new assessment by scientists from the US and Europe, Greenland's ice sheet will irreversibly retreat by at least 59,000 sq km, increasing sea levels by 27.4 cm globally.

Why are the recent estimates different?

- According to the new study, past estimates did not take into account the factors that make Greenland more susceptible to ice loss.
- These include a rise in rain and sunlight absorption, the entry of warm ocean currents, and ice sheet cracks.
- The researchers computed the revised estimations by factoring in these facts and using glaciological theory.

Can we prevent this ice loss?

- The researchers say that ice loss and rise in sea levels are inevitable. But taking climate action now will reduce the impact to some extent.

4. **Europe faces its worst drought in 500 years**

Context:

- After the scorching summer, 2022 could be Europe's worst drought year in 500 years. Power generation has been impacted by the shrinking of large rivers to small streams.

Drought Situation in Europe:

- The drought is considered to be the worst in 500 years. The last time a summer in Europe was this dry was in 1540, when a year-long drought claimed thousands of lives.
- However, earlier European droughts from 2003, 2010, and 2018 were also compared with the events of 1540.
- Even medium-sized boats cannot be supported on some of Europe's largest rivers, including the Rhine, Po, Loire, and Danube, which are normally formidable waters.
- Approximately 64% of the continent's landmass was experiencing drought conditions, according to a report by the Global Drought Observatory (GDO), an organisation of the European Commission.
- Drought affected agriculture in about 90% of the Swiss and French regions, around 83% of Germany, and nearly 75% of Italy.
- In the upcoming months, it is unlikely that the situation would substantially improve.

Causes for drought:

- Droughts are a common occurrence in Europe and are a natural feature of the climatic system. The protracted and severe departure from typical weather patterns has led to the unprecedented dry spell.
- Temperatures have reached historic highs in many countries as a result of the record-breaking heat waves.
- The evaporation of surface water and soil moisture has increased as a result of unusually high temperatures.
- The fact that the current drought started so soon after the 2018 drought can also be partly blamed for its severity.
- The effects of the previous drought were still being felt in many places of Europe, and the soil moisture level had not yet returned to normal.

Impacts of drought:

- Transport: Europe significantly relies on its rivers to efficiently carry commodities, including coal to power plants. Most large ships can no longer operate because of water levels that have fallen to less than a metre in some areas.
- Power production has been affected, which has resulted in a lack of electricity and a rise in energy prices that were already high owing to the conflict between Russia and Ukraine.
- Nuclear power facilities, which utilise a lot of water as a coolant, have had trouble operating due to a lack of water.
- Food security: In many nations, food prices have increased significantly, and some areas are rationing water. Additionally, agriculture has suffered greatly.

5. Indian Ports Bill, 2022

Context:

- The Indian Ports Act of 1908, which is now in effect and is more than 110 years old, is intended to be repealed and replaced by the Indian Ports Bill, 2022.

Important clauses of the bill:

- Environmental adherence: By adhering to the marine treaties and international instruments to which India is a party, the law will ensure the prevention and containment of pollution at ports.
 - * The International Convention for the Prevention of Pollution from Ships has been ratified by India.
- Proposed institutional changes: Establish and strengthen State Maritime Boards and State Maritimes Development Council for efficient management, control, and administration of India's non-major ports.
 - * Establish mechanisms for adjudicating port-related conflicts.
 - * Create a national council to support the port industry's planned expansion and development.
 - * Establishment Maritime State Development Fund
- Benefits of the Bill: It will ensure optimal use of India's coastline, alleviate logistical bottlenecks, and assist India in becoming a significant commercial centre.

6. Rising forest fires are the new threat to this ozone atmospheric layer

Context:

- Recently scientists in the UK found that the forest fires have also triggered changes in ozone layers in the atmosphere, widening the ozone hole.

How forest fires cause Ozone depletion?

- Intense and uncontrolled fires result in millions of tonnes of smoke and associated gases.
- The smoke plumes rose to such great heights because of black carbon, which absorbs solar heat and rises into the lower stratosphere.
- The ozone layer sits in the stratosphere, located between 10 km and 50 km above Earth's surface, and absorbs harmful ultraviolet radiation from the sun.
- The black carbon released by the forest fires continues to absorb sunlight and warm the air.
- The 2019-20 wildfires spiked temperatures in the lower stratosphere over Australia by 3 degrees Celsius, globally the temperatures rose by 0.7°C — the biggest increase since 1991.
- This is worrisome as warming in the stratosphere can also lead to ozone-layer damage by altering the atmosphere's dynamics.
- These injected smoke particles have produced unexpected and extreme perturbations in stratospheric gases beyond any seen in the previous 15 years of measurements.
- It includes increases in formaldehyde, chlorine nitrate, chlorine monoxide, and hypochlorous acid and decreases in ozone, nitrogen dioxide and hydrochloric acid.
- These perturbations in stratospheric composition have the potential to affect ozone chemistry in unexpected ways.
- The frequency of extreme wildfires will likely rise by 30 per cent by 2050, according to the United Nations Environment Programme. Such events could undo 35 years of efforts under the Montreal Protocol.
- Research has linked a decrease in ozone levels to an uptick in the incidence of skin cancer and cataracts in humans.

7. Odisha Millet Mission

Context:

- In 2017, the state launched the Odisha Millet Mission (omm), which aims to bring millets back to its fields and food plates by encouraging farmers to grow the crops that traditionally formed a substantial part of the diet and crop system in tribal areas.

Achievements of OMM:

- These small-seeded cereal crops require less water, less inputs and are highly resilient to climate vulnerability, but rich in nutrients like calcium, iron and protein.
- OMM provides farmers incentives of up to Rs.9,500 per ha over a three year period to shift to millet cultivation. This includes free seeds and organic fertilisers.

- To complete the supply chain, the government has created an assured market for the produce.
- The state has been offering a minimum support price of R3,377 per 100 kg of ragi, more than the R1,940 per 100 kg for paddy.
- Over the past five years, Odisha has recorded a 14-fold increase in millet production, from 3,333 hectares (ha) in 2017-18 to 53,230 ha in 2021-22.
- Even the average yield has improved by 28 per cent because of sustainable agricultural practices and quality seeds.
- To ensure that the millets reach the food plates, the government conducts regular campaigns and rallies to make people aware of the benefits of millets and to remove the notion that they are poor people's food.
- The government has also made it part of the public distribution system (PDS) and provides 1 kg of ragi per ration card holder, which can increase to 2 kg in areas with high ragi procurement.
- OMM also sells millet products, such as cookies, savoury snacks, vermicelli and processed millets, under a brand called "Millet Shakti" through food trucks, cafés, kiosks and other outlets.
- "Women self-help groups (shgs) have been kept at the centre of the programme.
- OMM also leverages Farmer Producer Organisations (FPO) to provide better marketing linkages

Issues in OMM:

- OMM promotes production and consumption of seven millets. But so far, focus has been on ragi, which has accounted for 86 per cent of the total area under millets,
- In contrast, little millet, foxtail millet, sorghum, pearl millet, kodo millet and barnyard millet cover less than 13 percent of the area.
- Due to inadequate assured procurement by the government, forced the farmers to distress sale .
- The full potential of SHGs, though, has not yet been realised. So far, only three women's SHGs manufacture and process Millet Shakti products, which limits the volume available, income generated, and consumption
- Nine districts have less than 5 percent of farmers' coverage. Only 1.54 per cent of total net sown area is covered.
- Focus has largely been on production and procurement of ragi rather than all kinds of millets
- The number of sales outlets are still low. The scale of Millet Shakti and public distribution is extremely limited.
- Only 500 kg of millets are procured per ha at assured prices. Farmers resort to the open market to sell produce they do not or cannot consume at low prices of Rs.10-12 per kg.

Way forward:

- The government should develop better strategies for production, marketing support and consumption.
- The government can expand distribution of millets in more districts and include it in midday meals offered in schools to provide a major consumption boost.

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