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# Current Affairs Reverse Engineering CARE (May 2024)

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# International Relations

**Q.1) India is a major contributor to the UN Peace Keeping Operations. Give an account of India's contribution to the UN Peace Keeping Operations since Independence with a special reference to the contribution of Indian Women in peacekeeping operations. Highlight its impact on India's bid for a permanent seat the UN Security Council and on India's own strategic scenario. 15 marks (250 words)**

Topic – India and UN	
Introduction	Chapter VII of the United Nations Charter gives the United Nations Security Council the power and responsibility to take collective action to maintain international peace and security. It is under this mandate; the UN's Department of Peace deploys peacekeeping forces across the world. India's units have been deployed as a part of the mission and have earned accolades to this end. Notwithstanding this, such contributions have strategic benefits that reinforces the global standing of a country in the comity of nations.
Body	<ul style="list-style-type: none"> <li>• India's contribution to the UN Peace Keeping Operations since Independence</li> <li>• Contribution of Indian Women in Peace Keeping Operations</li> <li>• Impact on India's bid for a permanent seat at the UNSC</li> <li>• Impact on India's own strategic scenario</li> </ul>
Conclusion	Peacekeeping gained traction out of the cold war scenario due to the questionable neutrality of rival camps i.e. US and the USSR. With geopolitics and veto power determining deployment of peacekeepers, a comprehensive reform in the functioning of the UN Security Council is necessary. Emerging powers who have contributed extensively to peacekeeping must have a say at the decision making bodies of the UN. Objectivity, neutrality and professionalism in peacekeeping operations will be the subsequent benefits of such reforms.

<b>UPSC Syllabus</b>	<b>India and United Nations</b>
<b>Why was this question asked?</b>	<b>Q: Present a complete picture of India's effort for a permanent seat in the UN Security Council. (UPSC CSE 2005)</b>
<b>Introduction</b>	Chapter VII of the United Nations Charter gives the United Nations Security Council the power and responsibility to take collective action

	<p>to maintain international peace and security. It is under this mandate; the UN's Department of Peace deploys peacekeeping forces across the world. India's units have been deployed as a part of the mission and have earned accolades to this end. Notwithstanding this, such contributions have strategic benefits that reinforces the global standing of a country in the comity of nations.</p>
<p><b>Body</b></p>	<p><b>India's contribution to the UN Peace Keeping Operations since Independence:</b></p> <ul style="list-style-type: none"> <li>• Indian peacekeepers have taken part in 49 of the 72 missions, providing over 2,87,000 personnel all over the world since Independence.</li> <li>• Nearly 160 Indian soldiers and uniformed personnel have made the supreme sacrifice to ensure peace across the globe.</li> <li>• The Indian Army's action in the Congo, in the 1960s, became the 'first peace enforcement operation' in the history of the UN. In peace enforcement operations, military force is used to compel peace in a conflict. Peace enforcement operations require larger military force than peace keeping operations in general.</li> <li>• A Centre for UN Peacekeeping (CUNPK) has been established at New Delhi. It provides niche training to over 12,000 cadets in peacekeeping operations from both India and other nations.</li> <li>• Pre-cold war era: Major mission include the setting up Indian Custodian Force to enforce ceasefire in the aftermath of the Korean War (1950-53); making a bulk of the UN Emergency Force deployed during Suez Crisis (1956); sending police monitors, election supervisors and military observers under the mandate of the UNTAG (UN Transition Group in Namibia) for the withdrawal of foreign forces, smooth conduct of democratic elections and subsequent transition of power.</li> <li>• Post-cold war era: India was involved in coercive disarmament operations during the UN Operations in Somalia – II (1994); Operation Khukri during which numerous peace keepers were rescued by Indian hostage rescue units as a part of the UN Assistance Mission in Sierra Leone-UNAMSIL (1999); being a part of the UN Interim Force in Lebanon (UNIFIL) etc.</li> </ul> <p><b>Contribution of Indian Women in Peace Keeping Operations:</b></p> <ul style="list-style-type: none"> <li>• India has deployed Female Engagement Team (FETs) in Congo and Abyei as a part of India's Nari Shakti Initiative and UN's increasing focus on gender equity in troop deployment.</li> </ul>

- India has also deployed women military police in Golan Heights and military observers across various UN Peacekeeping Missions.
- India ranks as the 11th largest contributor of women military peacekeepers to the United Nations. Major Radhika Sen has been selected as the 'Military Gender Advocate of the Year' for 2023 by the UN Headquarters.
- India's women's contingents have been crucial to the Winning Hearts and Minds (WHAM) strategy and gender sensitive peacekeeping operations that impact women, children, aged etc. thereby having the potential to avert future conflicts through better human capital development.

**Impact on India's bid for a permanent seat at the UNSC:**

- It provides enough soft power for India at the global high table. A greater opposition to veto by China is one of the crucial leverages that participation in peacekeeping operations offer.
- Operational experiences are the pillar of future troop deployment by the UNSC and the success of its missions. India's involvement would be a sine qua non in decision making due to its extensive operational experience. This further stresses the India's bid for a permanent seat.
- India's peacekeepers are mainly deployed in conflict ridden Global South. Success of the peacekeeping missions can help boost India's image as the leader of the Global South. Such stature can again strengthen India's bid for a permanent seat at the UNSC.
- Peace is conducive to South-South trade and commerce. It will India's economic might in the long run as these conflict ridden nations are rich in precious metals and rare minerals. Thus peacekeeping operations indirectly contribute to India's economic growth thereby reinforcing its bid for a permanent seat at the UNSC.

**Impact on India's own strategic scenario:**

- Access to rare earths: African and Middle-Eastern conflict ridden nations where peacekeeping troops are deployed are rich in rare earths that have military applications like motors of missiles, scopes of rifles etc. Thus, peacekeeping operations can minimize conflicts and assure India a new supply chain of these rare earth metals.
- Energy security: India has become overly reliant on the Gulf for crude oil. Suppressed global conflict is tantamount to multiple

	<p>options for energy access. Thus, peacekeeping operations contribute to India's energy security and energy diversification in the long run.</p> <ul style="list-style-type: none"> <li>• Alternative to Belt and Road Initiative: Lebanon and Gulf nations are under the umbrella of conflicts. Neutral force deployment through the UN can mitigate conflicts and bolster the India Middle East Europe Economic Corridor – an alternative to the Belt and Road Initiative of China.</li> <li>• Operational Experience: In case of a war with our nuclear neighbors, India will have an upstart owing to its operational experience in diverse terrains across the world through UN Peacekeeping Operations.</li> </ul>
<b>Conclusion</b>	<p>Peacekeeping gained traction out of the cold war scenario due to the questionable neutrality of rival camps i.e. US and the USSR. With geopolitics and veto power determining deployment of peacekeepers, a comprehensive reform in the functioning of the UN Security Council is necessary. Emerging powers who have contributed extensively to peacekeeping must have a say at the decision-making bodies of the UN. Objectivity, neutrality and professionalism in peacekeeping operations will be the subsequent benefits of such reforms.</p>

**Q.2) 'Nepal's cartographic aggression that has deep roots in Nepal's internal politics has become a festering wound for India. This has cast a shadow over the strategic, economic and social dimensions of the relationship.' Discuss. How can India and Nepal tread a path towards resolving their bilateral disputes for regional stability? (15 marks, 250 words)**

Topic- India-Nepal Relations	
<b>Introduction</b>	<p>Indo-Nepal relations has often been referred to as "roti-beti ka rishta" as intricate socio-economic links that the two nations have with a visa free entry facilitated by the Treaty of Peace and Friendship signed in 1950. Internal political dynamics of Nepal has cast a shadow over this multifaceted relationship jeopardizing years of progress made for decades across multiple domains. The recent cartographic aggression whereby Nepal unilaterally published a map that contained parts Indian territory has called into question, the state of Indo-Nepal relations.</p>
<b>Body</b>	<ul style="list-style-type: none"> <li>• Background of Indo-Nepal relationship</li> <li>• Irritants in the relationship</li> </ul>

	<ul style="list-style-type: none"> <li>• Impacts on different dimensions of the relationship</li> <li>• Treading a path towards resolving bilateral disputes</li> </ul>
Conclusion	<p>Political and ideological differences must not be allowed to impinge upon the civilizational ties between India and Nepal. Mutual difference can be resolved by Dialogue, Debate and Discussion in a diplomatic manner. A National Security Adviser and Foreign Minister level dialogue mechanism can be setup to deal with the simmering issues in Indo-Nepal ties. PM Modi said that, “Differences should not be left to become disputes”. Thus cherished doctrines like ‘Neighborhood First Policy’ and ‘Gujral Doctrine’ should guide Indo-Nepal tied to avert differences from becoming disputes.</p>

<b>UPSC Syllabus</b>	<b>India-Nepal Relations</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the contentious issues that have caused the prolonged constitutional logjam in Nepal. (UPSC CSE 2012)</b>
<b>Introduction</b>	<p>Indo-Nepal relations has often been referred to as “roti-beti ka rishta” as intricate socio-economic links that the two nations have with a visa free entry facilitated by the Treaty of Peace and Friendship signed in 1950. Internal political dynamics of Nepal has cast a shadow over this multifaceted relationship jeopardizing years of progress made for decades across multiple domains. The recent cartographic aggression whereby Nepal unilaterally published a map that contained parts Indian territory has called into question, the state of Indo-Nepal relations.</p>
<b>Body</b>	<p><b>Indo-Nepal relationship:</b></p> <ul style="list-style-type: none"> <li>• Political: Both are members of the SAARC, BIMSTEC and NAM. PM Modi became the first Indian PM to visit Nepal in 17 years after getting elected in 2014. Nepal is at the core of India’s neighborhood first policy.</li> <li>• Social: There are close marital, religious, linguistic and cultural ties. Nepalese students study in premier Indian universities under the SAARC Scholarship Scheme. India prioritized Nepal while exporting free vaccines during COVID-19.</li> <li>• Economic: Total bilateral trade in 2023-24 was around \$9 billion with surplus in favor of India. India accounts for over 2/3rds of Nepal’s merchandise trade and Nepalese citizens in India send nearly \$1.2 billion in remittances to Nepal.</li> <li>• Strategic: Treaty of Peace and Friendship allows Gurkhas of Nepal to be enlisted in the Indian Army and both confer honorary</li> </ul>

rank of General to each other's army chiefs.

**Irritants in the relationship:**

- Internal politics: Anti-India rhetoric peddled by few parties in Nepal has affected the vibrancy of bilateral relations.
- Unresolved borders: Treaty of Sugauli (1816) was contested by Nepal as it was signed during the colonial rule and alleged by Nepal as an inconclusive document.
- Chinese inroads: Nepal signed a transit agreement with China during the blockade in 2015 that had affected the import of basic necessities from India.
- Treaty of Peace and Friendship, 1950: Critics in Nepal allege that it requires a revision as they deem it to be an obstacle to resolve persisting boundary issues in Susta and Kalapani.
- Economic: Balance of trade is highly in favor of India with an approx. \$ 7 billion trade surplus. Further, the delay in commencing work on Pancheshwar Multipurpose Project has shunted the relationship on a downhill slide.

**Impacts on different dimensions of the relationship:**

**Social:**

- Cultural tourism between the people two countries may be affected due to strained relations between the two neighbors.
- More and more mandarin institutes are opened in Nepal stymieing the prevalence of Hindi in Nepal.
- Educational and Health cooperation can also be affected by strained government to government relations.

**Economic:**

- India is the largest source of FDI in Nepal. Hindrances in mutual relations may scuttle the predominance of India in the economic landscape of Nepal.
- Further, Nepal has become a part of Belt and Road Initiative of which India is not a member. This contrast between views can in the long term jeopardize large trade surplus India enjoys with Nepal.

**Strategic:**

- Nepal conducted its first ever joint army drill called Sagarmatha Friendship with China in 2017. The entry of China in Nepal is a strategic concern for India amid strained ties.
- India is the third largest arms exporter to Nepal after China and The USA. This asymmetry in defense relationship can further

	<p>widen due to Nepal's internal political feuds becoming a festering wound for India.</p> <p><b>Treading a path towards resolving bilateral disputes:</b></p> <ul style="list-style-type: none"> <li>• People-People relations have been the hallmark of Indo-Nepal ties. Initiatives like Buddhist circuit and Nepal circuit under Swadesh Darshan Scheme can bolster the already strong ties.</li> <li>• Political engagement across the broad spectrum of actor involving the left and the right is the way forward in calming the political rhetoric against India that is fuming in Nepal.</li> <li>• Fast tracking development projects may help gather goodwill of Nepali's in the long run. Emulating the example of Afghanistan where India enjoys goodwill of Afghan people due to \$3 billion development projects is a case in point.</li> <li>• Indigenous defense production by cutting costs can make Indian exports more attractive to developing and least developed countries. This may propel defense engagement in the long run with Nepal.</li> <li>• Summit diplomacy with mutual bilateral visits along with military diplomacy can help soar Indo-Nepal ties to greater heights.</li> </ul>
<p><b>Conclusion</b></p>	<p>Political and ideological differences must not be allowed to impinge upon the civilizational ties between India and Nepal. Mutual difference can be resolved by Dialogue, Debate and Discussion in a diplomatic manner. A National Security Adviser and Foreign Minister level dialogue mechanism can be setup to deal with the simmering issues in Indo-Nepal ties. PM Modi said that, "Differences should not be left to become disputes". Thus cherished doctrines like 'Neighborhood First Policy' and 'Gujral Doctrine' should guide Indo-Nepal tied to avert differences from becoming disputes.</p>

**Q.3) India entered into a 10-year contract with for the operationalization of Chabahar. Explain its implications for India. What is the significance of Iran in India's socio-economic and strategic calculus? Elucidate the major bottlenecks in Indo-Iranian relationship while suggesting measures to take the relationship to its full potential.15 marks (250 words)**

Topic- India-Iran Bilateral Relations	
Introduction	India and Iran have civilizational ties, with medieval Persian travelers extensively describing India, its people, its culture and society. This

	relationship got a fillip as India signed a long-term contract with Iran to operationalize Chabahar port. The relationship with Iran went through twists and turns despite great strategic convergence between India and Iran on a range of issues.
Body	<ul style="list-style-type: none"> <li>• Implications for India</li> <li>• Significance of Iran in India's Social, Economic and Strategic Calculus</li> <li>• Major bottlenecks in Indo-Iranian relationship</li> <li>• Measures to realize the full potential of the relationship</li> </ul>
Conclusion	India-Iran relations have stood the test of time. Increasing strategic convergence demands a strategic partnership for mutual benefit in the long term. Political will is necessary on both sides as this involves taking geopolitical risks and may irk major powers like the US which considers Iran as one among the axis of evil. Innovative arrangements stretching from trade to cultural dimensions can further garner good will on both sides which may eventually strengthen the bilateral ties in the long term.

<b>UPSC Syllabus</b>	<b>India-Iran Bilateral Relations</b>
<b>Why was this question asked?</b>	<b>Q.</b> How have the US sanctions against Iran affected India's bilateral relations with Iran? (UPSC CSE 2012)
<b>Introduction</b>	India and Iran have civilizational ties, with medieval Persian travelers extensively describing India, its people, its culture and society. This relationship got a fillip as India signed a long-term contract with Iran to operationalize Chabahar port. The relationship with Iran went through twists and turns despite great strategic convergence between India and Iran on a range of issues.
<b>Body</b>	<p><b>Implications for India:</b></p> <ul style="list-style-type: none"> <li>• Energy Security: India relies on imports for more than 80% of its crude oil consumption. With instability in the Red Sea and Persian Gulf, Chabahar becomes a viaduct for safe import of crude oil apart from ramping up the imports of crude oil from Iran.</li> <li>• Stability in Afghanistan: India has gained a lot of good will by investing \$3 billion in developmental projects in Afghanistan. Sustaining the good will demands maintenance of those</li> </ul>

projects. Chabahar helps India bypass Pakistan while accessing Afghanistan.

- Counter to Belt and Road Initiative: Chinese inroads into Central Asia can be countered by utilizing Chabahar port, as it will improve India's trade, people-people and energy relationship with the Central Asian countries.
- De-hyphenation of relations: Implementation of the pact marks a shift in India-US relationship as India wants to de-hyphenate its Indo-Iran relationship from the USA. This demonstrates greater strategic autonomy India is vouching for as an emerging pole of the world.

### **Significance of Iran in India's-**

- **Social Calculus:**
  - 10-15% of India's Muslim population is made up of Shia's. Holy shrines of Shia Imam's are housed in Iran. Cultural connect between India and Iran can improve India's soft power through improved people-people relations.
  - A considerable number (approx. 8000) of Iranian students pursue higher education in India's premier institutes under 67 scholarship schemes operated for foreign students. Apart from remittances, it can export India culture, cuisine and arts in Iran.
  - India has gifted 1 million doses of COVAXIN under the Vaccine Maitri programme to Iran. This has enhanced India's partnership with Iran in public health dimension for mutual long term benefit.
- **Economic Calculus:**
  - India enjoys a \$1 billion trade surplus with Iran with the trade figures touching \$2.33 billion in 2022-23, up by 21.76% from 2021-22.
  - Iran was one of the top 10 oil sources for India making upto 16% of India's oil imports prior to US Sanctions. Affordable crude oil from diverse sources is what India aspires for. Iran can satisfy India's energy security needs from this aspect.
  - Iran is hungry for investments after years of sanctions and internal instability. India will get an another option to diversify its investments in a growing country like Iran which also became the latest member of BRICS.
- **Strategic Calculus:**
  - Chabahar port is 73 km west of Pakistan's Gwadar Port. Alleged encirclement of India by China through the Belt and Road

Initiative can be countered by a port operationalized by India. Thus, Iran's active support is vital for India's strategic depth.

- Antipiracy operations in the Northern Indian Ocean and Persian Gulf cannot be ensured efficiently and effectively without Iranian cooperation. Towards this end, India joined a 2-day naval exercise called 'Iran-Russia Maritime Security Belt' in 2021.

#### **Major bottlenecks in Indo-Iranian relationship:**

- Indo-Israel relationship: India's increasingly closer relationship with Israel has come to haunt India-Iran relationship though India has de-hyphenated from Iran, its relationship with Israel.
- US Sanctions: US sanctions dragged the completion of Chabahar road project. With active US discouragement of India's deepening cooperation with Iran, crucial; projects came to a grinding halt.
- Stymied in comparison to China: China's trade with Iran was at \$9.44 billion in 2022. This was nearly 4 times the India's trade figure with Iran.
- India-Gulf relationship: India has close strategic partnerships with countries like Oman, UAE and Saudi Arabia. The Yemen dispute which has Iran and Gulf countries as rivals poses a challenge for India's balancing game in the Middle East.
- Kashmir issue: Iran has not unconditionally supported India's claims on Kashmir in Organization of Islamic Cooperation. This is also a simmering issue between India and Iran.

#### **Measures to realize the full potential of the relationship:**

- Enlightened self-interest: India should de-hyphenate its relations with Iran from relations with other nations. It must pursue the principle of enlightened self-interest in this regard.
- VISA reforms: VISA on arrival and religious tourism circuit can include major religious places in Iran and India to improve tourism and people-people relations.
- Rupee-Rial arrangement: A VOSTRO account can be opened to avert US sanctions against bilateral trade. Mechanisms adopted with Russia can be emulated here also.
- Timely completion: Time bound completion of project must be etched into the terms of reference in MoU's between Iran and India. Projects like International North South Transport and Transit Corridor must pursue strict timelines for their completion.

	<ul style="list-style-type: none"> <li>• Anti-terror cooperation: ISIS-Khorasan has been raising its head in the region. Active intelligence cooperation with Iran in this regard can further mutually benefit in anti-terror and anti-radicalization activities.</li> </ul>
<b>Conclusion</b>	India-Iran relations have stood the test of time. Increasing strategic convergence demands a strategic partnership for mutual benefit in the long term. Political will is necessary on both sides as this involves taking geopolitical risks and may irk major powers like the US which considers Iran as one among the axis of evil. Innovative arrangements stretching from trade to cultural dimensions can further garner good will on both sides which may eventually strengthen the bilateral ties in the long term.

**Q.4) India-Maldives relations has seen major ups and downs in recent years. Discuss. How can this relationship be transformed so that it is mutually beneficial in multiple domains for both India and Maldives? 15 marks (250 words)**

Topic – India- Maldives Relations	
Introduction	India and Maldives share similar culture, way of life and a common colonial history. Both have civilizational ties that has navigated the gusty winds of global geopolitics. But the relationship is not averse to serious internal political issues that projects its arms to dent the longstanding relationship. The rising stature of India as a major pole of the world demands a favorable relation with the strategically important island of Maldives. Therefore, a critical assessment of the relationship is demanded.
Body	<ul style="list-style-type: none"> <li>• Economic Significance of India-Maldives relations:</li> <li>• Political relations between India-Maldives</li> <li>• Vaccine diplomacy and social issues</li> <li>• Security relations</li> <li>• Issues in the Indo-Maldivian relations</li> <li>• Way forward</li> </ul>
Conclusion	India and Maldives relationship have been through twists and turns. India's wait and watch approach during critical junctures with respect to instability in Maldives has worked to a great extent. India must not let the comprehensive partnership to become a scape goat of few political players. It can explore new forms of diplomacy like summit diplomacy, military diplomacy, track 3 diplomacy etc. to bring the relationship on the right track. Thus, a novel policy on the lines of 'Look West' is necessary to deal with the island nations of the Indian Ocean Region.

<b>UPSC Syllabus</b>	<b>India- Maldives Relations</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the political developments in Maldives in the last two years. Should they be of any cause of concern to India? (UPSC CSE 2013)</b>
<b>Introduction</b>	India and Maldives share similar culture, way of life and a common colonial history. Both have civilizational ties that has navigated the gusty winds of global geopolitics. But the relationship is not averse to serious internal political issues that projects its arms to dent the longstanding relationship. The rising stature of India as a major pole of the world demands a favorable relation with the strategically important island of Maldives. Therefore, a critical assessment of the relationship is demanded.
<b>Body</b>	<p><b>Economic Significance of India-Maldives relations</b></p> <ul style="list-style-type: none"> <li>• Indian are the 2<sup>nd</sup> largest number of tourists visiting Maldives after the Chinese. Thus, Indians contribute to a hefty chunk of Maldives' tourism economy which employs nearly 25,000 people across the value chain.</li> <li>• India is the 4<sup>th</sup> largest trading partner of Maldives with the bilateral trade figures breaching \$500 million mark in 2022. India has also been involved in the construction of major projects like the \$500 million Greater Male Connectivity Project.</li> </ul> <p><b>Political relations between India-Maldives</b></p> <ul style="list-style-type: none"> <li>• India's 'neighborhood policy' and Maldives' 'India First' policy complement each other with frequent high level bilateral visits strengthening this partnership.</li> <li>• Both are members of the Commonwealth and the SAARC. At the multilateral level too, mechanisms have been put in place to sustain the civilizational ties.</li> </ul> <p><b>Vaccine diplomacy and social issues</b></p> <ul style="list-style-type: none"> <li>• India under 'Vaccine Maitri' gifted vaccines to Maldives at the peak of COVID-19 in 2021. Thus, Maldives became the first ever country to receive India made vaccines.</li> <li>• Maldivians choose India for higher education and medical treatment. Notwithstanding this, Bollywood and Indian arts is popular among the common Maldivians providing India its major soft power base.</li> </ul> <p><b>Security relations</b></p>

- India was the first to respond with essential goods and personnel during the 2004 Tsunami and 2014 Male Water Crisis.
- Maldives is an important component of India's SAGAR Policy which envisions India to play the role of Net Security Provider in the Indian Ocean Region. Further, Male is also a part of the Colombo Security Conclave that aims to strengthen maritime security as Maldives is situated at the junction of important Sea Lanes Of Communication (SLOCs).

#### **Issues in the Indo-Maldivian relations:**

- India Out Campaign: Domestic political rivalries often lead to political opponents taking sides kicking up nationalistic sentiments by scapegoating India's increasing influence in the Maldivian society and economy.
- Chinese influence: Maldives owes \$1.4 billion in unpaid debt to China. Maldives is also a part of the Belt and Road Initiative. Apart from the allegations of 'debt trap diplomacy' by China, strategic presence of China in Maldives may pose security challenges to India in the Indian Ocean Region.
- Radicalism: Record number of ISIS fighters are known to have joined ISIS. Rising radicalization may also affect the maritime security in the region apart from driving narco-trade through sea lanes of communication.
- Political instability: Internal political stifes have time and again questioned the democratic credentials of Maldives. This may give undue advantage to anti-India parties who in turn may reverse the gains made in the decades long relationship.

#### **Way forward:**

- Engagement across the spectrum of political parties will be crucial in reversing the anti-India tide that has been kicked up by some political players in Maldives. Track 2 and 3 diplomacy must be complement this engagement to yield sustained results.
- Considerable line of credits may have to be extended in the long run for Maldives to get out of debt obligations towards China. This may reduce the excessive influence that China has on the Maldivian economy.
- India must complete its projects in a time bound manner to gain the good will of the Maldivian people and harness necessary soft power which may act as a buffer in the heat of anti-Indian politics of some Maldivian parties.
- Intelligence cooperation regarding piracy, cyber security,

	radicalization and extremism must be strengthened as any of these issues also have their influence on India. Thus a joint working group on emerging issues is necessary for mutual benefit.
<b>Conclusion</b>	India and Maldives relationship have been through twists and turns. India's wait and watch approach during critical junctures with respect to instability in Maldives has worked to a great extent. India must not let the comprehensive partnership to become a scape goat of few political players. It can explore new forms of diplomacy like summit diplomacy, military diplomacy, track 3 diplomacy etc. to bring the relationship on the right track. Thus, a novel policy on the lines of 'Look West' is necessary to deal with the island nations of the Indian Ocean Region.



# POLITY AND GOVERNANCE

**Q.5) 'Interpreting 39(b) in such a wide sense that there is no protection of private rights in the society at all can be counterproductive and undesirable as well'. In the light of the above statement, discuss in brief about Article 39 (b) of the Indian constitution. With help of case laws, compare and contrast between Fundamental Rights and the Directive Principles of State Policy. (15 marks, 250 words)**

Topic- Directive Principles of State Policy and Fundamental Rights	
Introduction	Supreme Court of India has raised questions on granting State control over private property in context of interpretations of article 39 (b) of the Indian constitution. There has been a constant flux between the Fundamental Rights(FRs) and the Directive Principles of State Policy(DPSP) as to which one will prevail, in case of overlap. Various court judgements have tried to tone down the differences between the objectives pursued by both these features of our Constitution. They contrast with each other on many points while complementing each other in other aspects thus demanding a deeper introspection.
Body	<ul style="list-style-type: none"> <li>• About Article 39 (b) of the Constitution</li> <li>• Complementarity between the FR and the DPSP</li> <li>• Contrast between the FR and the DPSP</li> <li>• Important Cases</li> <li>• Way forward</li> </ul>
Conclusion	As Granville Austin stated, Fundamental Rights and Directive Principles of State Policy are the conscience of the Constitution and strive to promote social revolution in India. Individual liberty and free enterprise is as important as collective welfare in a democratic society. Giving superiority to one over the other will disrupt the purpose of the Constitution. Thus, a middle ground must be established between the two in order to promote political, social and economic justice all at once.

<b>UPSC Syllabus</b>	<b>Directive Principles of State Policy and Fundamental Rights</b>
<b>Why was this question asked?</b>	<b>Q. Bring out the differences between the Fundamental Rights and the Directive Principles of State Policy. Discuss some of the measures taken</b>

	by the Union and State Governments for the implementation of the Directive Principles of State Policy while suggesting way forward to harmonise them in pursuing welfare objectives. <b>(UPSC CSE 2007)</b>
<b>Introduction</b>	Supreme Court of India has raised questions on granting State control over private property in context of interpretations of article 39 (b) of the Indian constitution. There has been a constant flux between the Fundamental Rights (FRs) and the Directive Principles of State Policy(DPSP) as to which one will prevail, in case of overlap. Various court judgements have tried to tone down the differences between the objectives pursued by both these features of our Constitution. They contrast with each other on many points while complementing each other in other aspects thus demanding a deeper introspection.
<b>Body</b>	<p><b>About Article 39 (b) of the Constitution:</b></p> <ul style="list-style-type: none"> <li>• Article 39 of the Constitution provides for certain principles to be followed by the State.</li> <li>• Article 39 (b) states that the ownership and control of the material resources of the community are so distributed as best to sub serve the common good.</li> <li>• Similarly, Article 39 (c) states that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment.</li> <li>• Article 39 (b) and 39 (c) have together formed the Government’s flagship provisions to pursue its land reform and affirmative action initiatives.</li> <li>• These have often led to litigations that have called into question the primacy between the Fundamental Rights and the Directive Principles of State Policy.</li> </ul> <p><b>Complementarity between the FR and the DPSP:</b></p> <ul style="list-style-type: none"> <li>• Gender justice: Both promote the idea of gender empowerment. Article 15 prohibits discrimination on grounds of religion, race, caste, sex or place of birth. This is complemented by Article 42 that directs the state to provide maternity relief.</li> <li>• Distributive justice: Article 14 under the FR promotes equality of before law. This gets complemented by Article 39 that provides for equitable distribution of resources of the community for common good.</li> <li>• Vulnerable sections: Article 16 provides for affirmative action to vulnerable sections. On the other hand, Article 46 buttresses this by directing the State to promote the educational and</li> </ul>

economic interests of weaker sections.

- Human capital: Article 24 prohibits employment of children below 14 years in any factory, mine, or hazardous occupation; while Article 45 directs the State to provide Early Childhood Care and Education (ECCE) until they attain the age of 6 years. Thus both complement each other.
- Enforcement: Both can be enforced through the operationalization of a law passed by the Parliament to this effect.

#### **Contrast between the FR and the DPSP:**

- Enforceability: The Supreme Court and the High Courts entertain a writ petition to adjudicate against the violation of Fundamental Rights. On the other hand, one cannot approach directly these apex courts with respect to the violation of DPSPs.
- FRs are guaranteed under Part III (Articles 12-35) of the Constitution while DPSPs are guaranteed under Part IV (Articles 36-51) of the Constitution.
- FRs are negative in nature in that they prohibit the State from taking certain actions while DPSPs are positive in nature in that they direct the State to take certain actions.
- FRs aim to establish political democracy in the country by guaranteeing every individual their civic rights while DPSPs aim to establish economic and social democracy in the country.
- FRs are automatically enforced and don't require a separate legislation unlike DPSPs that require a separate legislation for enforcement.
- FRs were inspired from the Constitution of USA while DPSPs were inspired from the Constitution of Ireland.

#### **Important Cases**

- Champakaram Dorairajan Case (1951): The Supreme Court upheld the primacy of the FRs over the DPSPs by taking anti-reservation stance. It held that Article 46 goes against Right to Equality guaranteed under Article 14 of the Constitution.
- Golaknath Case (1967): The surplus land of Golkanath Brothers was acquired by the Government to serve Article 39 (c) that directs the State to prevent concentration of wealth. Again the Supreme Court upheld the primacy of FRs by holding that such an action violates Article 19(1)(f) that gave the citizens the right to keep, acquire and dispose of their property.

	<ul style="list-style-type: none"> <li>• Keshavananda Bharati Case (1973): The Supreme Court held that FRs can be amended to pursue objectives under DPSPs but without altering the basic structure of the Constitution.</li> <li>• 44<sup>th</sup> Constitutional Amendment Act: It removed the Fundamental Rights Status for the Article 19(1)(f) and reduced it to a Constitutional Right under Article 300 A. This was done in view of courts adjudicating while giving primacy to the fundamental rights.</li> <li>• Minerva Mills Case (1980): The Supreme Court held that there should be a balance between the FRs and DPSPs while pursuing welfare objectives by the State. It thus directed the State to not render absolute damage to individual liberty while pursuing the operationalization of DPSPs.</li> </ul> <p><b>Way forward:</b></p> <ul style="list-style-type: none"> <li>• Gandhian socialism: India follows Fabian Socialism instead of Marxian Socialism. Gandhian ideals of trusteeship are expected to guide the private ownership of property instead of the State confiscating it to pursue welfare objectives.</li> <li>• Progressive taxation: Progressive taxation through broadening of tax base and improving tax compliance can minimize inequality instead of wholesale confiscation of property which may jeopardize free enterprise.</li> <li>• Judicial oversight: Judicial activism acting as a neutral umpire in the tussle between the FRs and DPSPs can moderate the adverse effects of radical actions of the Executive while pursuing DPSPs.</li> <li>• Affirmative action: Affirmative action under Article 46 should not compromise equality and merit under Article 14, as mentioned in the Indira Sawhney Judgement (1992) which imposed a cap on the percentage of reserved seats. This golden mean should be aspired for in any tussle between the FRs and DPSPs.</li> </ul>
<p><b>Conclusion</b></p>	<p>As Granville Austin stated, Fundamental Rights and Directive Principles of State Policy are the conscience of the Constitution and strive to promote social revolution in India. Individual liberty and free enterprise is as important as collective welfare in a democratic society. Giving superiority to one over the other will disrupt the purpose of the Constitution. Thus, a middle ground must be established between the two in order to promote political, social and economic justice all at once.</p>

**Q.6) There has been a rising trend of bills evading legislative scrutiny having adverse impact on the representative democracy. Examine the causes behind the trend and measures to be adopted to enrich the representative democracy and the writ of its institutions. (15 marks, 250 words)**

Topic- Parliamentary democracy	
<b>Introduction</b>	The Constitution envisages the legislature as a shining light of representative democracy upholding people's aspirations. There has been a rising trend of budgets and bills being passed with minimal scrutiny affecting both people and parliamentarians. The Annual Review of State Laws 2023 released by the PRS Legislative Research lays bare this sorry state of affairs.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Rising trend of bills evading legislative scrutiny</li> <li>• Impact on the representative democracy</li> <li>• Causes behind the trend of bills evading legislative scrutiny</li> <li>• Measures to increase the quality of representative democracy</li> </ul>
<b>Conclusion</b>	The quality of democracy depends on the quality of its law makers. It is said by Chanakya that "Yatha Rajah Tatha Prajah" – (As is a king, so is his people") considering the value that law makers bring in sustaining a functional polity. But the sorry state of affairs as mentioned above must be countered lest it may turn into a gargantuan monster resulting in 'rule by law' instead of 'rule of law'. Hence, over the board reforms as mentioned above is necessary to enrich the representative democracy and the writ of its institutions.

<b>UPSC Syllabus</b>	<b>Parliamentary democracy</b>
<b>Why was this question asked?</b>	Q. Individual parliamentarian's role as the national law maker is on the decline, which in turn has adversely impacted the quality of debates and their substance. Discuss. (UPSC CSE 2019)
<b>Introduction</b>	The Constitution envisages the legislature as a shining light of representative democracy upholding people's aspirations. There has been a rising trend of budgets and bills being passed with minimal scrutiny affecting both people and parliamentarians. The Annual Review of State Laws 2023 released by the PRS Legislative Research lays bare this sorry state of affairs.
<b>Body</b>	<p><b>Rising trend of bills evading legislative scrutiny:</b></p> <ul style="list-style-type: none"> <li>• 40% of the 18.5 lakh crore worth of budget passed by 10 States</li> </ul>

without discussion in 2023.

- 84 ordinances were promulgated in as many as 20 states in 2023.
- As many as 5 states passed all bills on the day they were introduced or the next day.
- In major states like Bihar, Delhi, Goa, Maharashtra and Odisha, the Public Accounts Committee of the respective state legislatures did not table any reports.
- 60% of the bills introduced in the Lok Sabha were sent for detailed examination of the Standing Committees while it was only 13% for the 17<sup>th</sup> Lok Sabha.

#### **Impact on the representative democracy:**

- Educational value: Budding legislators learn the nuances of parliamentary procedures, law making, debate and raise concerns about the issues of their constituencies while deliberating on the bill. It affects not just the educational value but also the people's welfare in the long run due to one size fits all approach of many statutes.
- Neutrality: Committees of the legislatures and parliament hold closed door meeting insulated from the party politics that create water tight separation between law makers on the floor of the house. Thus, coolheaded and unbiased deliberation of the bill goes for a toss when bills evade parliamentary scrutiny.
- Awareness: As the media livestreams legislative discussions, common citizens become aware of the state of affairs of the rules and regulations governing them. Guillotining bills and not deliberating on them hinder this awareness generation potential of the law making bodies.
- Presidentialization: It would lead to rule of the Executive instead of law making bodies holding the executive accountable thus leading to Presidentialization of the Prime Minister and Chief Ministers.
- Group theory: Bills evading parliamentary scrutiny gives undue advantage to influential pressure groups of businessmen, caste associations, political allies etc leaving the common man's concerns at the 'Mercy of God'.

#### **Causes behind the trend of bills evading legislative scrutiny:**

- Delimitation: The number of seats were frozen through the 42<sup>nd</sup> Constitutional Amendment Act based on the 1971 census. The population has grown by leaps and bounds, so is the number of

issues to be debated in the Parliament. Few lawmakers cannot discuss each and every issue thereby affecting legislative scrutiny.

- Laymen: Politicians generally are laymen. Law making is the business of an expert like a seasoned bureaucrat. This lack of expertise comes to haunt the effectiveness of legislative debates.
- Constitutional loopholes: The recommendations of the Standing Committees are only recommendatory in nature. They don't have a binding effect thus reducing the importance of their scrutiny.
- General indifference: People are busy with their own chores. The general indifference is exhibited in the low percentage of voting mainly by urban folks in every election.
- Absenteeism: Apart from the rising absenteeism of lawmakers, the Parliament and State Legislatures themselves have been holding sessions for few and few days in a year. For Rajya Sabha, it has gone below 100 days in a year.

**Measures to increase the quality of representative democracy:**

- Minimum number of sessions: The average annual sitting days has dipped from 135 in the 1<sup>st</sup> Lok Sabha to 55 days in the 17<sup>th</sup> Lok Sabha. The National Commission to Review the Working of the Constitution recommended a minimum 100 sitting days to improve the deliberation, discussion and debates in the Legislatures and the Parliament.
- Expert Support: A separate expert body should be created to resolve the doubt of the Parliamentarians and to educate them on crucial aspects of law making. This will go a long way in resolving the dearth of knowledge of budding law makers.
- Binding effect: There should be a clause in the Constitution that defines standing committee recommendations on which subjects should have a binding effect on the passage of the bills. This will give teeth to their recommendations and deliberations.
- Judicial Activism: In the D.C. Wadhwa Case (1987), The Supreme Court held that repeated promulgation and re-promulgation of ordinances was unconstitutional. Ordinances should be an exception while legislative scrutiny is a rule.
- Criminalization of politics: 42% of the Parliamentarians in the present Lok Sabha have criminal charges against them. Those with serious charges with a prima-facie evidence must be

	disqualified from candidature.
<b>Conclusion</b>	The quality of democracy depends on the quality of its law makers. It is said by Chanakya that “Yatha Rajah Tatha Prajah” – (As is a king, so is his people”) considering the value that law makers bring in sustaining a functional polity. But the sorry state of affairs as mentioned above must be countered lest it may turn into a gargantuan monster resulting in ‘rule by law’ instead of ‘rule of law’. Hence, over the board reforms as mentioned above is necessary to enrich the representative democracy and the writ of its institutions.

**Q.7) DigiLocker is an important pillar of e-governance in India. Discuss. Explain the challenges encountered in its effective implementation while enumerating other such e-governance initiatives. Suggest innovative measures to improve its adoption across the length and breadth of the country. 15 marks, 250 words)**

Topic- E-governance	
<b>Introduction</b>	DigiLocker is a flagship initiative of the Ministry of Electronics and Information Technology under the Digital India programme and was launched in 2015 to provide citizens a secure document access platform on a public cloud. But the crucial e-governance initiative also encounters challenges ranging from cyber-security to digital divide affecting its smooth implementation across the length and breadth of the nation.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Pillars of e-governance in India:</li> <li>• Other such e-governance initiatives:</li> <li>• Challenges encountered in its effective implementation:</li> <li>• Innovative measures to improve its adoption:</li> </ul>
<b>Conclusion</b>	DigiLocker is an enabler in e-governance. Its potential must be internalized through strengthening of the sub-systems that drive it. It faces numerous challenges that are characteristic of any digital platform. Overall cyber hygiene along with digitization of government transactions can go a long way in abridging the redundant procedures to improve overall efficiency. Therefore, citizen engagement, backend reforms and better grievance redressal can drive the adoption of DigiLocker in the long run.

<b>UPSC Syllabus</b>	<b>E-governance</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the advantages and security implications of cloud hosting of servers vis-à-vis in-house machine-based hosting for government</b>

	businesses. (UPSC CSE 2015)
<b>Introduction</b>	DigiLocker is a flagship initiative of the Ministry of Electronics and Information Technology under the Digital India programme and was launched in 2015 to provide citizens a secure document access platform on a public cloud. But the crucial e-governance initiative also encounters challenges ranging from cyber-security to digital divide affecting its smooth implementation across the length and breadth of the nation.
<b>Body</b>	<p><b>Pillars of e-governance in India:</b></p> <ul style="list-style-type: none"> <li>• <b>Transparency:</b> Having crucial documents and certificates online e-signed by verified authorities improves transparency in the disbursement of welfare benefits and reduction in the instances of corruption.</li> <li>• <b>Efficiency:</b> It reduces unnecessary workload of carrying documents, having a carbon copy and maintaining them. Thus, it improves the efficiency when applying for passports, Ayushman Bharat Scheme, Public Distribution Schemes etc.</li> <li>• <b>Ease of doing business:</b> DigiLocker facilitates single window clearance by collating documents at one place and their authorized retrieval. Thus, it improves Government to Business transactions.</li> <li>• <b>Security:</b> Close to 27 crore registered users with nearly 67 lakh documents are hosted on DigiLocker. This is backed by 2048 Bit RSA-Secure Sockets Layer encryption that is used in transmitting and receiving data thus ensuring optimum security.</li> <li>• <b>Litigation:</b> Conclusive land titles and policy documents can be vetted and uploaded on the portal reducing litigation arising due to fake physical documents. Thus, it can mitigate the long legal battles which take years to be resolved.</li> </ul> <p><b>Other such e-governance initiatives:</b></p> <ul style="list-style-type: none"> <li>• <b>mygov.in:</b> It is a citizen engagement initiative of the Government of India to improve the policy formulation and receive public input on welfare objectives of the government. It boasts 3 crore users across 23 States and Union Territories to enhance citizen engagement.</li> <li>• <b>UMANG:</b> A unified mobile application that provides access to a range of services offered by the Federal and State Governments under a single umbrella.</li> <li>• <b>E-gram swaraj:</b> Geotagging of assets created by Panchayats</li> </ul>

along with spatial planning is enabled by the application.

- **MeghRaj:** It is a Government of India's cloud initiative providing services like Software as a Service, Storage as a Service, Platform as a Service to achieve economy of scale thereby reducing costs for government departments across the Union and the States.
- **FRIENDS:** It is a single window facility involving token managements system for most transactions with the State Government of Kerala. Payments related to Electricity Board, Kerala University, Local Bodies, Water Supply Authority etc. are accomplished through this mechanism.

#### **Challenges encountered in its effective implementation:**

- **Digital Divide:** The India Inequality Report by Oxfam, 2022 states that, only 31% rural households used internet compared to 67% of urban households. This digital divide can hamper the adoption of DigiLocker.
- **Cyber-security:** Recent ransomware attacks on reputed institutes like AIIMS raise concerns about the cybersecurity as the DigiLocker facility hosts sensitive documents which can be swindled and sold on the dark web.
- **Non-uniformity:** Many departments still do not accept DigiLocker or accept documents in DigiLocker along with physical copies. This affects the original intent of minimizing the need for physical copies, due to non-uniformity in procedures among the departments.
- **Infrastructural:** BharatNet hasn't been saturated in rural areas. Further intermittent electricity supply can hinder the full scale adoption of DigiLocker.
- **Awareness:** A large section of the population uses private cloud servers. Popularizing DigiLocker requires innovative mechanism so as to onboard as many people as possible.

#### **Innovative measures to improve its adoption:**

- **Cyber-security:** Improving cyber resilience through CERT-In and a contingent back up facility for files stored in DigiLocker can improve the overall efficiency and effectiveness of the platform.
- **Uniformity:** State and Central departments must standardize a procedure for accepting documents. Physical copies should be done away with if the citizen possesses copies in DigiLocker.

	<ul style="list-style-type: none"> <li>• Digitization: Digitization of documents through state specific missions can improve the online availability of documents furthering the adoption of DigiLocker.</li> <li>• Grievance redressal: An efficient grievance redressal mechanism regarding the upload and retrieval of documents along with e-sign facility can improve the trust in the platform.</li> <li>• Digital divide: Full-scale implementation of BharatNet can bridge the digital divide apart from the provision of satellite internet in most remote regions. This can enhance the greater adoption of DigiLocker and other such e-governance initiatives.</li> </ul>
<b>Conclusion</b>	DigiLocker is an enabler in e-governance. Its potential must be internalized through strengthening of the sub-systems that drive it. It faces numerous challenges that are characteristic of any digital platform. Overall cyber hygiene along with digitization of government transactions can go a long way in abridging the redundant procedures to improve overall efficiency. Therefore, citizen engagement, backend reforms and better grievance redressal can drive the adoption of DigiLocker in the long run.

**Q.8) There have been calls to confer National Human Rights Commission (NHRC) with Constitutional recognition. What is the significance of such a move? Critically analyze the functioning of the NHRC in recent years. How can its functioning be made more effective? 15 marks, 250 words)**

Topic- Statutory Bodies	
<b>Introduction</b>	National Human Rights Commission is a statutory body created through the Protection of Human Rights Act, 1993. Recently NHRCs status was downgraded by deferring its Category 'A' status by the Global Alliance of National Human Rights Institutions. This makes one ponder over the functioning of the NHRC over the years, calls to give it a Constitutional Status and reforms needed to make it an effective organization safeguarding human rights of our citizens.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Significance of conferring Constitutional Status</li> <li>• Achievements of NHRC in recent years</li> <li>• Issues in the functioning of NHRC</li> <li>• Reforms needed to make its functioning more effective</li> </ul>
<b>Conclusion</b>	NHRC, despite inviting jargons like 'toothless tiger' can become a body to be reckoned with if it is reformed in a time bound manner. Judicial oversight,

political will and parliamentary oversight are crucial pillars of such a reform. A solid Human Rights machinery can improve India's soft power along with democratic credentials as the world's largest democracy lest India's own commitments in the sphere of human rights may be called into question.

<b>UPSC Syllabus</b>	<b>Statutory Bodies</b>
<b>Why was this question asked?</b>	<b>Q.</b> National Human Rights Commission in India can be most effective when its tasks are adequately supported by other mechanisms that ensure the accountability of a government. In light of the above observation, assess the role of NHRC as an effective complement to the judiciary and other institutions in promoting and protecting human rights standards. <b>(UPSC CSE 2014)</b>
<b>Introduction</b>	National Human Rights Commission is a statutory body created through the Protection of Human Rights Act, 1993. Recently NHRC's status was downgraded by deferring its Category 'A' status by the Global Alliance of National Human Rights Institutions. This makes one ponder over the functioning of the NHRC over the years, calls to give it a Constitutional Status and reforms needed to make it an effective organization safeguarding human rights of our citizens.
<b>Body</b>	<p><b>Significance of conferring Constitutional Status:</b></p> <ul style="list-style-type: none"> <li>• It will get complete functional independence while discharging Constitutional obligations as its members can only be removed by a special majority of both the houses of the Parliament. Thus the members enjoy a security of tenure.</li> <li>• It assumes the powers of a civil court to summon documents from any public organization under the Government of India or a State.</li> <li>• Its orders and advices garners the power of precedence as they will be used in future as reference while adjudicating on a matter.</li> <li>• It prevents conflict of interest as its members will not be eligible for further employment in the Government of India or a State.</li> <li>• The entire expenses of the Commission will be charged on the Consolidated Fund of India and hence will not be subject to the vote of the Parliament.</li> </ul> <p><b>Achievements of NHRC in recent years:</b></p> <ul style="list-style-type: none"> <li>• Custodial deaths: The Commission's 1997 guideline mandates that every alleged custodial death and encounter killing be</li> </ul>

reported to it within 24 hours. This prevents police excesses and biased investigation that have been a cause for concern in the law-and-order machinery.

- Gender justice: Efforts of NHRC were crucial in delivering compensation ranging from Rs. 3 lakhs to Rs. 9 lakhs to 49 victims by the State Government in the Muzaffarpur Shelter Home Case.
- Case clearance rate: Cases have been resolved within months with 17 lakh cases disposed till 2021 and compensation has been paid in 90% of them.
- Awareness generation: Around 200 conferences have been conducted across the country to generate awareness on the crucial aspects of human rights and consequences of violating it.

#### **Issues in the functioning of NHRC:**

- A toothless tiger: Former NHRC Chairman H.L. Dattu has called NHRC, a toothless tiger as it is only a recommendatory body. It is upto the Government concerned to act on its recommendations affecting NHRCs punitive power.
- Conflict of Interest: Custodial deaths rose from 444 in 1995 to 5,496 in 2015. Most officers in the NHRC have been deputed from the police departments. But most cases are against these police departments demonstrating clear conflict of interest.
- Vacancy: Between 1995 and 2015, the number of complaints rose by 1,455% while the staff strength decreased by 16.94% in the same period. This glaring vacancy has increased the pendency and overall effectiveness and efficiency of the Commission.
- Pendency: From 11,617 cases in 2010-11, the pendency had increased to 40,766 in 2015-16. The rising pendency in the backdrop of staff shortage create structural and procedural inefficiencies in the effective functioning of the NHRC.

#### **Reforms needed to make its functioning can be made more effective:**

- Provision of a Constitutional Status: The provision of Constitutional Status along with the conferment of contempt power can ensure that the recommendations of NHRC are given due emphasis by respective departments.
- Parliamentary oversight: Protection of Human Rights Act, 1993 must be amended to make time bound appointments to the NHRC. Parliamentary oversight can further strengthen the staff

	<p>capacity of NHRC.</p> <ul style="list-style-type: none"> <li>• A separate investigation and prosecution mechanism: Deputation of officers from the State Police Departments must be done away with to avert the situations of conflict of interest. Thus a separate investigation and prosecution wing of NHRC can satisfactorily meet this requirement.</li> <li>• Citizen charter: An agenda containing deliverables, their responsibility and time frame to deliver must be etched into a robust citizen's charter of the NHRC. Trustworthiness and confidence of the citizens will be natural consequences of such a mechanism.</li> </ul>
<b>Conclusion</b>	<p>National Human Rights Commission, despite inviting jargons like 'toothless tiger' can become a body to be reckoned with if it is reformed in a time bound manner. Judicial oversight, political will and parliamentary oversight are crucial pillars of such a reform. A solid Human Rights machinery can improve India's soft power along with democratic credentials as the world's largest democracy lest India's own commitments in the sphere of human rights may be called into question.</p>

**Q.9) The Draft Digital Competition Bill is novel in many aspects going beyond the present system of anti-competitive arrangements.' In light of the above statement, critically evaluate Draft Digital Competition Bill. Also give a brief overview of the role of the Competition Commission of India in containing market abuse by dominant market players. 15 marks (250 words)**

Topic – Government Acts and Policies	
Introduction	<p>India has the 3<sup>rd</sup> largest startup ecosystem globally. Startups thrive under cutthroat competition not under unfair competition. With one of the largest human capital base in the information technology sector, India can exploit the potential of this capital only if there is fair competition and a strong entrepreneurial base. Notwithstanding criticisms, the Draft Digital Competition Bill is an initiative towards this end by reforming the present anti-trust regulatory regime.</p>
Body	<ul style="list-style-type: none"> <li>• Significance of the Draft Digital Competition Bill</li> <li>• Criticisms against the Draft Digital Competition Bill</li> <li>• Present system of eliminating anti-competitive practices</li> <li>• Role of the Competition Commission of India (CCI)</li> </ul>
Conclusion	<p>Multi-stakeholder consensus must be arrived at for faster enactment of the Draft Digital Competition Bill and its streamlined implementation. The</p>

operation of digital firms demands innovative and agile policies which can meet new challenges. Even though Competition Commission of India is evolving new mechanisms to counter anti-competitive practices, but in digital space, more technology infusion is need of hour.

<b>UPSC Syllabus</b>	<b>Government Acts and Policies</b>
<b>Why was this question asked?</b>	<b>Q.</b> Discuss the role of the Competition Commission of India in containing the abuse of dominant position by the Multi-National Corporations in India. Refer to the recent decisions. <b>(UPSC CSE 2023)</b>
<b>Introduction</b>	India has the 3rd largest startup ecosystem globally. Startups thrive under cutthroat competition not under unfair competition. With one of the largest human capital base in the information technology sector, India can exploit the potential of this capital only if there is fair competition and a strong entrepreneurial base. Notwithstanding criticisms, the Draft Digital Competition Bill is an initiative towards this end by reforming the present anti-trust regulatory regime.
<b>Body</b>	<p><b>Significance of the Draft Digital Competition Bill:</b></p> <ul style="list-style-type: none"> <li>• Companies cannot give self-preference to their own services over the same services provided by competitors. For examples Apple would have to give users access to download apps from third party users than Apple’s own app store.</li> <li>• Data gathered from one company cannot be used for the benefit of a group company. For example, data collected from google cannot be used in recommending YouTube ads thereby safeguarding user privacy.</li> <li>• Moves away from ex post facto anti-trust framework to ex ante anti-trust framework thereby pre-emptively eliminating future instances of anti-competitive practices.</li> <li>• Competition Commission of India (CCI) will designate certain entities as “Systematically Significant Digital Enterprise” (SSDE) based on market capitalization, number of users, global and domestic turnover etc. This will improve the oversight of possible violations by these entities thereby preventing unfair market competition.</li> <li>• Considerable penalties in the form of fines ranging upto 10% of the global turnover promotes better compliance in the long run.</li> </ul> <p><b>Criticisms against the Draft Digital Competition Bill:</b></p> <ul style="list-style-type: none"> <li>• Increase in the compliance burden and compliance costs may</li> </ul>

drive up the cost of the services like advertisements and utility apps like pdf readers, file managers etc. provided by these tech giants in the long run.

- These rules may hamper innovation and research as tech giants have to forego revenue due to the increased competition, which further affects cutting edge developments in AI and robotics.
- Inclusion of qualitative parameters in classifying an entity as SSDE may increase the discretion of the CCI and can potentially impact the growth of startups due to increased compliance burden.
- User friendliness of the platforms may get jeopardized as similar regulations in the EU through the Digital Markets Act has led to an increase of 4000% in the time taken to find things via google search.
- Allowing users to download apps from a third party platforms may hamper the security of the Operating Systems like Android and IOS.

#### **Present system of eliminating anti-competitive practices**

- Post mortem method: Present system follow ex post facto procedure in curbing anti-competitive practices as seen in the Vodafone-Hutch merger where Vodafone evaded \$2.5 billion in taxes through tax planning strategies thereby affecting market competition.
- Till the regulators take note of the issue, considerable damage would have been done to the plight of small players and new entrants in the market.
- CCI realized just 0.6% of the fines that it had imposed on companies for anti-trust practices due to lengthy judicial reviews and overturned orders. Thus, overall effectiveness under the present regulatory regime has turned futile.
- End customer had already borne the losses when the CCI imposed Rs. 6,300 crore fine on cement companies for alleged cartelization. Thus, the customer or the competitor or the government will always be under the present ex post facto regulatory regime.

#### **Role of the Competition Commission of India (CCI):**

- CCI imposed Rs. 936 crores fine against Google for mandating those hosting their apps on GooglePlay to mandatorily use Google's in-app billing system.
- Since its inception, 95% of the cases have been decided within 30 days demonstrating the efficient working of the CCI.

	<ul style="list-style-type: none"> <li>• Through an amendment to the Competition Act in 2023, prior approval of the CCI has been mandated for mergers and acquisitions valuing over Rs. 2,000 crores thereby avoiding ex post facto actions.</li> <li>• CCI has established a Digital Market Unit for navigating the regulatory challenges in the digital space and learn from their peers across the world with respect to anti-trust regulations.</li> </ul>
<b>Conclusion</b>	Multi-stakeholder consensus must be arrived at for faster enactment of the Draft Digital Competition Bill and its streamlined implementation. The operation of digital firms demands innovative and agile policies which can meet new challenges. Even though Competition Commission of India is evolving new mechanisms to counter anti-competitive practices, but in digital space, more technology infusion is need of hour.

**Q.10) ‘The criminal justice system in India is muddling through a range of obstacles.’ In light of the above statement, discuss the issues in Indian criminal justice system. What measures can be taken to bring holistic reform in the system, in light of recommendations of various committees? 15 marks (250 words)**

Topic – Judiciary in India	
Introduction	It is remarked that India’s criminal justice system is offender centric than victim centric. Despite being offended, the victim must run from pillar to post with frequent adjournments and years of legal battle to get justice. This state of affairs has a damaging effect on the psyche of the individual and society whom approach para legal and kangaroo courts to resolve their issues jeopardizing the merit of the integrated judicial system. Various committees have recommended important guidelines and suggestions for conceptualizing systemic reforms to make the system efficient, effective and economical, which needs to be comprehensively implemented.
Body	<ul style="list-style-type: none"> <li>• Issues in the Indian criminal justice system:</li> <li>• Social, political and economic Impact</li> <li>• Measures taken to reform the system:</li> <li>• Reforms and guidelines suggested by important committees/cases</li> </ul>
Conclusion	Reforming criminal justice system demands the collusive efforts of the executive, judiciary and the legislature as seen in the measures already taken. The reform process cannot operate in silos in the event of which it may come short in achieving its reform agenda. Cooperative federalism should be at the core of the interventions as many sub parts of the criminal justice system involve the active cooperation of states. Clear agenda, time

bound targets and a separate funding mechanism must be set aside to turn the criminal justice system from the present offender centric to victim centric for speedy, effective and affordable justice.

<b>UPSC Syllabus</b>	<b>Judiciary in India</b>
<b>Why was this question asked?</b>	<b>Q. "Constitutionally guaranteed judicial independence is a prerequisite of democracy." Comment. (UPSC CSE 2023)</b>
<b>Introduction</b>	It is remarked that India's criminal justice system is offender centric than victim centric. Despite being offended, the victim must run from pillar to post with frequent adjournments and years of legal battle to get justice. This state of affairs has a damaging effect on the psyche of the individual and society whom approach para legal and kangaroo courts to resolve their issues jeopardizing the merit of the integrated judicial system. Various committees have recommended important guidelines and suggestions for conceptualizing systemic reforms to make the system efficient, effective and economical, which needs to be comprehensively implemented.
<b>Body</b>	<p><b>Issues in the Indian criminal justice system</b></p> <ul style="list-style-type: none"> <li>• Vacancies: There are 4 lakh vacancies of police persons in the country. This subverts the efficient disposal of cases through regular follow-ups and robust evidence submission.</li> <li>• Judge to population ratio: India has 21 judicial officers per million citizens against the Law Commission recommendation of 50 judges per million. This has resulted in 4 crore pending cases in the sub-ordinate judiciary as per the National Judicial Data Grid.</li> <li>• Police to population ratio: India has 152 police persons per lakh citizens against the UN recommended 222 police persons per lakh population. Over and above this, the non-separation of the investigation police from the law and order police has been making matters worse by hindering the overall effectiveness of the police system.</li> <li>• Pendency: Lack of special and fast track courts to adjudicate matters has resulted in rising pendency. As per the 'Crime in India' report, nearly 90% of the hit and run cases are pending in courts.</li> <li>• Jail reforms: 75% of the prisoners in India are undertrials and 2 out of 3 prisoners belong to vulnerable and low income sections</li> </ul>

unable to afford surety for their bail application to be approved.

### **Social, political and economic Impact**

#### **Social:**

- Lack of convictions will damage the deterrence value and perpetrators gain an unforeseen confidence to continue the criminal acts jolting the public psyche and trust in the judicial system.
- The record high undertrials pose a threat to the demographic dividend as they cannot be productive individuals contributing to the national GDP. As many undertrials face mental and physical trauma, they become a burden on the State's economic and social resources in the form of added healthcare and rehabilitation costs.

#### **Political:**

- 42% of the MPs in the 17<sup>th</sup> Lok Sabha have criminal charges against them remark Association for Democratic Reforms. This spate of criminalization of politics has gone scot-free owing to the sorry state of the criminal justice system.
- Honest young political aspirants are further discouraged due to this state of affairs affecting the quality and consistency of parliamentary debates.

#### **Economic:**

- Land disputes though are civil cases have indirect nexus with criminal elements like the 'settlement gangs' that operate in the real estate sphere. Dysfunctional criminal justice system affects the speedy adjudication of cases which in turn disjoints the investments in the economy resulting in job losses.
- Law and Order is the backbone of solid economic growth. Poor criminal justice system affects the business friendliness of States. The classic example is of Uttar Pradesh though it has reversed this in recent years through stolid law and order measures.

### **Measures taken to reform the system:**

- Nirbhaya Fund: A separate fund with Rs 1,000 crore corpus has been created by the Centre. Many States have utilized to launch 'Safe City Projects' to improve women's safety by installing CCTVs and taking other requisite measures.
- Appointment of DGPs: A minimum 2-year tenure and approval of the list of eligible officers to be selected for DGP has improved political neutrality and the law and order scenario of the States.
- Model Prisons Act, 2023: It replaces the 130-year-old Prisons Act, 1894 which lays emphasis on discipline and enforcement. The

	<p>new act lays due emphasis on skill training of prisoners and their reintegration into the society along with the concept of open prisons to reduce the number of undertrials in the Indian jails.</p> <ul style="list-style-type: none"> <li>• E- courts Mission Mode Project: The project has been launched with the assistance of the Department of Justice, for improving the court infrastructure to limit judicial pendency.</li> </ul> <p><b>Reforms and guidelines suggested by important committees/cases</b></p> <ul style="list-style-type: none"> <li>• Prakash Singh Case: The guidelines in the case enumerated in 2006 mandates the separation of the law-and-order police from the investigation police for better investigation and prosecution thereby minimizing judicial delay.</li> <li>• Mulla Committee recommendations: It recommended the creation of an Indian Prisons and Correctional Service for reducing the number of undertrials and efficient functioning of the jail administration.</li> <li>• National Judicial Infrastructure Pipeline: Ex-CJI Shri N.V. Ramana recommended the creation of a National Judicial Infrastructure Pipeline on the lines of the National Infrastructure Pipeline. This would help fund the efficient creation and maintenance of the judicial infrastructure.</li> <li>• Lok Adalats: Over 1.1 crore cases with a total value of Rs. 8,054 crores were settled in a single day in the first National Lok Adalat of 2024. Such mechanisms must be frequently resorted to dispose of the mounting judicial pendency.</li> </ul>
<p><b>Conclusion</b></p>	<p>Reforming criminal justice system demands the collusive efforts of the executive, judiciary and the legislature as seen in the measures already taken. The reform process cannot operate in silos in the event of which it may come short in achieving its reform agenda. Cooperative federalism should be at the core of the interventions as many sub parts of the criminal justice system involve the active cooperation of states. Clear agenda, time bound targets and a separate funding mechanism must be set aside to turn the criminal justice system from the present offender centric to victim centric for speedy, effective and affordable justice.</p>

**Q.11) 'Judiciary at various levels is plagued by systemic issues which hamper its overall efficiency'. Discuss. Explain the negative impact of these issues on the societal, economic and political landscape. Mention the feasible course of action to deal with these systemic issues for the efficient and effective functioning of the judiciary. 15 marks (250 words)**

Topic – Judiciary in India	
Introduction	Indian Constitution provides for an integrated system of judiciary with the Supreme Court at the apex and the High Courts and Sub-Ordinate Courts functioning below it. The judiciary at every level is facing structural and operational issues that hamper its functional efficiency. The recent allegations against the questionable adjudication process of the accused, projects systemic issues in the judiciary demanding a critical review of the extant machinery.
Body	<ul style="list-style-type: none"> <li>• Systemic issues in the judiciary at various levels</li> <li>• Negative impact of systemic issues</li> <li>• Feasible course of action to deal with systemic issues</li> </ul>
Conclusion	Pope Paul VI remarked that, “If you want peace, work for justice”. Justice is the window to societal peace, economic growth and political maturity in a nation. India’s judiciary faces issues which are procedural, legal and institutional in nature. Lack of deterrence, criminalization of politics and stunted innovation are some of its negative impacts. Judicial reforms recommended from time to time must be implemented to improve the Accessibility, Availability and Affordability of adjudication processes at multiple levels of the judiciary.

<b>UPSC Syllabus</b>	<b>Judiciary in India</b>
<b>Why was this question asked?</b>	<b>Q:</b> What is meant by judicial activism? Evaluate its role in the context of the functioning of Indian Polity. (UPSC CSE 2008)
<b>Introduction</b>	Indian Constitution provides for an integrated system of judiciary with the Supreme Court at the apex and the High Courts and Sub-Ordinate Courts functioning below it. The judiciary at every level is facing structural and operational issues that hamper its functional efficiency. The recent allegations against the questionable adjudication process of the accused, projects systemic issues in the judiciary demanding a critical review of the extant machinery.
<b>Body</b>	<b>Systemic issues in the judiciary at various levels -</b>

#### **At the level of sub-ordinate courts:**

- Infrastructure: According to National Judicial Data Grid, 22% of the court complexes don't have toilet facilities for women impeding gender equity, access and trust in the judicial process.
- Pendency: Nearly 4 crore cases are pending in the sub-ordinate judiciary. This is largely attributed to the low judge to population of 15 per million against the Law Commission recommended 50 per million.
- Corruption: A judge was caught red handed for accepting bribe for a favorable judgement in the Tis Hazari Court premises by the CBI. Thus corruption has become the order of the day in the sub-ordinate judiciary for expediting bail applications and giving favorable judgements.

#### **At the level of High Courts and the Supreme Court:**

- Writ petitions: Private litigations are being masqueraded as public interest litigation for advanced hearings. This affects the needy sections of the society apart from inviting allegations of bias on the apex court of this nation.
- Adjournments: Lawyers find numerous alibis to adjourn the proceedings. Faulty investigation, lack of witness protection and minimal use of mediation has led to the average case pendency in sub-ordinate courts clocking 5 years approximately, according to the India Justice Report.
- Regional benches: The Supreme Court being at the apex must deal with the Constitutional cases and receive cases on appeal by creating regional benches. This idea though feasible is barely receiving the needed attention.

#### **Negative impact of systemic issues**

##### **Societal landscape:**

- Lack of deterrence: National Crime Record Bureau data states that the crime on women increased by 4% in 2023 compared to 2022. This translates to 87 women are sexually assaulted every day. Systemic issues in the judiciary complements this lack of deterrence.
- Kangaroo courts: Justice is delivered through the Kangaroo Courts in areas where Left Wing Extremism is dominant owing to the cost, access and trust issues in the regular judicial system.

##### **Political landscape:**

- Criminalization of politics: Association for Democratic Reforms states that 42% of the sitting MP's have criminal charges against

them with 25% facing serious criminal charges. Thus, judicial pendency can reduce the quality of representative democracy.

- Party capture: Pressure groups like caste associations, business interests, ideological allies etc. can capture party's decision making process thereby affecting the transparency, competence and citizen centricity of political parties.

#### **Economic landscape:**

- Ease of doing business: In the Ease of Doing Business Report 2020, India was placed at 163<sup>rd</sup> position in 'enforcing contracts' indicator. Thus, systemic issues in judiciary may hamper the ease of doing business for firms in India's economic landscape.
- Innovation: Judicial pendency affects the resolution of intellectual property rights cases. This may hinder innovation and research in the long run.

#### **Feasible course of action to deal with systemic issues**

- All India Judicial Service: Chief Justices' Conference in 1961 recommended to amend the Constitution and create a new All India Judicial Service under Article 312 of the Constitution. It would standardize recruitment of judicial officers to the subordinate judiciary.
- Court Managers: Back-end procedures often tend to be tedious. The judge should be relieved of the administrative work by appointing qualified court managers.
- National Judicial Infrastructure Pipeline: Ex-CJI N.V. Ramana remarked of creating a National Judicial Infrastructure Pipeline on the lines of National Infrastructure Pipeline to fund the revamping of judicial infrastructure. Such mechanisms are worth to ponder.
- Compulsory mediation: Pre-litigation mediation must be made compulsory at least in civil cases to reduce the burden on the judiciary. A separate vertical under High Courts must monitor such processes in a broad manner.
- Pre-legislative scrutiny: Bills often end up in judicial review. 50% of the litigation in the judiciary consists of the Government as a party to the case. Thus, pre-legislative scrutiny by judiciary can de-duplicate tasks and reduce the burden on judiciary.
- Rationalization: Obsolete laws and faulty provisions must be eliminated and the elephantine Indian Penal Code must be rationalized from time to time to avert legal interpretation issues while adjudicating cases.

**Conclusion**

Pope Paul VI remarked that, “If you want peace, work for justice”. Justice is the window to societal peace, economic growth and political maturity in a nation. India’s judiciary faces issues which are procedural, legal and institutional in nature. Lack of deterrence, criminalization of politics and stunted innovation are some of its negative impacts. Judicial reforms recommended from time to time must be implemented to improve the Accessibility, Availability and Affordability of adjudication processes at multiple levels of the judiciary.



# Social Issues and Social Justice

**Q.12) Particularly Vulnerable Tribal Groups (PVTGs) have been most marginalized among the tribal groups. Enumerate the criteria to be designated as a PVTG. State the issues faced by these groups after 7 decades of Independence. What are the government interventions that have been undertaken to ameliorate their concerns? Suggest further measures to improve their plight. 15 marks (250 words)**

Topic- Particularly Vulnerable Tribal Groups (PVTGs)	
Introduction	75 PVTGs are spread over 17 States and one Union Territory. These are the most vulnerable and backward among the 705 Scheduled Tribes. They face a range of issues from health to unemployment. Further, lack of targeted programmes has affected their upliftment demanding concrete measures to improve their socio-economic status. They are designated as PVTGs through a well-defined criterion that was conceived during the Fourth Five Year Plan period.
Body	<ul style="list-style-type: none"> <li>Criteria for a group to be designated as a PVTG</li> <li>Issues faced</li> <li>Government interventions to ameliorate conditions:</li> <li>Measures needed to improve plight</li> </ul>
Conclusion	The development of Particularly Vulnerable Tribal Groups (PVTGs) has been ignored for decades. Their concerns got further buttressed by the industrial expansion, deforestation, dam building, Left Wing Extremism etc. This has called for innovative measures involving regional and Union governments. Providing them political voice through enfranchisement and following Tribal Panchsheel laid down by Pandit Nehru can act as broad pillars for overall development of PVTGs.

<b>UPSC Syllabus</b>	<b>Particularly Vulnerable Tribal Groups (PVTGs)</b>
<b>Why was this question asked?</b>	<b>Q.</b> The Central Government frequently complains on the poor performance of the State Governments in eradicating suffering of the vulnerable sections of the society. Restructuring of Centrally sponsored schemes across the sectors for ameliorating the cause of vulnerable sections of population aims at providing flexibility to the States in better implementation. Critically evaluate. <b>(UPSC CSE 2013)</b>

<p><b>Introduction</b></p>	<p>75 PVTGs are spread over 17 States and one Union Territory. These are the most vulnerable and backward among the 705 Scheduled Tribes. They face a range of issues from health to unemployment. Further, lack of targeted programmes has affected their upliftment demanding concrete measures to improve their socio-economic status. They are designated as PVTGs through a well-defined criterion that was conceived during the Fourth Five Year Plan period.</p>
<p><b>Body</b></p>	<p><b>Criteria for a group to be designated as a PVTG</b></p> <ul style="list-style-type: none"> <li>• As per the Dhebar Commission Report, a criterion for identifying PVTGs has been laid down. These are –</li> <li>• Pre-agricultural level of technology – like practicing shifting cultivation or animal rearing to sustain themselves without modern machinery.</li> <li>• Low literacy level – below the national average threatening their socio-economic development.</li> <li>• Economic backwardness – per capita might be below the national average affecting their standard of living.</li> <li>• A declining or stagnant population – with total fertility rate declining below the replacement level in the long run.</li> </ul> <p><b>Issues faced</b></p> <ul style="list-style-type: none"> <li>• Genetic diseases: Many PVTGs are vulnerable to genetic diseases like sickle cell anemia, Turner’s Syndrome etc. They neither have the awareness of the disease nor have access to quality care.</li> <li>• Difficulty in access: They reside in remote regions infested with Left Wing Extremists in many cases which affects the reach of the public administration.</li> <li>• Loss of tribal culture: Sanskritization has been ongoing among the tribal with the loss of primitive forms of worship like Sarnaism.</li> <li>• Political voice: Since they are scattered with strong tribal allegiance, political influence of these tribals is nearly nil.</li> </ul> <p><b>Government interventions to ameliorate conditions:</b></p> <ul style="list-style-type: none"> <li>• PM Van Dhan Yojana: Tribals are grouped into Self Help Groups to improve the processing of forest produce and improve economic security of PVTGs.</li> <li>• Aspirant Districts Programme: An umbrella programme covering health, sanitation, financial inclusion, education etc. under the scrutiny of Central Prabhari Officers has been brining overall development of tribals especially PVTGs.</li> <li>• Vanbandhu Kalyan Yojana: Mandates all States to prepare ‘Conservation Cum Development Plans’ for PVTGs for their</li> </ul>

	<p>holistic development.</p> <ul style="list-style-type: none"> <li>• Regional Initiatives: Jan Swasthya Sahyog by Chhattisgarh has been driving health revolution among the PVTGs covering nutritional and health requirements of PVTGs.</li> </ul> <p><b>Measures needed to improve plight</b></p> <ul style="list-style-type: none"> <li>• Database: A national database of PVTGs can help gather crucial insights into the problems faced by these PVTGs aiding data driven policies.</li> <li>• National Mission: A mission like PM PVTG Mission with Rs. 15,000 crore outlay is of great relevance. Implementing it in letter and spirit is necessary.</li> <li>• PVTGs outside the V and VI Schedule Areas: PVTGs outside the Scheduled Areas suffer from housing, sanitation, health and employment issues. Tending to their concerns by State level identification is a sine qua non.</li> <li>• Education: Extending the reach of Ekalvy Model Residential Schools through greater outlay and State support can improve the human resource potential of PVTGs.</li> </ul>
<p><b>Conclusion</b></p>	<p>The development of Particularly Vulnerable Tribal Groups (PVTGs) has been ignored for decades. Their concerns got further buttressed by the industrial expansion, deforestation, dam building, Left Wing Extremism etc. This has called for innovative measures involving regional and Union governments. Providing them political voice through enfranchisement and following Tribal Panchsheel laid down by Pandit Nehru can act as broad pillars for overall development of PVTGs.</p>

**Q.13) Out of Pocket Expenditure has been consistently decreasing. In the light of this statement discuss the reasons behind the phenomena and state its significance. Elucidate on the loopholes that are present in the Indian public health system. What measures can be adopted to further strengthen the system? (15 marks, 250 words)**

Topic- Public Health	
Introduction	<p>Public health and Sanitation is a subject under the State List in the VII Schedule of the Constitution. With no standard health system protocols across States, Out of Pocket Expenditure on health in India was considered one of the world's highest. But of lately this is on a downhill slide. Out of pocket expenditure on health decreased from 62.26% in 2014-15 to 39.4% of the total health expenditure in 2021-22. Multiple reasons and efforts of multiple stakeholders can be attributed to the phenomena.</p>

<b>Body</b>	<ul style="list-style-type: none"> <li>• Causal factors behind the decreasing Out of Pocket Expenditure</li> <li>• Significance of decreasing Out of Pocket Expenditure</li> <li>• Loopholes present in the present public health system</li> <li>• Way forward</li> </ul>
<b>Conclusion</b>	<p>It is said that “health is wealth”. It is also true that one needs wealth to safeguard health. This may keep out a large section of the Indian population. Along with affordability, quality of health care is also necessary lest India’s vision of becoming a \$ 5 trillion economy only will sound good on paper not in reality. The above mentioned interventions will come in handy in ameliorating the systemic issues in the healthcare scenario and therefore must be rightly pursued.</p>

<b>UPSC Syllabus</b>	<b>Public Health</b>
<b>Why was this question asked?</b>	<p><b>Q.</b> In order to enhance the prospects of social development, sound and adequate healthcare policies are needed particularly in the fields of geriatric and maternal healthcare. <b>(UPSC CSE 2020)</b></p>
<b>Introduction</b>	<p>Public health and Sanitation is a subject under the State List in the VII Schedule of the Constitution. With no standard health system protocols across States, Out of Pocket Expenditure on health in India was considered one of the world’s highest. But of lately this is on a downhill slide. Out of pocket expenditure on health decreased from 62.26% in 2014-15 to 39.4% of the total health expenditure in 2021-22. Multiple reasons and efforts of multiple stakeholders can be attributed to the phenomena.</p>
<b>Body</b>	<p><b>Causal factors behind the decreasing Out of Pocket Expenditure:</b></p> <ul style="list-style-type: none"> <li>• Increasing Gross Health Expenditure as a percentage of GDP from 1.13% in 2014-15 to 1.84% in 2021-22.</li> <li>• Expenditure on government-financed insurance rose from 4,757 crore in 2013-14 to 20,771 crore in 2021-22.</li> <li>• 2.59 crore free dialysis sessions have been held under the PM National Dialysis Programme since 2016.</li> <li>• Rs. 70,000 crore is being injected into the primary healthcare system in line with the XV Finance Commission recommendations.</li> <li>• Rs. 28,000 crore has been saved through the disbursement of low cost generic medicines by 10,000 Jan Aushadhi Kendras since</li> </ul>

2014.

### **Significance of decreasing Out of Pocket Expenditure:**

- **Demographic dividend:** India's demographic dividend was feared to turn into demographic disaster without a robust health system. Decreasing Out of Pocket Expenditure may bode well to reap the demographic dividend as India has the largest number of people below 35 years among the comity of nations.
- **Geriatric care:** India's aged population is expected to increase from 10% in 2023 to 19% in 2050. The increasing prevalence of lifestyle diseases demands that the cost of cradle to grave care is kept under restraint. Thus low Out of Pocket Expenditure is a shot in the arm for India's public health aspirations.
- **Vicious circle:** Poverty and high Out of Pocket Expenditure goes hand in hand. Low Out of Pocket Expenditure helps lift 20% of India's population which is still reeling under chronic poverty.
- **Employment:** Good public health is an indicator of work productivity. Considering this low Out of Pocket Expenditure can improve productivity thereby sustaining employment levels in an economy.
- **Population control:** Low Infant Mortality Rate through institutional deliveries will be a reality only if Out of Pocket Expenditure is within reasonable limits. Thus, couples have greater incentives for family planning if infant mortality rate is kept at its lowest through low Out of Pocket Expenditure.

### **Loopholes present in the present public health system**

- Despite the low Out of Pocket Expenditure seen recently, there are still loopholes gaping in the system.
- **Non Communicable Diseases:** Approximately 60 lakh deaths i.e. 60% of all the health related deaths in India are attributed to Non Communicable Diseases. As such, there is a low premium placed on non-communicable diseases in the present system where continuous care and access is still out of bounds for large sections of the population.
- **Holistic:** Traditional health systems like Ayurveda, Homeopathy and Naturopathy are seen as separate from Allopathy affecting holistic health care concept since the traditional health systems when integrated with Allopathy can improve the quality of life of patients with lifestyle diseases like diabetes, hypertension, obesity etc.

	<ul style="list-style-type: none"> <li>• <b>Capacity:</b> India has 1.3 hospital beds per 1000 population against the recommended 3 beds per 1000 population. This hinders comprehensive preventive and rehabilitative care complex surgeries apart from disincentivising institutional deliveries.</li> <li>• <b>Rural health:</b> About 75% of the health infrastructure and manpower are concentrated in the urban areas where just 27% of the population resides. This deficit of healthcare in rural hinterlands has the potential to increase the Out of Pocket Expenditure and continuity of care.</li> <li>• <b>Tropical diseases:</b> India accounts for 1/3<sup>rd</sup> of the world's Neglected Tropical Disease burden. Poor Research and Development expenditure at 0.6 % of GDP has further posed obstacles to interventions like new drug development against Neglected Tropical Diseases.</li> </ul> <p><b>Way forward:</b></p> <ul style="list-style-type: none"> <li>• A comprehensive rural health policy covering primary, secondary and tertiary care focusing on non-communicable diseases is the need of the hour. Further, health education through ASHA workers may complement the above efforts to yield sustained results in the long run.</li> <li>• An Indian Public Health Service can be conceptualized to improve standards across States and improve public health as a whole including sanitation and access to clean water.</li> <li>• <b>Integrated Health Care:</b> Provision of holistic and preventive care through Ayurveda, Homeopathy and Naturopathy and other such systems to mitigate the spate of non-communicable diseases and the need for complex health interventions.</li> <li>• Increasing the number of hospital beds to WHO recommended 3/1000 is a sine qua non to improve access to underprivileged sections of the society.</li> <li>• NITI Aayog has remarked of the missing middle in the health insurance scenario where the middle class is in need of an affordable health insurance scheme. Such a scheme with contributory model must be conceptualized at the earliest along the lines of Ayushman Bharat Programme.</li> </ul>
<p><b>Conclusion</b></p>	<p>It is said that “health is wealth”. It is also true that one needs wealth to safeguard health. This may keep out a large section of the Indian population. Along with affordability, quality of health care is also</p>

	necessary lest India's vision of becoming a \$ 5 trillion economy only will sound good on paper not in reality. The above-mentioned interventions will come in handy in ameliorating the systemic issues in the healthcare scenario and therefore must be rightly pursued.
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**Q.14) Despite being engines of growth, metropolitan cities suffer from housing issues. In the light of this statement, enumerate the programmes initiated for affordable housing in urban India till now. Evaluate the status of PM Awas Yojna (Urban) while elaborating the further measures necessary for reforming the urban housing scenario. 15 marks (250 words)**

Topic- Socio-Economic welfare schemes	
Introduction	PM Awas Yojana (Urban) was launched in 2015 to provide affordable housing to 1.18 crore urban families by 2024. The metropolitan cities are plagued by housing problems as witnessed by the proliferation of slums. PM Awas Yojana envisages to ameliorate the issue through subsidization of affordable housing programmes for individual and group housing schemes. With increasing rate of urbanization, the scheme itself has come under scrutiny necessitating further review.
Body	<ul style="list-style-type: none"> <li>• Urban centers being engines of growth</li> <li>• Metropolitan cities suffering from housing issues</li> <li>• Programmes undertaken for affordable housing in urban areas since Independence</li> <li>• Achievements under PM Awas Yojana (Urban)</li> <li>• Issues plaguing the PM Awas Yojana (Urban)</li> <li>• Measures necessary for reforming the urban housing scenario</li> </ul>
Conclusion	SDG 11.1 promises safe and affordable housing for all. 70 years after Independence, India is still struggling to meet the basic necessities of its citizens. Housing is a window to the disbursal of other welfare schemes like Ayushman Bharat, UJJWALA Yojana, UJALA Yojana, PDS etc. Despite challenges, the PM Awas Yojana (Urban) has tread a steady path towards completion. Any future housing scheme must also accommodate the concerns of urban landless poor as a separate class while framing Key Performance Indicators and Key Result Areas.

<b>UPSC Syllabus</b>	<b>Socio-Economic Welfare Schemes</b>
<b>Why was this question asked?</b>	<b>Q.</b> Explain the nature and causes of growing slum population in the metropolitan cities of India. (UPSC CSE 2007)
<b>Introduction</b>	PM Awas Yojana (Urban) was launched in 2015 to provide affordable housing to 1.18 crore urban families by 2024. The metropolitan cities are plagued by housing problems as witnessed by the proliferation of slums. PM Awas Yojana envisages to ameliorate the issue through subsidization of affordable housing programmes for individual and group housing schemes. With increasing rate of urbanization, the scheme itself has come under scrutiny necessitating further review.
<b>Body</b>	<p><b>Urban centers being engines of growth:</b></p> <ul style="list-style-type: none"> <li>• Cities in India occupy just 3% of India’s geographical area, but contribute to a whopping 70% of India’s GDP.</li> <li>• The World Bank projects that by 2036, India’s towns and cities will be home to 40% of its population, up from 31% in 2011.</li> <li>• Programmes like UDAN, Bharatmala and Sagarmala have been strengthening connectivity between hinterland and urban centers. This drives further urbanization apart from the rise in the service sector jobs in India owing to structural shift in the economy.</li> </ul> <p><b>Metropolitan cities suffering from housing issues:</b></p> <ul style="list-style-type: none"> <li>• According to an ICRIER report, urban housing shortage increased by 54% requiring 2.9 crore homes compared to 2012.</li> <li>• As per Census 2011, 6.5 crore people i.e. 5% of India’s population lived in slums.</li> <li>• In 2023, India was the world’s 14<sup>th</sup> priciest housing market according to Knight Frank’s Global Housing Price Index.</li> </ul> <p><b>Programmes undertaken for affordable housing in urban areas since Independence:</b></p> <ul style="list-style-type: none"> <li>• 1985 – Indira Awas Yojana was launched with sole emphasis on rural housing. This indirectly helped urban housing issues by minimizing rural to urban migration.</li> <li>• 2004 – Jawaharlal Nehru Urban Renewal Mission (JNNURM) focused on providing infrastructural services and basic amenities to urban poor apart from improving planned development of peri-urban areas. One of its sub-missions also focused on the Integrated Development of Slums.</li> <li>• 2011 – Rajiv Awas Yojana provided central assistance to projects in select cities that worked towards a slum free India.</li> </ul>

- 2015 – PM Awas Yojana – Here the Government started to provide subsidy directly to the beneficiary to construct affordable homes. Assistance was also provided to realtors catering to affordable housing segment.

#### **Achievements under PM Awas Yojana (Urban)**

- Around 80 lakh homes i.e. 80% of the target has been achieved under the PM Awas Yojana. This has to a great extent alleviated the housing concerns of the urban poor.
- In-situ slum redevelopment with the participation of private developers also has attained considerable success as seen in the commencement of \$3 billion Dharavi Slum Redevelopment Plan.
- State specific schemes like Dignity Housing Programme of Greater Hyderabad Municipal Corporation has delivered on time affordable rental housing complexes enhancing the Ease of Living and a guaranteed fundamental right under Art 21 of the Constitution.
- It has to a great extent induced Transit Oriented Development decongesting the Central Business Districts. Thus, urban transportation and public health has also benefited by the scheme.

#### **Issues plaguing the PM Awas Yojana (Urban)**

- Around 83% of the houses constructed under the scheme are not meant for urban landless poor but those already having capital and land.
- Constant delays have plagued the scheme with the deadline shifted to December 2024 from December 2022.
- Land acquisition for slum redevelopment has run into bottlenecks due to political slugfests, litigations and issues related to compensation.
- States' active cooperation determines the success or failure of the scheme. With some states not maintaining proper data regarding allocation, the Centre is hesitant to disburse more funds fearing misappropriation.

#### **Measures necessary for reforming the urban housing scenario**

- Geo-tagging: Geotagging of assets can ensure efficient allocation of funds along with review of the progress of the scheme for making mid-course corrections.
- Quality and Safety Audit: The affordable rental housing complexes constructed under the scheme must be audited for quality and safety to mitigate corruption and improve project viability.

	<ul style="list-style-type: none"> <li>• Land banks: An urban land bank with prior clearances can reduce red tapism, promote faster completion of projects while reducing litigation in courts.</li> <li>• Single window clearance: A state specific portal should be envisaged for single window clearance regarding environment, electricity, water supply and sanitation. This can further improve the project outcomes.</li> </ul>
<b>Conclusion</b>	SDG 11.1 promises safe and affordable housing for all. 70 years after Independence, India is still struggling to meet the basic necessities of its citizens. Housing is a window to the disbursement of other welfare schemes like Ayushman Bharat, UJJWALA Yojana, UJALA Yojana, PDS etc. Despite challenges, the PM Awas Yojana (Urban) has tread a steady path towards completion. Any future housing scheme must also accommodate the concerns of urban landless poor as a separate class while framing Key Performance Indicators and Key Result Areas.

**Q.15) 'Urban India is in a maze of recurring problems.' In the light of this statement, critically analyze the effectiveness of the Smart Cities Mission in tackling these problems. Further mention necessary reforms to make the Smart Cities Mission a force for change. 15 marks, 250 words)**

Topic- Urbanisation and associated issues	
<b>Introduction</b>	Smart Cities Mission was launched as a Centrally Sponsored Scheme with Rs. 48,000 crore Central allocation over 5 years starting from 2015. It aimed to improve the quality of life through the upgradation of social, economic, physical and institutional pillars of a city by the application of smart solutions. Urban India caught in a maze of problems was the prime beneficiary of this mission. But after 8 years of its launch, it is still found wanting in many aspects.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Urban India in a maze of recurring problems:</li> <li>• Achievements of the Smart Cities Mission:</li> <li>• Criticism against the Smart Cities Mission:</li> <li>• Necessary reforms to make the Smart Cities Mission a force for change:</li> </ul>
<b>Conclusion</b>	Smart cities get altogether a different meaning when they are spoken in the Indian context. The poverty, floods, groundwater issues, waste management demonstrate the range of issues that cities have to deal with. These essential services must be strengthened along with scientifically prepared master plans for city expansion. SMART Cities Mission must contribute to this end

by acting on its drawbacks in a mission mode to make the future cities of India not just growth engines but inclusive growth engines.

<b>UPSC Syllabus</b>	<b>Urbanisation and associated issues</b>
<b>Why was this question asked?</b>	<b>Q.</b> With a brief background of the quality of urban life in India, introduce the objectives and strategy of the ‘Smart City Programme’. <b>(UPSC CSE 2016)</b>
<b>Introduction</b>	Smart Cities Mission was launched as a Centrally Sponsored Scheme with Rs. 48,000 crore Central allocation over 5 years starting from 2015. It aimed to improve the quality of life through the upgradation of social, economic, physical and institutional pillars of a city by the application of smart solutions. Urban India caught in a maze of problems was the prime beneficiary of this mission. But after 8 years of its launch, it is still found wanting in many aspects.
<b>Body</b>	<p><b>Urban India in a maze of recurring problems:</b></p> <ul style="list-style-type: none"> <li>• <b>Transportation:</b> Cities are moving vehicles instead of people. A Transit Oriented Development with last mile connectivity has been a utopia in major urban hotspots.</li> <li>• <b>Floods:</b> 1.2 lakh people across 20 districts were displaced by the floods that hit Assam in 2023. The major hotspots of these flooding were cities like Guwahati.</li> <li>• <b>Urban Heat Island Effect:</b> The Central Business District experiences 2°C higher temperature compared to outgrowths. This affects the Ease of Living in the major centers of growth.</li> <li>• <b>Declining ground water levels:</b> NITI’s Composite Water Management Index released in 2018 projected that 21 major cities would run out of ground water by 2020. Save the pandemic, the prediction came true in 2023 with major cities like Bengaluru facing severe water crisis.</li> <li>• <b>Slum:</b> As per Census 2011, 6.5 crore people i.e. 5% of India’s population lived in slums.</li> </ul> <p><b>Achievements of the Smart Cities Mission:</b></p> <ul style="list-style-type: none"> <li>• <b>Smart infrastructure development:</b> All 100 smart cities have Integrated Command and Control Centre which use city level data for informed policy making regarding women’s safety, traffic, solid water management, urban water supply and development of urban commons.</li> </ul>

- Citizen safety: 76,000 CCTV surveillance cameras have been installed in 100 smart cities for crime prevention and detection for not just smart but also safe cities.
- Urban mobility: 600+ kilometers of cycling tracks and 2500+ kilometers of smart roads with universal accessibility, utility ducts and signage worth more than Rs. 40,000 crore have been completed.
- Energy Efficiency: More than 50 lakh Solar/LED street lights have been installed apart from the installation of more than 700 tonnes per day waste to energy processing capacity.

#### **Criticism against the Smart Cities Mission:**

- Exclusionary: Not more than 1% of the city's geographical area was selected for development. This led to islands of growth to the exclusion of vulnerable sections at its periphery.
- Definition: There is no uniform definition of a smart city. Different definitions have made it difficult to gauge the level of development thus hindering objective allocations under the scheme.
- Bypassing elected authorities: The Special Purpose Vehicle created under the scheme bypasses the scrutiny of Urban Local Bodies. Institutional jungle with dispersed accountability has been an undesirable impact of the mission.
- Insufficient: McKinsey Report states that India requires \$1.2 trillion by 2030 to make its cities livable. Allocation of Rs. 2 lakh crore under the Smart Cities Mission is just 0.027% of the total requirement to transform urban India.

#### **Necessary reforms to make the Smart Cities Mission a force for change:**

- A unified authority: Active engagement of citizens through the accommodation of Urban Local Body functionaries and stakeholders is crucial for the success of the mission. A unified authority with clearly defined functions can improve the programme outcomes.
- Iterations: Any further iteration of the mission must be inclusive in its conception. Instead of island of growth, it must focus on whole of the city approach for integrated development.
- Theory of reversals: Policy making should cater to the weakest sections of the society. Improving the plight of slum dwellers, urban poor having no capital and land and street vendors will

	<p>promote inclusive smart cities not just smart cities.</p> <ul style="list-style-type: none"> <li>• Tier 3 and 4 cities: Rural to urban migration must be thwarted to preserve the carrying capacity of metropolitan cities. Rs 10,000 crore allocated for the development of Tier 2 and 3 cities under the Urban Infrastructure Development Fund is a welcome step in this direction.</li> </ul>
<b>Conclusion</b>	<p>Smart cities get altogether a different meaning when they are spoken in the Indian context. The poverty, floods, groundwater issues, waste management demonstrate the range of issues that cities have to deal with. These essential services must be strengthened along with scientifically prepared master plans for city expansion. SMART Cities Mission must contribute to this end by acting on its drawbacks in a mission mode to make the future cities of India not just growth engines but inclusive growth engines.</p>

**Q.16) 'In spite of different interventions by the administration, orderly labour migration is still a utopia'. In light of the above statement, analyse the issues faced by migrant laborers. Elucidate the socio-economic impacts owing to these challenges. Enumerate some innovative measures to ameliorate the plight of migrant laborers. (15 marks, 250 words)**

Topic- Welfare of Vulnerable sections	
<b>Introduction</b>	<p>According to the Census 2011, there are 4.14 crore migrant workmen in our country. Despite being an important part of the economy contributing in different capacities, they remain excluded from various welfare objectives while struggling to afford to two square meals. Notwithstanding different interventions by the Governments, they need a holistic policy covering their entire family to break the intergenerational cycle of poverty.</p>
<b>Body</b>	<ul style="list-style-type: none"> <li>• Different interventions for orderly labour migration</li> <li>• Issues faced by migrant labourers</li> <li>• Social and Economic Impacts</li> <li>• Innovative measures to ameliorate the plight of migrant workers</li> </ul>
<b>Conclusion</b>	<p>Migrant workers as discussed face numerous systemic challenges that threaten them a dignified life. \$5 trillion economy will be an exercise in futility if it is not inclusive. Inclusive development demands that the concerns of the migrant workmen are resolved through regulatory, civil society and political efforts. SDG 8.8 strives to attain safe and secure working environment along with labor rights for migrant workers. Every</p>

intervention affecting laborers should also be designed to cater to the plight of migrant workmen for inclusive development.

<b>UPSC Syllabus</b>	<b>Welfare of Vulnerable sections</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the changes in the trends of labour migration within and outside India in the last four decades. (UPSC CSE 2015)</b>
<b>Introduction</b>	<p>According to the Census 2011, there are 4.14 crore migrant workmen in our country. Despite being an important part of the economy contributing in different capacities, they remain excluded from various welfare objectives while struggling to afford to two square meals. Notwithstanding different interventions by the Governments, they need a holistic policy covering their entire family to break the intergenerational cycle of poverty.</p>
<b>Body</b>	<p><b>Different interventions for orderly labour migration:</b></p> <ul style="list-style-type: none"> <li>• Inter State Migrant Workmen Act, 1979: It mandates the registration of workers with the Labour Department before movement.</li> <li>• Bonded Labour Abolition Act, 1976: It prohibits bonded labour throughout the country and entails punishment which may extend upto 3 years of imprisonment for the violation of its provisions.</li> <li>• Art 23 of the Constitution prohibits forced labour as a right against exploitation and is a fundamental right.</li> <li>• Shram Suvidha Portal acts as a single points of contact between employers and enforcement agencies to facilitate the reporting of inspections regarding labour welfare and other such specifics.</li> <li>• eShram portal aims to collect data of unorganized workers, including the migrant workers to implement the Social Security Schemes.</li> </ul> <p><b>Issues faced by migrant labourers</b></p> <ul style="list-style-type: none"> <li>• Bonded labour: Since 2000, around 5,000 bonded laborers have been released mainly from the Southern States under the Bonded Labour Abolition Act, 1976.</li> <li>• Hunger deaths: NHRC took cognizance of the 50 starvation deaths that left 300 children orphaned in Odisha in 2010. Most of these were laborers who venture into South India for the want of local jobs.</li> </ul>

- Wage regulation: Most of the migrant laborers are caught in the complex web of middlemen and earn below average wages for the hazardous work that they undertake.
- Occupational diseases: Asthma, pulmonary embolism, lung cancer, hyper tension etc are the order of the day for many migrant laborers who work in brick kilns, construction sector, mines etc.

### **Impacts owing to challenges**

- **Social impacts**

- Half-literates: Due to vicious poverty, school children in attaining the age of 14, start working in brick kilns, farms, hotels etc. to support their families. This leaves a generation of half-literates with narrow skillsets and employability.
- Health: Occupational health hazards, poor nutrition and high incidence of Infant and Maternal Mortality Ratio among these workers further affect the overall economic health of their families. This poverty again affects long term health outcomes.

### **Economic impacts**

- India cannot reap fully its much-boasted demographic dividend if a large section of its population is not getting remunerative employment or livelihood opportunities.
- Many of the migrant laborers are led into crimes and illegal activities in desperation to support their day-to-day needs. Law and Order gets compromised in turn affecting investments in the region.
- The State machinery becomes over stretched in satisfying the increasing health burden of migrant workmen. Thus, investments in wealth generating capital assets becomes an orphan.

### **Innovative measures to ameliorate the plight of migrant workers**

- MGNREGA: Reforms must be implemented in MGNREGA to construct assets in private land so that capital assets like cowsheds, processing units of Minor Forest Produce etc. are built in the plots of laborers ensuring long term welfare.
- Collectivization: Collectivization of their land through Farmer Producer Organizations can crowdsource efforts while improving their bargaining power thereby promoting year round cropping and multi season employment.
- Kerala model: The Changathi Project of the Kerala Government

	<p>provides local language training to migrant workers to improve their literacy, social inclusion and employability in various sectors within the State.</p> <ul style="list-style-type: none"> <li>• Skill development: Skill development under PM's Employment Generation Programme to setup non-farm micro industries may reduce labour distress in the agricultural sector.</li> <li>• Wage regulation: Wages in the unorganized units in which these migrant workmen are employed must be regulated to the mutual beneficence of employers and laborers.</li> </ul>
<b>Conclusion</b>	<p>Migrant workers as discussed face numerous systemic challenges that threaten them a dignified life. \$5 trillion economy will be an exercise in futility if it is not inclusive. Inclusive development demands that the concerns of the migrant workmen are resolved through regulatory, civil society and political efforts. SDG 8.8 strives to attain safe and secure working environment along with labor rights for migrant workers. Every intervention affecting laborers should also be designed to cater to the plight of migrant workmen for inclusive development.</p>

**Q.17) Critically analyse the progress made under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Scheme. Enumerate the objectives of the scheme. Also propose measures to resolve the concerns associated with the efficient implementation of the scheme. (15 marks, 250 words)**

Topic- Government Schemes	
<b>Introduction</b>	<p>Recent urban floods in Bengaluru, Delhi, Chennai, Mumbai etc. and the havoc it caused demonstrate the state of urban governance in India. It is towards meeting these kinds of challenges AMRUT scheme was conceptualized to drive sustainable urban governance. After two iterations, it has invited appreciation for providing a road map for urban governance by emphasizing on social, economic and environmental aspects of governance. Yet, it is affected by pitfalls which requires a comprehensive review of the scheme as a whole.</p>
<b>Body</b>	<ul style="list-style-type: none"> <li>• Progress made under the scheme</li> <li>• Challenges with the scheme</li> <li>• Objectives of the scheme</li> <li>• Measures to resolve the concerns associated</li> </ul>
<b>Conclusion</b>	<p>Indian cities are expected to host 60% of India's population by 2050. This means increasing demand on basic services like water supply, sewerage,</p>

	<p>urban commons, green mobility etc. The AMRUT Scheme is a significant initiative to meet these challenges. But it suffers from numerous bottlenecks like lack of affordable finance, expert functionaries and participatory approach. Therefore, masterplans determining urban expansion and management must entail tools to meet these bottlenecks to make sustainable urban governance a reality.</p>
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<b>UPSC Syllabus</b>	<b>Government Schemes</b>
<b>Why was this question asked?</b>	<b>Q:</b> With a brief background of quality of urban life in India, introduce the objectives and strategy of the ‘Smart City Programme’. (UPSC CSE 2016)
<b>Introduction</b>	<p>Recent urban floods in Bengaluru, Delhi, Chennai, Mumbai etc. and the havoc it caused demonstrate the state of urban governance in India. It is towards meeting these kinds of challenges AMRUT scheme was conceptualized to drive sustainable urban governance. After two iterations, it has invited appreciation for providing a road map for urban governance by emphasizing on social, economic and environmental aspects of governance. Yet, it is affected by pitfalls which requires a comprehensive review of the scheme as a whole.</p>
<b>Body</b>	<p><b>Progress made under the scheme</b></p> <ul style="list-style-type: none"> <li>• As on May 2024, a sum of Rs. 83,537 crores have been dispersed to build the relevant infrastructure.</li> <li>• Around 58.66 lakh tap connections have been provided improving the state of water security thereby promoting health and cleanliness.</li> <li>• Around 39.5 lakh sewerage connections have been provided mitigating the spate of communicable diseases and also complementing the outcomes of the Swachh Bharat Mission.</li> <li>• A total of 2,411 parks have been developed which regulate micro climate, improve the aesthetic appeal of a city apart from functioning as exercise rigs that improved population health.</li> <li>• Around 62.78 lakh LED bulbs have been installed reducing the carbon footprint of the city and also improving the energy efficiency.</li> </ul> <p><b>Challenges with the scheme</b></p> <ul style="list-style-type: none"> <li>• Local bodies which have Constitutional mandate under the 74<sup>th</sup></li> </ul>

Constitutional Amendment Act have been kept out of the decision making loop.

- The whole process is top down in nature with minimal scope for participatory decision making in urban governance.
- The scheme doesn't venture into the root causes of the problem like urban aquifer management to enhance sustenance of the scheme. NITI Aayog has predicted that by 40% of the Indian population will have no access to drinking water by 2030.
- The scheme itself is grossly inadequate considering the magnitude of the problems being faced by Indian cities.
- Nearly 31% of urban Indian households still do not have piped water and 67% are not connected to piped sewerage discharge system.
- Further, the average water supply per person in urban India is 69.25 liters/day whereas the required amount is 135 liters.
- Minimal focus is being given to decentralized sewage management systems. The opposition from real estate developers and their nexus with politicians has been affecting the rollout of such systems.

#### **Objectives of the scheme**

- The scheme was launched in June 2015 and is currently in its second iteration. The mission was drawn to cover 500 cities and towns with a population of over one lakh with notified municipalities.
- It was conceptualized as a Centrally Sponsored Scheme with central assistance to States to resolve the challenges like pollution, water supply, urban mobility etc. facing the urban landscape.
- AMRUT 1.0 had the purpose of ensuring every household with tap water and sewerage connection, developing greenery and well maintained common spaces along with the reduction of pollution by switching to public transport or constructing facilities for non-motorized transport.
- AMRUT 2.0 aimed at making cities 'water secure' by providing functional water tap connections to all households in all statutory towns. Further, targets were set for 100% sewage management in 500 AMRUT cities.

#### **Measures to resolve the concerns associated**

- Urban local bodies must be kept in the loop to make it more

	<p>participatory and hold the elected officials to account.</p> <ul style="list-style-type: none"> <li>• Municipal bonds as a financing tool must be thoroughly utilized as financing projects is a major issue in infrastructure development in Indian cities. Vadodara Municipal Corporation issued Asia's first certified green municipal bonds in February 2024. Such options can also be emulated by other municipalities in the country.</li> <li>• Flood hazard mapping and separation of flood water drainage and sewage pipelines must be taken up on a mission mode to improve the supply of clean water while recharging the urban aquifers.</li> <li>• Real estate must be strictly regulated to avert the occupation of lakes and flood plains in the urban landscapes as these water systems act as watersheds and buffers in the event of an above average rainfall thereby mitigating urban floods.</li> <li>• A separate cadre of officials specializing in urban management must be conceptualized by the State Government's to lend professionalism in tackling the problems faced by India's emerging growth engines.</li> </ul>
<p><b>Conclusion</b></p>	<p>Indian cities are expected to host 60% of India's population by 2050. This means increasing demand on basic services like water supply, sewerage, urban commons, green mobility etc. The AMRUT Scheme is a significant initiative to meet these challenges. But it suffers from numerous bottlenecks like lack of affordable finance, expert functionaries and participatory approach. Therefore, masterplans determining urban expansion and management must entail tools to meet these bottlenecks to make sustainable urban governance a reality.</p>

# DISASTER MANAGEMENT

**Q.18) India as a whole has been suffering from the impacts of heat wave in recent past.'**

**In the light of the above statement, state the criteria used by Indian Meteorological Department to declare a heatwave, causes behind the heat waves and socio-economic impacts that heat waves have on the sub-continent. What measures can be adopted to mitigate the impacts of such heat wave conditions? (15 marks, 250 words)**

Topic- Heatwaves	
Introduction	Temperatures touched 47.2 °C in the Gangetic West Bengal, Jharkhand and Odisha in April 2024. The country as a whole has been suffering from the impacts of heat waves affecting the health, economy and agricultural landscape. The IMD has tried to objectively define the heat wave to provide advisories so as to warn the citizens of the hazard posed by heat waves.
Body	<ul style="list-style-type: none"> <li>Criteria used by the IMD to declare heat waves</li> <li>Causes propelling the heatwaves</li> <li>Impacts of heatwaves</li> <li>Measures to be adopted to mitigate the impacts of heatwave conditions</li> </ul>
Conclusion	Incidences of heatwaves have been on a rise with incessant emissions of fossil fuels and anthropological changes to ecology. The impacts from such events prove to be a great obstacle in India becoming a \$5 trillion economy. Thus, there is a need to undertake systemic measures to counter the effects of heatwaves and safeguarding ecosystem integrity in the long run.

<b>UPSC Syllabus</b>	<b>Heatwaves</b>
<b>Why was this question asked?</b>	<b>Q. Most of the unusual climatic happenings are explained as an outcome of the El-Nino effect. Do you agree? (UPSC CSE 2014)</b>
<b>Introduction</b>	Temperatures touched 47.2 OC in the Gangetic West Bengal, Jharkhand and Odisha in April 2024. The country as a whole has been suffering from the impacts of heat waves affecting the health, economy and agricultural landscape. The IMD has tried to objectively define the heat wave to provide advisories so as to warn the citizens of the hazard posed by heat waves.

## Body

### Criteria used by the Indian Meteorological Department to declare heat waves:

- When the maximum temperature at a station in the plains reaches 40 °C or more.
- When the maximum temperature at a station in the coasts reaches 37 °C or more.
- When the maximum temperature at a station in the hills reaches 30 °C or more.
- A normal heatwave is declared if the departure from the normal is 4.5-6.4 °C and a severe heatwave if the departure from the normal is 6.4 °C.

### Causes propelling the heatwaves:

- **Deforestation:** Global Forest Watch reported that India has lost 2.33 million hectares of tree cover since 2000 which shoots up the greenhouse gas concentrations owing to lack of carbon sequestration.
- **El-Nino and Climate Change:** India has been facing the brunt of El-Nino which refers to a sudden heating of the eastern equatorial Pacific Ocean that created heatwave like conditions in India and major parts of the world.
- Since the Industrial Revolution, the average temperature of the earth has increased by 1 °C thereby contributing to frequent heatwave like conditions.
- **Urban Heat Islands:** Minimal vegetation, traffic congestion and high rise buildings in Central Business Districts like Delhi, Bengaluru, Mumbai etc have trapped heat leading to urban heat island effect resulting in localized heatwave conditions.
- **Fossil fuel emissions:** According to IPCC, in 2018, 89% of the greenhouse gas emissions came from fossil fuels and industry. These gases trap heat and contribute to heatwave like conditions.

### Impacts of heatwaves:

#### Social:

- **Health issues:** Heatwaves cause stroke, heart attacks, nausea, etc affecting population health, Women who handle household chores are particularly vulnerable to heatwaves as they travel miles to fetch water in water scarce regions of India.
- **Educational outcomes:** School closures due to heatwaves can affect the educational attainments. Under privileged children are at a great risk as they pose higher chances of dropping out of

	<p>school altogether.</p> <p><b>Economic:</b></p> <ul style="list-style-type: none"> <li>• <b>Workplace productivity:</b> ILO remarks that worker productivity may drop by 50% under heatwave conditions. This is specifically relevant to blue collar workers who engage in field work and labour intensive processes.</li> <li>• <b>Food security:</b> Heatwaves affect the harvesting of paddy and wheat as they damage the grain structure apart from resulting in low yields.</li> </ul> <p><b>Measures to be adopted to mitigate the impacts of heatwave conditions:</b></p> <ul style="list-style-type: none"> <li>• <b>Afforestation:</b> Adhering to the National Forest Policy, 1988, India must pursue of increasing its forest cover to 33% of the geographical area from the present 21% to improve carbon sequestration to contain heatwaves.</li> <li>• <b>Technology:</b> IMD can prepare heat hazard map of India on a seasonal basis using satellite data to make sure that citizens prepare for the impending heat wave in advance.</li> <li>• <b>Transit Oriented Development:</b> Horizontal extension of city like Chandigarh should be emulated by other cities to promote transit oriented development. This will reduce congestion in the Central Business District thereby averting Urban Heat Island effect.</li> <li>• <b>Climate obligations:</b> India is on track to achieve its Nationally Determined Contributions of reducing emissions intensity of its GDP by 45% by 2030 from 2005 levels.</li> <li>• <b>Green transition:</b> Switch to green fuels like hydrogen through flagship initiatives like National Green Hydrogen Mission will prove to be fruitful in the long run.</li> </ul>
<p><b>Conclusion</b></p>	<p>Incidences of heatwaves have been on a rise with incessant emissions of fossil fuels and anthropological changes to ecology. The impacts from such events prove to be a great obstacle in India becoming a \$5 trillion economy. Thus, there is a need to undertake systemic measures to counter the effects of heatwaves and safeguarding ecosystem integrity in the long run.</p>

**Q.19) European Union recently activated its emergency satellite mapping service, Copernicus emergency service at Iran's request to locate Iranian President's helicopter that crashed near Iran-Azerbaijan border. Discuss in detail the features of Copernicus Programme. What is the significance of such projects in disaster management. Also mention similar measures adopted by India in disaster management. 15 marks (250 words)**

Topic – Disaster management	
Introduction	Space based technology has been at the core of any contingency by streamlining ground-based interventions. Be it security, agriculture, disaster management or urban planning, space technologies have been at the forefront. The recent chopper crash of the Iranian President near Iran-Azerbaijan border brought to the fore, the relevance of these crucial technologies which have made their merit count also in the India's disaster management scenario.
Body	<ul style="list-style-type: none"> <li>• About the Copernicus Programme</li> <li>• Significance in disaster management</li> <li>• Role of space technology in disaster management in India</li> <li>• Way Ahead</li> </ul>
Conclusion	It is approximated that India loses nearly 2% of its GDP to the fury of disasters. Space technologies and satellite missions have been crucial to mitigate the impact that these disasters pose. As the origins and impacts of these disasters stretch across multiple countries around the Indian subcontinent, a regional response with pooling of efforts by the relevant institutions is necessary to ensure a robust disaster management profile. This will also fulfill the obligations set under the SDG 11.5 i.e. 'reduce the adverse effects of natural disasters'.

<b>UPSC Syllabus</b>	<b>Disaster management</b>
<b>Why was this question asked?</b>	<b>Q. Disaster preparedness is the first step in any disaster management process Explain how hazard zonation mapping will help disaster mitigation in case of landslides. (UPSC CSE 2019)</b>
<b>Introduction</b>	Space based technology has been at the core of any contingency by streamlining ground-based interventions. Be it security, agriculture, disaster management or urban planning, space technologies have been at the forefront. The recent chopper crash of the Iranian President near Iran-Azerbaijan border brought to the fore, the relevance of these crucial technologies which have made their merit count also in the India's

	disaster management scenario.
<b>Body</b>	<p><b>About the Copernicus Programme:</b></p> <ul style="list-style-type: none"> <li>• It is a space technology mission of the European Union to monitor the Earth and its environment by collecting data from a set of satellites known as the Sentinels.</li> <li>• It also gets data from the contributing missions whether commercial or public and other supporting ground stations.</li> <li>• It was launched in 1998 and the programme at that time was called as the Global Monitoring for Environmental Security (GMES).</li> <li>• The users get the information on a full, open and free-of-charge basis thus driving disaster management, scientific missions and security services.</li> </ul> <p><b>Significance in disaster management:</b></p> <ul style="list-style-type: none"> <li>• Preparedness: Earth mapping by earth observation satellites can predict the cyclone formation, rate of deforestation, change in the thickness of glaciers etc. All these helps prepare for a possible disaster by evacuation of population, building disaster resilient structures and other such measures.</li> <li>• Response: Evacuation of those stuck in disaster by locating them through Synthetic Aperture Radars under hazardous conditions or say mandating safer transport paths based on satellite data is facilitated by such programmes.</li> <li>• Rehabilitation: Access of safe routes to the centers hosting displaced people, assessing the damage for compensation and pointing safer landscapes for reconstruction can be helped by such programmes.</li> <li>• Mitigation: Disaster Risk Reduction, that is the prime goal of Sendai Framework, is advanced by such technology missions as they help in hazard zonation for future construction of public, private and commercial infrastructures.</li> </ul> <p><b>Role of space technology in disaster management in India:</b></p> <ul style="list-style-type: none"> <li>• Sentinel Asia: ISRO is a part of the network of space agencies that disseminate remote sensing and GIS based early warning to improve the accuracy of disaster preparedness in Asia. Thus, it helps India which is battered by cyclonic and geologic disasters in better disaster preparedness.</li> <li>• BHUVAN: It is India's Geo Portal providing 2.5 m high resolution imagery of Indian locations covering disasters, agriculture, water, land resources etc. It helps in informed decision making in devising urban master plans, forest diversion,</li> </ul>

	<p>conceptualization of river valley projects etc. for better disaster resilience.</p> <ul style="list-style-type: none"> <li>• MOSDAC: Meteorological and Oceanographic Satellite Data Archival Centre collates data from satellites like Oceansat, INSAT, MeghaTropiques etc. gauge sea-level rise, buildup of cyclones and storms that help in providing early warning for evacuation purposes.</li> <li>• VEDAS: Visualization of the Earth Observation Data and Archival System (VEDAS) of the Space Applications Centre of ISRO provides remote sensing data for earth observation in wide disciplines such as agriculture, land use, forest, environment and marine resources.</li> </ul> <p><b>Way Ahead</b></p> <ul style="list-style-type: none"> <li>• A regional satellite system for disaster management say BIMSTEC satellite. It will help India promote its neighborhood first policy while mitigating climate related displacements in the region.</li> <li>• Open Government Data initiative of the Union Government must be utilized by startups to develop area level disaster maps with multiple layers of visualization. This can be used by both the government and private individuals developing infrastructure.</li> <li>• A Copernicus like system which is free of cost can be provided to research institutions, public departments and other such system can be devised to respond in a thorough manner to disasters.</li> <li>• Disaster awareness must accommodate a chapter on how to utilize the data from space technology portals to take preemptive measures in the event of an impending disaster.</li> </ul>
<p><b>Conclusion</b></p>	<p>It is approximated that India loses nearly 2% of its GDP to the fury of disasters. Space technologies and satellite missions have been crucial to mitigate the impact that these disasters pose. As the origins and impacts of these disasters stretch across multiple countries around the Indian subcontinent, a regional response with pooling of efforts by the relevant institutions is necessary to ensure a robust disaster management profile. This will also fulfill the obligations set under the SDG 11.5 i.e. ‘reduce the adverse effects of natural disasters’.</p>

**Q.20) Recently Cyclone Remal slammed India and Bangladesh. Critically analyse the cyclone preparedness of India. What are the factors that are conducive to the formation of tropical cyclones? Discuss the measures necessary to improve India's cyclone preparedness. (15 marks, 250 words)**

Topic- Natural disasters	
<b>Introduction</b>	According to Climate Change Vulnerability Index, nearly 50% of the Indian coasts are vulnerable to extreme cyclone events. Disasters cost India a whopping 2% of the GDP every year. Cyclones which are rapidly rotating wind systems revolving around a low pressure centre affects most of the 13 coastal States in India. India has taken measures involving technology like POLNET, EDUSAT, weather radars etc. apart from social and behavior change communication. Yet the Remal Cyclone claimed 16 lives pointing at chinks in India's disaster preparedness armor.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Advancements in India's cyclone preparedness</li> <li>• Issues persisting in India's cyclone preparedness</li> <li>• Factors conducive to the formation of tropical cyclones</li> <li>• Measures to improve India's cyclone preparedness</li> </ul>
<b>Conclusion</b>	Benjamin Franklin said that, "by failing to prepare, we are preparing to fail". The same remark applies well for cyclone preparedness. Most of the cyclone preparedness measures depend on how interested the State is in tackling disasters. Technology, human resources and institutions are corner stones of the strategy to avert disasters. Reforming them holistically and mainstreaming disasters through education, awareness and regulatory measures is the need of the hour. Also, this will in the long run, fulfill the goals laid under SDG 11.5 – Reduce the adverse effects of natural disasters.

<b>UPSC Syllabus</b>	<b>Natural disasters</b>
<b>Why was this question asked?</b>	<b>Q: Tropical cyclones are largely confined to South China Sea, Bay of Bengal and Gulf of Mexico. Why? (UPSC CSE 2014)</b>
<b>Introduction</b>	According to Climate Change Vulnerability Index, nearly 50% of the Indian coasts are vulnerable to extreme cyclone events. Disasters cost India a whopping 2% of the GDP every year. Cyclones which are rapidly rotating wind systems revolving around a low pressure centre affects most of the 13 coastal States in India. India has taken measures involving technology like POLNET, EDUSAT, weather radars etc. apart from social and behavior change communication. Yet the Remal

	Cyclone claimed 16 lives pointing at chinks in India's disaster preparedness armor.
<b>Body</b>	<p><b>Advancements in India's cyclone preparedness:</b></p> <ul style="list-style-type: none"> <li>• National Cyclone Risk Mitigation Project: The Ministry of Home Affairs formulated the project with \$300 million assistance from the World Bank in 2006. Planting shelter belts, saline embankments, constructing cyclone shelters and strengthening early warning in 13 coastal states are a part of the project.</li> <li>• Cell Broadcast Alert System: National Disaster Management Authority and Department of Telecommunications have collaborated to area based alert system through mobile phones. These provide early warning to residents in critical areas for safe evacuation thereby saving numerous lives.</li> <li>• Satellite Technology: The cyclone structure and impact area have been analyzed using DVORAK Technique, QuickSCAT technology, and remoting sensing satellites like Oceansat-2 for accurate prediction of cyclone landfall.</li> <li>• POLNET: Satellite based secure communication network has been implemented for better coordination between the security forces in disaster affected areas.</li> <li>• Doppler Weather Radars: Ensemble Prediction system with 12 km resolution has been put in place along with the Doppler Weather Radars which are installed at an interval of 300 km along the coast have improved the precipitation estimates from storm surges and cyclones helping in taking informed decisions.</li> </ul> <p><b>Issues persisting in India's cyclone preparedness:</b></p> <ul style="list-style-type: none"> <li>• Lack of a culture of preparedness: In India, disaster management has become a disaster of management than management of disaster. Often people and administration do firefighting exercise on an approaching disaster than promoting a culture of preparedness.</li> <li>• Standard Operating Procedures: There is a critical lack of standard operating procedures for Critical First Responder Units operating at the state level. Every disaster requires the help of the Indian Army and National Disaster Response Force in one form or the other.</li> <li>• Disaster Education: Modules on disaster management haven't been included in the school textbooks. Internalizing disaster</li> </ul>

response and awareness starts at school but this aspect rarely gets its due emphasis.

- Local bodies: Local bodies rarely impose norms regarding disaster resilience of structures. With glaring corruption and scarcity of funds and functionaries, building codes and regulations go for a toss.
- Build Back Better: Post disaster funding delays and corruption in disbursing them results in structures built without any disaster resilience. This goes grossly against the Sendai Framework on Disaster Risk Reduction which India has pledged to adhere to.

#### **Factors conducive to the formation of tropical cyclones:**

- Sea surface temperature: Minimum temperatures from 25-27 °C is necessary for tropical cyclones to originate. They function as heat engines sucking moisture from the sea and resulting in upper air dispersion by releasing latent heat.
- Coriolis force: The Coriolis force is zero at the equator. Due to this, 65% of the tropical cyclones are formed between 10 to 20 ° N and S latitudes.
- Water source: The cyclone should have a water source from where it can absorb water vapor to subsist the natural heat engine above. The cyclone makes a landfall as soon as it is cutoff from this water source.
- Vertical wind shear: There should be no strong vertical wind shear as it will alter the swirling motion of water particles thereby obstructing the development of low pressure area that acts as the core of tropical cyclones.

#### **Measures to improve India's cyclone preparedness:**

- Mainstreaming: Disaster awareness must be mainstreamed into the modules in school education. Coastal states must take care to include area specific disasters in their educational curriculum.
- Big Data: Big Data and Artificial Intelligence must be adopted to assess historical data sets to predict the evolution of disasters and better prepare for future disasters.
- Performance based grants: Central grants should be based on the performance of the States in mitigating and preparing for disasters. A robust accounting mechanism is necessary for the same to avoid loopholes if any.
- Disaster warning app: A national disaster warning app with location specific alerts must be conceptualized for better citizen

	<p>awareness. For example, this can also give location inputs about the nearest cyclone shelters, healthcare, police station and access to food and other essentials.</p> <ul style="list-style-type: none"> <li>Welfare schemes: Welfare schemes like laying pipelines City Gas Distribution and PM Awas Yojna must include disaster resilience at the design stage itself. This will ensure the creation of disaster resilient infrastructure.</li> </ul>
<b>Conclusion</b>	<p>Benjamin Franklin said that, “by failing to prepare, we are preparing to fail”. The same remark applies well for cyclone preparedness. Most of the cyclone preparedness measures depend on how interested the State is in tackling disasters. Technology, human resources and institutions are corner stones of the strategy to avert disasters. Reforming them holistically and mainstreaming disasters through education, awareness and regulatory measures is the need of the hour. Also, this will in the long run, fulfill the goals laid under SDG 11.5 – Reduce the adverse effects of natural disasters.</p>

**Q.21) ‘Landslide is one area where the official interventions have been found wanting’. Critically discuss. Deliberate on the triggers for the landslides with illustrations. Also enumerate the measures required to mitigate the impact of landslides. (15 marks, 250 words)**

Topic- Landslides	
<b>Introduction</b>	<p>Landslide is the mass movement of material such as earth, rock or debris down a slope. Landslides occur when the gravity acting on a slope exceeds the resisting forces of a slope. The triggering factors behind a landslide such as deforestation, unscientific construction and climate change occurs over a long period though the landslide as an event may look as a sudden event. The Indian plate is currently moving North-East at 5 cm per year against the Eurasian plate. This is one among the multiple causes for landslides. Multiple interventions are being made, the progress of which demand a critical review.</p>
<b>Body</b>	<ul style="list-style-type: none"> <li>India’s vulnerability to landslides</li> <li>Official interventions to mitigate their impact</li> <li>Issues in tackling landslides in India</li> <li>Factors triggering landslides</li> <li>Measures required to mitigate the impact of landslides</li> </ul>
<b>Conclusion</b>	<p>India faces landslides year on year. Mizoram, Himachal Pradesh, Uttarakhand, Kerala, etc. have been particularly prone to the fury of</p>

landslides. They can impact agriculture, tourism, infrastructure and the generation of local jobs. Thus, a comprehensive solution involving technology, people and policy is necessary to mitigate the risks and impacts posed by landslides. A silo-based approach cannot deal with them instead landslide should be included in the overall disaster management strategy for better outcomes.

<b>UPSC Syllabus</b>	<b>Landslides</b>
<b>Why was this question asked?</b>	<b>Q:</b> Disaster preparedness is the first step in any disaster management process. Explain how hazard zonation mapping will help disaster mitigation in the case of landslides. (UPSC CSE 2019)
<b>Introduction</b>	Landslide is the mass movement of material such as earth, rock or debris down a slope. Landslides occur when the gravity acting on a slope exceeds the resisting forces of a slope. The triggering factors behind a landslide such as deforestation, unscientific construction and climate change occurs over a long period though the landslide as an event may look as a sudden event. The Indian plate is currently moving North-East at 5 cm per year against the Eurasian plate. This is one among the multiple causes for landslides. Multiple interventions are being made, the progress of which demand a critical review.
<b>Body</b>	<p><b>India's vulnerability to landslides:</b></p> <ul style="list-style-type: none"> <li>• As per Geological Survey of India, 13% of India's area i.e. 0.42 million square km is vulnerable to landslides.</li> <li>• The vulnerable areas are spread over 15 states and 4 Union Territories.</li> <li>• About 42% of the vulnerable area is in the North Eastern Region where the terrain is mostly hilly. North Eastern Region accounted for nearly 10% of total landslides in India between 2015 and 2022.</li> <li>• Kerala saw the largest number of landslides between 2015 and 2022, most of which are due to the 2018 floods.</li> <li>• According to the National Disaster Management Authority, more than 18,000 people have died due to landslides between 1998 and 2017.</li> </ul> <p><b>Official interventions to mitigate their impact:</b></p> <ul style="list-style-type: none"> <li>• National Landslide Risk Management Strategy, 2019: It focuses on vulnerability mapping, development of early warning</li> </ul>

systems and preparation of mountain zone regulations to mitigate the risk and impact of landslides.

- Regulating tourism: The Tamil Nadu Government introduced e-pass for tourists visiting Ooty, Kodaikanal and Nilgiris to contain the negative impact of tourism on mountain ecosystem and geology. Such measures directly contribute to the mitigation of landslide risk.
- Landslide Early Warning System: Central Building Research Institute and IIT-Roorkee are in the process of installing landslide early warning systems at two locations based on the precipitation breaching a set threshold.
- Nava Keralam: Kerala State Government with technical assistance from GeoHazards International has been working on building infrastructure only after hazard mapping and relocation of the existing structures from areas prone to landslides.
- Bioengineering: Mizoram has been making efforts to plant vetiver grass for slope stabilization. The grass is known to contain erosion by 90% in steep slopes when scientifically planted.

#### **Issues in tackling landslides in India:**

- Indifference: People have been practising shifting cultivation, expanding plantations and building resorts and housing structures in sensitive areas. Unmitigated development resulted in Joshimath being classified as a subsidence hit zone after the disastrous land subsidence in 2023.
- Infrastructure needs: India is still a lower middle income country. Infrastructure is direly needed to sustain economic growth. But very little premium is placed on the sustainability of such infrastructure through the construction of disaster resilient structures.
- Climate change: The earth has warmed by 1.1 °C from the dawn of the Industrial Revolution. El Nino, La Nina and extreme events as a result of this, are affecting precipitation and consequently slope stability. The effect of climate change hasn't been given due emphasis in landslide risk mitigation strategies.
- Corruption: Local bodies are knee deep in corruption. Permissions are given in hazardous areas by receiving hush money. This further affects the government's efforts at mitigating the risk and impact of landslides.
- Land mafia: Land mafias occupy prime land and construct

resorts and stay inns at major tourist destinations without paying any heed to vulnerable zones and land regulations. Nexus with local politicians further increases the risk of these built infrastructures.

#### **Factors triggering landslides**

- Deforestation: Hilly areas are witnessing development. Rail and road infrastructure is being ramped up in North East. Deforestation is a natural consequence and so are landslides.
- Unregulated tourism: Revenge tourism after COVID-19 and rising per capita incomes have been driving tourism beyond the carrying capacity of sensitive ecosystems. The heavy death toll during Kedarnath floods is partly attributed to unregulated tourism.
- Development projects: Chardham Mahamrg Vikas Project and strategic tunnels and roadways near the geologically sensitive borders are increasing the risk profile of these areas. Finding a balance between risk reduction and development has become a Gordian knot.
- Climate change: Record precipitations, dying glaciers and poor watershed management have been increasing the risk of landslides. This is complemented by a lack of perspective plan in managing landslides.

#### **Measures required to mitigate the impact of landslides**

- A separate authority: A separate authority outside the bounds of local bodies, involving experts and bureaucrats, must be created to obtain permission to build infrastructure in risk prone areas. This will induce professionalism and help take objective decisions.
- Disaster insurance: A Government sponsored disaster insurance must be put in place to mitigate the damages caused due to landslides.
- Resilient structures: Structures made of light materials which are environment friendly can reduce the load on sub soil in hazard prone areas. This in turn can lead to slope stabilization in the long run.
- Evacuation roadmap: A local level road map for evacuation of citizens in case of landslides must be mandated. Escape routes must be well maintained and monitored from time to time.
- Afforestation: Geospatial data must be utilized to point out

	sloped having scanty tree cover and afforestation measures must be commenced to improve slope stabilization and mitigate landslide risk.
<b>Conclusion</b>	India faces landslides year on year. Mizoram, Himachal Pradesh, Uttarakhand, Kerala, etc. have been particularly prone to the fury of landslides. They can impact agriculture, tourism, infrastructure and the generation of local jobs. Thus, a comprehensive solution involving technology, people and policy is necessary to mitigate the risks and impacts posed by landslides. A silo-based approach cannot deal with them instead landslide should be included in the overall disaster management strategy for better outcomes.



# Ecology and Environment

**Q.22) Methane is the second most abundant greenhouse gas in the atmosphere with its hazardous impacts. Examine the sources of methane emissions. Elaborate on the measures taken to contain methane emissions and what more can be done to reduce the hazardous impacts of methane emissions? 15 marks (250 words)**

Topic- Greenhouse gases	
Introduction	After carbon dioxide, methane is the second most abundant greenhouse gas in the atmosphere affecting the goals to mitigate global warming. About 20% of the global warming is attributed to methane. Over a century, methane has a 28 times higher global warming potential than carbon dioxide. Multiple sources contribute to the methane emission yielding hazardous effects. It has resulted in untold hazardous effects on environment, economy and society.
Body	<ul style="list-style-type: none"> <li>• Sources of methane emissions</li> <li>• Hazardous impacts of methane emissions</li> <li>• Measures taken to curb methane emissions</li> <li>• Way forward</li> </ul>
Conclusion	The climate conventions and efforts to mitigate greenhouse gases would prove to be futile if practical measures to counter methane emissions is not take into account. Hence, the above mentioned measures along with innovative financing and technology transfer mechanism can have domino effect of the efforts to contain globally warming which must be rightfully pursued.

<b>UPSC Syllabus</b>	<b>Greenhouse gases</b>
<b>Why was this question asked?</b>	<b>Q.</b> Climate change is a global problem. How will India be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? <b>(UPSC Main 2017)</b>
<b>Introduction</b>	After carbon dioxide, methane is the second most abundant greenhouse gas in the atmosphere affecting the goals to mitigate global warming. About 20% of the global warming is attributed to methane. Over a century, methane has a 28 times higher global warming potential than carbon dioxide. Multiple sources contribute to the methane emission yielding hazardous effects. It has resulted in untold hazardous effects on

	environment, economy and society.
<b>Body</b>	<p><b>Sources of methane emissions:</b></p> <p><b>Thermogenic:</b></p> <ul style="list-style-type: none"> <li>• <b>Volcanoes:</b> Recently Mount Ruang volcano erupted in Indonesia. Such volcanic eruptions release large amounts of methane but it is not an incessant phenomenon like anthropogenic emissions.</li> <li>• <b>Fossil fuel extraction:</b> About one-third of the anthropogenic methane emissions are pointed to fossil fuel extraction with Russia being the top methane emitter in the world.</li> <li>• <b>Earthquakes:</b> Minor and major earthquakes on the sea and land too contribute to methane emissions.</li> </ul> <p><b>Biogenic:</b></p> <ul style="list-style-type: none"> <li>• <b>Enteric fermentation:</b> Global Methane Assessment, 2021 pegs that a single cow can produce 99 kg of methane in a year through enteric fermentation.</li> <li>• <b>Wetlands:</b> They contribute to 75% of the natural source of methane emissions. Anaerobic bacteria and microbes like archaea produce methane during their metabolic processes.</li> <li>• <b>Agriculture:</b> Agriculture contributes to 30% of the natural source of methane emissions. Paddy and wheat cultivation under flooded conditions is a major reason behind this.</li> </ul> <p><b>Hazardous impacts of methane emissions:</b></p> <ul style="list-style-type: none"> <li>• <b>Radiative forcing:</b> Methane complements the effects of certain greenhouse gases like ozone further increasing the ambient temperature.</li> <li>• <b>Health:</b> Premature deaths and respiratory diseases like asthma, rhinitis, allergy etc are attributed to higher methane contributions in the atmosphere.</li> <li>• <b>Accidents:</b> Coal mines and empty gas rigs that still hold considerable quantities of methane result in fire accidents resulting in the death of mine workers</li> <li>• <b>Climate change:</b> methane emissions can jeopardize the efforts taken at combatting climate change like Montreal Protocol on Ozone, Convention on Biological Diversity and UN Framework Convention on Climate Change.</li> </ul> <p><b>Measures taken to curb methane emissions:</b></p> <ul style="list-style-type: none"> <li>• <b>Agriculture:</b> System of Rice Intensification and Direct Seeding of Rice have been adopted which increased yield by 45% while</li> </ul>

	<p>reducing greenhouse gas emissions.</p> <ul style="list-style-type: none"> <li>• <b>GOBARDHAN initiative:</b> Supports the biodegradable waste recovery initiatives through Incentivization of gas extraction facilities in villages and assured price support curb methane emissions.</li> <li>• <b>Global Methane Pledge:</b> 111 countries launched it at COP 26 to UNFCCC at Glasgow, The UK as a public-private partnership to reduce 30% of their methane emissions by 2030 compared to 2020.</li> <li>• <b>Green Mobility:</b> Initiatives like FAME I and FAME II by the government incentivizes faster adoption of electric and hybrid vehicles which goes a long way to containing methane emissions.</li> </ul> <p><b>Way forward:</b></p> <ul style="list-style-type: none"> <li>• <b>Adopting millet based diet</b> patterns can reduce methane emissions as millets do not need standing water for their growth that is the source of methane emissions.</li> <li>• <b>Ramping up on the funding pledges</b> from the developed to developing countries under the principle of Common but Differentiated Responsibility to adopt clean technologies for energy production can also curb methane emissions.</li> <li>• <b>Strengthening accounting systems</b> to track methane emission will aid in informed decision making at the policy level.</li> <li>• <b>Carbon capture technologies</b> can also be utilized as a short term measure to tackle methane emissions.</li> </ul>
<p><b>Conclusion</b></p>	<p>The climate conventions and efforts to mitigate greenhouse gases would prove to be futile if practical measures to counter methane emissions is not take into account. Hence, the above mentioned measures along with innovative financing and technology transfer mechanism can have domino effect of the efforts to contain globally warming which must be rightfully pursued.</p>

**Q.23) Recent estimates suggest that agriculture is a major contributor to Green-House Gas (GHG) emissions. In the light of this finding, discuss the potential of carbon farming in carbon sequestration. Also mention carbon farming schemes adopted worldwide. Explain the challenges such farming techniques pose and suggest way forward to overcome such challenges. 15 marks, 250 words)**

<p><b>Topic- Carbon Farming</b></p>	
<p><b>Introduction</b></p>	<p>Agriculture contributes to 18% of the GHG emissions as per The Indian</p>

	Network on Climate Change Assessment. Carbon farming is a set of methods involving regenerative agricultural practices for enhancing carbon storage in agricultural landscapes while improving agricultural productivity and soil health thus mitigating the GHG emissions from agriculture. Despite their huge potential, they pose challenges that needs innovative solutions demanding concerted efforts.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Importance of carbon farming in carbon sequestration</li> <li>• Carbon farming schemes adopted worldwide</li> <li>• Challenges encountered in adopting carbon farming</li> <li>• Way forward to overcome challenges</li> </ul>
<b>Conclusion</b>	Carbon farming is a tool to convert adversity into advantage. Unsustainable agriculture releasing GHG emissions will be a natural consequence of rising population and per capita incomes. Transforming this into sustainable agricultural practice demands the helping hand of carbon farming which entails numerous challenges in its rollout. But a concerted effort involving technological, policy and commercial domains can address these challenges so as to promote sustainable agriculture which is a cherished goal under SDG 2.

<b>UPSC Syllabus</b>	<b>Carbon farming</b>
<b>Why was this question asked?</b>	<b>Q. How far is Integrated Farming System helpful in sustaining agricultural production? (UPSC CSE 2019)</b>
<b>Introduction</b>	Agriculture contributes to 18% of the GHG emissions as per The Indian Network on Climate Change Assessment. Carbon farming is a set of methods involving regenerative agricultural practices for enhancing carbon storage in agricultural landscapes while improving agricultural productivity and soil health thus mitigating the GHG emissions from agriculture. Despite their huge potential, they pose challenges that needs innovative solutions demanding concerted efforts.
<b>Body</b>	<p><b>Importance of carbon farming in carbon sequestration</b></p> <ul style="list-style-type: none"> <li>• Ecosystem resilience: Carbon farming techniques like agroforestry encourage native trees and shrubs leading to better biodiversity and ecosystem resilience. Improved carbon sequestration will be an obvious by product of such measures.</li> <li>• Safeguarding soil: Minimum tillage through Direct Seeding of Rice minimizes release of carbon entrapped in soil while also</li> </ul>

mitigating methane emissions by averting flooding of fields during paddy growth.

- Waste management: Agricultural waste would be utilized in a bio-decomposer to produce biogas and mitigate fossil fuel emissions from traditional cook stoves thereby minimizing GHG emissions.
- Organic fertilizers: Synthetic fertilizers alone account to 0.8% of GHG emissions since they destroy soil biota that sequester carbon. Thus, carbon farming uses organic fertilizers to preserve the soil biota thereby helping in better carbon sequestration.
- Crop rotation: Crop rotation under carbon farming can improve the growth of nitrogen fixing bacteria. This increases the carbon sequestration capacity of both plants and soils in turn reducing GHG emissions.

#### **Carbon farming schemes adopted worldwide:**

- Farmers in the US can voluntarily adopt carbon farming methods to earn carbon credits and trade it on exchanges like Chicago Climate Exchange (CCX).
- The '4 per 1000 initiative' launched at the COP 21 to UNFCCC in Paris in 2015 brings together stakeholder across private and public sectors to incentivize regenerative agricultural systems that promote carbon sequestration.
- The Kenya Agricultural Carbon Project is the first African soil and agricultural carbon finance project that benefits rural communities and small holder farmers in Kenya.
- The Australian Carbon Credit Unit Scheme encourages farmers to store soil organic carbon through innovative agricultural practices by providing carbon credits.

#### **Challenges encountered in adopting carbon farming**

- Carbon farming works best where there is sufficient quantity of water to grow trees along with grain based agriculture. Thus, it may be unviable for small farmers.
- Accounting mechanism for carbon sequestration is still contested to quantify carbon credit. Objectivity becomes an orphan is carbon farming is implemented without any requisite preparation.
- As growing genetically engineered trees are prohibited in India, maximum carbon sequestration faces added challenges.
- Lack of sufficient policy support with objectively defined Key

	<p>Result Areas (KRAs) can further affect the roll out of carbon farming practices.</p> <ul style="list-style-type: none"> <li>• Finally, in a country like India with heavy reliance on rain fed agriculture, low crop insurance penetration and scant awareness, adopting carbon farming is a battle against all odds.</li> </ul> <p><b>Way forward to overcome challenges</b></p> <ul style="list-style-type: none"> <li>• Carbon Farming and its methods should be objectively defined under the National Mission on Sustainable Agriculture which is one of the missions under The National Action Plan on Climate Change (NAPCC).</li> <li>• This will inspire specific intervention from sub-national governments and private players alike.</li> <li>• Krishi Vigyan Kendra's must be roped in to generate awareness on the benefits of adopting carbon farming methods with case studies under the belt to convince the farmers.</li> <li>• Government can incentivize companies producing organic fertilizers through tax holidays to mitigate the excessive competition face by them from synthetic fertilizers.</li> <li>• A Jan andolan of sorts is necessary to buy products involving carbon farming methods. A separate seal of guarantee that the product is produced through sustainable farming methods will be an icing on the cake.</li> <li>• A separate agricultural carbon credit mechanism on the lines of The Kenya Agricultural Carbon Project is necessary to address the concerns of small farmers who hold 85% of the agricultural holdings in India.</li> </ul>
<p><b>Conclusion</b></p>	<p>Carbon farming is a tool to convert adversity into advantage. Unsustainable agriculture releasing GHG emissions will be a natural consequence of rising population and per capita incomes. Transforming this into sustainable agricultural practice demands the helping hand of carbon farming which entails numerous challenges in its rollout. But a concerted effort involving technological, policy and commercial domains can address these challenges so as to promote sustainable agriculture which is a cherished goal under SDG 2.</p>

**Q.24) India is facing a mounting challenge of solid waste management. Elucidate the causal factors behind such challenge and impacts it will have on human and ecological health. Give a brief on the Solid Waste Management Rules, 2016 while suggesting further measures to overcome the hazardous impacts resulting from improper disposal and processing of solid waste. 15 marks (250 words)**

Topic- Solid Waste Management	
Introduction	Solid waste generation has been growing by leaps and bounds as India has already become the country with the world's largest population along with rapid urbanization. Despite the comprehensive Solid Waste Management Rules being notified in 2016, the scientific management of solid waste faces a daunting challenges ranging from behavioral to financial aspects. This demands a thorough review of the problem and the interventions needed to overcome this challenge.
Body	<ul style="list-style-type: none"> <li>• Challenge of Solid Waste Management</li> <li>• Causal factors</li> <li>• Impact on Human and Ecological health</li> <li>• Features of Solid Waste Management Rules, 2016</li> <li>• Measures to overcome the hazardous impacts</li> </ul>
Conclusion	Improper solid waste management is a disaster in making. Apart from the visual appeal, it hinders the cities from becoming growth engines of new India. Institutional and decentralized solutions have borne fruit in tacking the challenge head on. A clear and constructive policy and a law on solid waste management is the need of the hour as its scientific management is directly related to Right to Life guaranteed under Article 21 of the Constitution.

<b>UPSC Syllabus</b>	<b>Solid Waste Management</b>
<b>Why was this question asked?</b>	<b>Q. What are the impediments in disposing huge quantities of discarded solid wastes which are continuously being generated How do we remove safely the toxic wastes that have been accumulating in our habitable environment? (UPSC CSE 2018)</b>
<b>Introduction</b>	Solid waste generation has been growing by leaps and bounds as India has already become the country with the world's largest population along with rapid urbanization. Despite the comprehensive Solid Waste Management Rules being notified in 2016, the scientific management of solid waste faces a daunting challenge ranging from behavioral to financial aspects. This demands a thorough review of the problem and the

	interventions needed to overcome this challenge.
<b>Body</b>	<p><b>Challenge of Solid Waste Management:</b></p> <ul style="list-style-type: none"> <li>• India is one among the top 10 countries generating Municipal Solid Waste.</li> <li>• According to a The Energy and Resources Institute (TERI) report, India generates over 62 million tons (MT) of solid waste of which over 42 MT of the total waste generated gets collected.</li> <li>• Nearly 50% i.e. 31 MT of the total generated waste is simply discarded in waste yards without any treatment.</li> <li>• The Central Pollution Control Board predicts that the annual waste generation will reach 165 MT by 2030 stressing the waste management systems beyond their coping capacity.</li> </ul> <p><b>Causal factors</b></p> <ul style="list-style-type: none"> <li>• Source segregation: Behaviour change among the residents is the biggest challenge in waste management. Lack of segregation into wet and dry waste hampers their recycling thereby increasing the load at dump yards.</li> <li>• Waste to energy: The cost of energy per unit produced through waste to energy plants is higher than energy produced through thermal power plants further affecting efficient waste management.</li> <li>• Single Use Plastic: Despite banning Single Use Plastic, various wrappers of package foods in the Fast Moving Consumer Goods category make up a disproportionate amount of the non-biodegradable waste. These wrappers and packaging items are difficult to be recycled finally ending up in landfills.</li> <li>• Informal sector: A majority of the waste also gets collected by rag pickers who work under hazardous conditions. But their proper accommodation in waste collection through better training hinders scientific waste management.</li> <li>• Sorry state of Urban Local Bodies: Urban local bodies are thirsty for funds with their own source revenue less than 1% of the GDP. Any reform in scientific waste management faces a daunting challenge of insufficient funds.</li> </ul> <p><b>Impact on:</b></p> <p><b>Human health:</b></p> <ul style="list-style-type: none"> <li>• Lifestyle diseases: Cancer, lung diseases and Alzheimer's disease owing to exposure to toxic chemicals like furans from the burnt waste is a natural consequence of unscientific waste management.</li> <li>• Endocrine disruption: Endocrine Disrupting Chemicals like</li> </ul>

phthalates leach into the groundwater creating a host of problems like liver cirrhosis, altered brain development and diabetes.

- Water borne diseases: Fresh water sources are polluted by the waste matter in these landfills. This leads to water borne disease like cholera, enteritis and typhoid for the most vulnerable sections of the society who depend on these water sources.

#### **Ecological health:**

- Microplastic pollution: Unscientific waste management leads to the degradation of plastic particles into microplastics polluting our food and water supply apart from stunting the growth of nearby flora and fauna.
- Biodiversity: As landfills take up a lot of land and pollute the nearby environment, native species of plants and animals with poor resilience are replaced by invasive alien species thereby threatening biodiversity.
- Tourism: Lake faces eutrophication due to leachates reaching them from landfills thereby jeopardizing aesthetic beauty of these lakes. This in the long term affects tourism and micro climate regulation by these lakes.

#### **Features of Solid Waste Management Rules, 2016:**

- The source segregation of waste has been mandated to channelize the waste to wealth by recovery, reuse and recycle.
- Integration of waste pickers/ rag pickers and waste dealers/ Kabadiwalas in the formal system should be done by State Governments, and Self Help Group, or any other group to be formed.
- Generator will have to pay 'User Fee' to waste collector and for 'Spot Fine' for Littering and Non-segregation.
- Construction and demolition waste should be stored, separately disposed off, as per the Construction and Demolition Waste Management Rules, 2016
- New townships and Group Housing Societies have been made responsible to develop in-house waste handling, and processing arrangements for bio-degradable waste.
- These rules have been made applicable to urban agglomerations, notified industrial townships, census towns, defence establishments etc. to extend the scope of the rules.

#### **Measures to overcome the hazardous impacts**

- Apart from the above rules, further innovative mechanisms are needed to tackle the solid waste problem namely –

	<ul style="list-style-type: none"> <li>• <b>Biomining:</b> Microorganisms are used to clean up waste sites that have been contaminated with hazardous heavy metals. This eco-friendly method has been used with considerable success.</li> <li>• <b>Volume based waste fee system:</b> Seoul imposes higher fee on those generating higher and more hazardous wastes. This has reduced the waste load, improved recycling and at the same time mitigated the generation of hazardous wastes.</li> <li>• <b>Kamikatsu model:</b> A city in Japan subsidized purchase of electric composters and compost bins for home based decentralized waste management. As a result of these efforts, the municipality achieved 81% recycling rate in 2016.</li> <li>• <b>Civil Society:</b> Community led waste management initiatives like Haritha Karma Sena, a women led organization in Kerala has generated revenues of over Rs. 10 crore by collecting non-organic waste and empowering 35,000 women in the process.</li> <li>• <b>Source segregation:</b> Waste to energy technologies like POLYCRACK can be operationalized efficiently only if waste is segregated at source. Thus penalizing non-segregation at source is the first step in scientific waste management.</li> </ul>
<p><b>Conclusion</b></p>	<p>Improper solid waste management is a disaster in making. Apart from the visual appeal, it hinders the cities from becoming growth engines of new India. Institutional and decentralized solutions have borne fruit in tackling the challenge head on. A clear and constructive policy and a law on solid waste management is the need of the hour as its scientific management is directly related to Right to Life guaranteed under Article 21 of the Constitution.</p>

**Q.25) Discuss the increasing multidimensional threats that Antarctica faces and the importance of the Antarctic Treaty in mitigating them. Enumerate India's activities in the Antarctica and the respective benefits that it gains from such activities. (15 marks, 250 words)**

Topic- Important Climate Treaties	
<p><b>Introduction</b></p>	<p>Antarctica has evoked deep interest of the mankind since the processes governing it influences the global weather patterns. Further, efforts have been made to insulate it from the terse geopolitical competition that color the other geographies of the world. It is necessary to ponder upon the multi-dimensional threats faced by the Antarctic ecosystem along with India's role in Antarctica for its own and shared benefit of the stakeholders concerned.</p>
<p><b>Body</b></p>	<ul style="list-style-type: none"> <li>• Multidimensional threats faced by Antarctica</li> </ul>

	<ul style="list-style-type: none"> <li>• Importance of the Antarctic Treaty</li> <li>• India's activities in the Antarctica</li> <li>• Benefits from Antarctica studies to India</li> </ul>
Conclusion	<p>Antarctica is well guarded from the unscientific use when compared to the Arctic. Increasing number of countries are getting interested in the Antarctic owing to its mineral, ecological and tourism potential. But a robust framework is necessary to safeguard it from the unscientific and unsustainable use. This demands the efforts at regional and global levels. The Antarctic Treaty System is a specimen of these efforts. Added reforms are a prerequisite to make it more relevant to the emerging threats to the Antarctic ecosystem.</p>

<b>UPSC Syllabus</b>	<b>Important Climate Treaties</b>
<b>Why was this question asked?</b>	<b>Q. Why is India taking keen interest in the Arctic region? (UPSC CSE 2018)</b>
<b>Introduction</b>	<p>Antarctica has evoked deep interest of the mankind since the processes governing it influences the global weather patterns. Further, efforts have been made to insulate it from the terse geopolitical competition that color the other geographies of the world. It is necessary to ponder upon the multi-dimensional threats faced by the Antarctic ecosystem along with India's role in Antarctica for its own and shared benefit of the stakeholders concerned.</p>
<b>Body</b>	<p><b>Multidimensional threats faced by Antarctica:</b></p> <p><b>Security:</b></p> <ul style="list-style-type: none"> <li>• Countries always try to increase their strategic depth by dispersing their military assets in order to increase their global power projection and safety of the complex platforms. Antarctica provides such strategic depth for global hegemony.</li> <li>• Further, it can double down as a military testing site for novel nuclear weapons. As it's a no man's land, this would also avert the critical impacts of such testing in their own soil.</li> </ul> <p><b>Economic:</b></p> <ul style="list-style-type: none"> <li>• Antarctica is known to host crucial rare minerals that find use in Electric Vehicles, complex defense platforms, electronics industry etc. Thus, countries will be on the hunt for such exploration activities which may jeopardize the Antarctic ecosystem.</li> </ul>

- Further, unsustainable tourism can dislodge the sensitive Antarctic ecosystem that is host to a range of endangered species.

#### **Scientific:**

- Around 30 countries have 82 bases in Antarctica. Unsustainable use of these bases can result in uninvited problems on the Antarctic ecosystem from improper waste disposal to geological disturbances owing to unscientific exploration.
- Melting permafrost can release trapped deadly viruses and can infect humans. They have the ability to spread deadly pandemics from the infected individuals returning from the Antarctica.

#### **Importance of the Antarctic Treaty**

- Around 56 countries are signatories to the Antarctic Treaty that was signed on December 1, 1959. It laid down certain binding guidelines for the scientific exploration in Antarctica.
- Antarctica shall be a no man's land outside the bounds of international geopolitical competition.
- Antarctica shall be used for peaceful purposes bereft of any militarization or fortification.
- All signatories to the treaty can engage in scientific exploration and should make freely available the data gathered from such explorations.
- Nuclear testing or disposal of radioactive materials shall be prohibited anywhere in Antarctica.
- All the above features of the treaty safeguard Antarctica from a range of multidimensional threats for the benefit of mankind.

#### **India's activities in the Antarctica**

- India has setup 3 bases in Antarctica namely – Dakshin Gangotri (1983), Maitri (1989) Bharati (2012) for oceanographic and geologic study focusing on the peculiar Antarctic system and its effect on the global climate.
- India aims to setup another station Maitri II by 2029 to further extend the scope and objectives of research.
- It is an active participant in the Antarctic Treaty Consultative Meetings (ATCM) as a responsible member of the Antarctic Treaty System. ATCMs facilitate a global dialogue on law, logistics, governance, science, tourism and other aspects of Antarctica.
- The Antarctic Bill, 2022 was passed by the Indian Parliament

	<p>and governs environmental, tourism, scientific exploration extending to a host of other issues so as to ensure sustainable scientific exploration in Antarctica.</p> <p><b>Benefits from Antarctica studies</b></p> <ul style="list-style-type: none"> <li>• <b>Himalayan Ecosystem:</b> 10 major rivers originating in the Himalayas prove to be a lifeline to the 1.3 billion people living in its watershed. Insights from Antarctic cryosphere can provide strategies to sustainably manage the Himalayan ecosystem.</li> <li>• <b>Biodiversity conservation:</b> India hosts a sizeable snow leopard population. Studying the impact of changes in Antarctic climate on its biodiversity can help predict the impact of changes in the Indian cryosphere on snow leopard thereby helping in conserving them.</li> <li>• <b>High Altitude Locations:</b> India has exquisite hills stations which are geologically and micro climatically affected by changes in the ice mass. Thus, understanding Antarctic high-altitude systems can help devise strategies to counter climatic threats to these Indian high-altitude locations.</li> <li>• <b>Food Security:</b> Himalayan cryosphere is the source of life-giving rivers like the Ganges and the Yamuna which sustains India's food baskets. Understanding the Antarctic cryosphere helps predict changes in the Himalayan cryosphere which helps in its sustainable management.</li> </ul>
<p><b>Conclusion</b></p>	<p>Antarctica is well guarded from the unscientific use when compared to the Arctic. Increasing number of countries are getting interested in the Antarctic owing to its mineral, ecological and tourism potential. But a robust framework is necessary to safeguard it from the unscientific and unsustainable use. This demands the efforts at regional and global levels. The Antarctic Treaty System is a specimen of these efforts. Added reforms are a prerequisite to make it more relevant to the emerging threats to the Antarctic ecosystem.</p>

**Q.26) Give an account of the receding glaciers across the world along with their purported impacts. In the backdrop of this statement, elaborate the requisite measures to mitigate the threat of climate change and its impacts on the Himalayan ecosystem. 15 marks (250 words)**

<p>Topic – Climate change</p>	
<p>Introduction</p>	<p>Many countries across the world are losing their last patch of glaciers. Various factors drive this glacier loss. Glaciers are at the core of many bio-</p>

	geological processes that maintain the Earth's water and food security. The macro climatic changes taking place put glaciers at a huge disadvantage. Thus, a deep review of these landforms is necessary for undertaking measures to preserve them.
Body	<ul style="list-style-type: none"> <li>• Background</li> <li>• Factors driving the glacier loss across the world</li> <li>• Impact of the glacier loss</li> <li>• Measures to mitigate threats</li> </ul>
Conclusion	Glaciers have borne the brunt of climate change and other anthropogenic interventions. The impact of the glacier loss is visible at both the regional and the global level stretching from tourism to conflicts over water sharing between two nations. To avert such issues, a multi-national pact on glaciers is necessary to safeguard them by investing in them human resources, finance and necessary technology to safeguard their functional integrity.

<b>UPSC Syllabus</b>	<b>Climate Change</b>
<b>Why was this question asked?</b>	<b>Q. Bring out the relationship between the shrinking Himalayan glaciers and the symptoms of climate change in India. (UPSC CSE 2014)</b>
<b>Introduction</b>	Many countries across the world are losing their last patch of glaciers. Various factors drive this glacier loss. Glaciers are at the core of many bio-geological processes that maintain the Earth's water and food security. The macro climatic changes taking place put glaciers at a huge disadvantage. Thus, a deep review of these landforms is necessary for undertaking measures to preserve them.
<b>Body</b>	<p><b>Background</b></p> <ul style="list-style-type: none"> <li>• Of late, Venezuela lost its last glacier and has likely become the first country in the modern history to lose all its glaciers.</li> <li>• Switzerland lost more than a 1,000 glaciers out of its 2400 glaciers just in the last 40 years' remarks a report of the World Meteorological Organization.</li> <li>• Thwaites glacier melt in the Antarctic already contributes to 4% of the sea level rise. Complete collapse may raise the sea level by more than 2 feet.</li> <li>• An ICIMOD Report states that the Himalayas would lose 75% of their glaciers by 2100 jeopardizing the lives and livelihoods of around 2 billion people.</li> </ul> <p><b>Factors driving the glacier loss across the world</b></p>

- **Climate change:** The earth's average surface temperature has increased by about 1.1°C since the industrial revolution. This anthropogenically induced climate change is a prime reason behind the glacier loss.
- **Unsustainable tourism:** Increasing per capita income and connectivity has exposed these sensitive ecosystems to unregulated tourism altering the natural processes of formation and shrinking of these glaciers.
- **Fossil fuel use:** There are no immediate signs of reduction in fossil fuel usage owing to the supply chain issues in Electric Vehicles and storage problems regarding the hydrogen fuel. Thus, continuing use decreases the albedo of glaciers increasing their melting.
- **Unscientific infrastructure projects:** Many road projects pass scrape through the glaciers affecting their geological stability thereby increasing their melting.
- **Global climate phenomenon:** Incessant Green House Gas emissions and positive feedback loops further worsen the spate of already shrinking glaciers.

#### **Impact of the glacier loss**

- **Food security:** Kyrgyzstan reported 2,50,000 tonnes of deficit in agricultural crop in 2023. This is attributed to its receding glaciers which have shrunk every decade from their original size.
- **Culture:** Kedarnath and Manasa Gangotri both are religious hotspots which are fed by rivers originating in glaciers. Mandakini originates in Chorabari glacier. Its melting would affect the tourist outfall and long held traditions would be consigned to oblivion.
- **Disasters:** More than 6,000 people died in Kedarnath floods (2013). Glacier loss compounds the intensity of these floods as glacier less slopes are more prone to landslides and geological faults.
- **Water security:** Glaciers store more than three quarters of the world's fresh water. Thus, receding glaciers are a threat to the water security of most populated watersheds in the world.

#### **Measures to mitigate threats**

- **Panchamrit goals:** India's climate obligations of achieving net zero emissions by 2070 can prove to be fruitful in mitigating climate change. Every country must fulfill its obligation regarding this to the UNFCCC.
- **Regulation of tourism:** Tourist permits must be capped in a year

	<p>to the sensitive hotspots to regulate local level warming and pollution thereby containing glacier loss.</p> <ul style="list-style-type: none"> <li>• <b>Switch to Electric Vehicles (EV):</b> More EV adoption reduces the effluent emission and in turn minimizes global warming and the consequent glacier loss.</li> <li>• <b>Space missions:</b> Missions like NASA-ISRO Synthetic Aperture Radar can gain critical insights into ice-loss and help in making informed policies.</li> <li>• <b>Afforestation:</b> Afforestation in the Himalayan ecosystem can attract rain bearing clouds and improve the precipitation thus enlarging the size of many shrinking glaciers.</li> </ul>
<b>Conclusion</b>	<p>Glaciers have borne the brunt of climate change and other anthropogenic interventions. The impact of the glacier loss is visible at both the regional and the global level stretching from tourism to conflicts over water sharing between two nations. To avert such issues, a multi-national pact on glaciers is necessary to safeguard them by investing in them human resources, finance and necessary technology to safeguard their functional integrity.</p>

**Q.27) 'The world's rangelands have been dying a silent death'. In light of the given statement, state the significance of these rangelands while remarking the issues that they face. Also comment on the state of desertification in India along with the remedial measures needed to contain desertification. (15 marks, 250 words)**

Topic- Desertification	
<b>Introduction</b>	<p>Rangelands refer to woodlands, grasslands, wetlands, shrublands etc. that are grazed by animals and on which the pastoralists depend on for their lives and livelihoods. They are witnessing a silent death due to a range of causes like unsustainable management practices to deforestation. The multidimensional impacts may upend the social and economic lives of communities depending on it. This also drives us to introspect on the state of desertification in India which is not unfamiliar to the effects of climate change.</p>
<b>Body</b>	<ul style="list-style-type: none"> <li>• About State of the rangelands (UNCCD Report)</li> <li>• Significance of the rangelands</li> <li>• Issues with respect to the rangelands</li> <li>• The state of desertification in India</li> <li>• Remedial measures needed to contain desertification</li> </ul>

<b>Conclusion</b>	The countries of the world in general have been unsuccessful in reversing desertification. Climate change, population pressures and minimal state capacity are the prime factors affecting the measures to reverse desertification and protect multiple ecosystems especially the rangelands. Nations must drastically increase their national targets and arrive at a responsible and ambitious pact to preserve the rangelands by averting further desertification. This will also suffice the SDG 15, which aims at halting and reversing land degradation and desertification.
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<b>UPSC Syllabus</b>	<b>Desertification</b>
<b>Why was this question asked?</b>	<b>Q. Examine the cause and the extent of desertification in India and suggest remedial measures? (UPSC CSE 2012)</b>
<b>Introduction</b>	Rangelands refer to woodlands, grasslands, wetlands, shrublands etc. that are grazed by animals and on which the pastoralists depend on for their lives and livelihoods. They are witnessing a silent death due to a range of causes like unsustainable management practices to deforestation. The multidimensional impacts may upend the social and economic lives of communities depending on it. This also drives us to introspect on the state of desertification in India which is not unfamiliar to the effects of climate change.
<b>Body</b>	<p><b>About State of the rangelands (UNCCD Report):</b></p> <ul style="list-style-type: none"> <li>• As much as 50% of the natural pastures globally are in decline because of climate change, biodiversity loss, overuse and misuse of these pastures.</li> <li>• Of the world's 500 million square kilometers of rangelands, only 12% is protected.</li> <li>• The current level of rangeland degradation is double the previous estimate of 25%.</li> <li>• Central Asia, Mongolia and China are most affected by rangeland degradation threatening carbon sequestration, ground water resources and nomadic pastoralism in these countries.</li> </ul> <p><b>Significance of the rangelands:</b></p> <ul style="list-style-type: none"> <li>• Over 2 billion people practising as rangers, herders and ranchers depend on the rangelands. For example, in India itself, over 1.3 crore people depend on practice pastoralism. This includes communities like Maldharis, Gujjars, Bakarwals, Gaddis, Raikas, Rabaris etc.</li> </ul>

- Export of dairy and livestock products like wool will be greatly affected owing to the degradation of wastelands. This is in the backdrop of India being the largest producer of milk, the surplus of which is exported earning crucial foreign exchange.
- Rangelands are a great carbon sink sequestering carbon, thus helping contain the anthropogenic climate change. Their degradation will be a major causal factor behind global warming in the present and the future.
- Transitional ecosystems: Rangelands are transitional ecosystems between the deserts and forests. Thus they contain the rate of desertification and are a host to exquisite 'edge species'. Thus rangelands are symbol of reversing desertification and promoting biodiversity.

#### **Issues with respect to the rangelands:**

- Forest fires: Forest fires have been affecting the rangelands as well. Ignition by miscreants, farmers, tourists etc. pose a direct threat to the ecology of these rangelands.
- Unregulated grazing: Extension of agriculture and unscientific land classification has led to unregulated grazing threatening the natural rejuvenation of rangelands.
- Climate change: The world has warmed by 1.2 °C since the industrial revolution. This fast paced climate change owing to anthropogenic sources has been threatening the very survival of these rangelands.
- Low awareness: A low premium is placed on protecting rangelands over forests, water bodies and woodlands. This underestimation of the value of rangelands owing to poor awareness is one of the prime reasons behind the degradation of pristine rangelands.

#### **The state of desertification in India:**

- According to the Ministry of Environment, Forests and Climate Change, nearly 1/3<sup>rd</sup> i.e. 32% of India's land has undergone degradation putting millions of lives and livelihoods at risk as desertification and food security have an intricate nexus.
- Further 25% of the land in India is undergoing degradation reversing the gains made in afforestation and land reclamation activities.
- According to the Desertification and Land Degradation Atlas of India, 28 out of 31 states have witnessed an increase in the level

	<p>of land degradation between 2011 and 2018.</p> <ul style="list-style-type: none"> <li>• Loss of soil cover is one of the biggest reasons behind desertification contributing to 11% of the total desertification. The other causes are climate change, wind and water erosion, deforestation etc.</li> </ul> <p><b>Remedial measures needed to contain desertification:</b></p> <ul style="list-style-type: none"> <li>• Afforestation: Initiatives like REDD and REDD + (Reducing Emissions from Deforestation and Land Degradation in developing countries) must be utilized to improve the rates of afforestation through the provision of finance, technology and expertise.</li> <li>• National targets: India increased its target to restore degraded land from 21 million hectares to 26 million hectares at the COP 14 to the UNCCD held at New Delhi in 2019. Other countries must also increase their targets for a holistic effort.</li> <li>• Protected Areas: In 2022, COP 15 to the UNCBD launched an ambitious initiative of classifying 30% of the world's land and marine areas as protected areas by 2030. Such classification may contain agricultural extension and unregulated grazing of sensitive ecosystems.</li> <li>• Technology: Biodiversity characterization can be made by using remote sensing satellites. The data from such observations should be freely available to the NGOs and individuals working to reverse land degradation.</li> </ul>
<p><b>Conclusion</b></p>	<p>The countries of the world in general have been unsuccessful in reversing desertification. Climate change, population pressures and minimal state capacity are the prime factors affecting the measures to reverse desertification and protect multiple ecosystems especially the rangelands. Nations must drastically increase their national targets and arrive at a responsible and ambitious pact to preserve the rangelands by averting further desertification. This will also suffice the SDG 15, which aims at halting and reversing land degradation and desertification.</p>

**Q.28) Examine critically the status of wind power in India. What are the peculiar benefits that the commissioning of wind energy projects offers? Elaborate on the further measures required for the streamlined rollout of wind energy in India. 15 marks (250 words)**

Topic – Wind energy in India

<b>Introduction</b>	India has pledged at the United Nations' Framework Convention on Climate Change (UNFCCC) to increase the share of renewables in the energy mix to 50% by 2030. Wind energy becomes a major pillar of the strategy to achieve the pledge. India has advanced by strides in capacity augmentation in the wind energy sector. Yet it encounters problems like intermittency and financial and administrative issues. The initial capital is also a cause for concern. Thus a thorough review of the issues in the sector is necessary so as to devise novel measures to resolve the bottlenecks in the sector.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Status of the wind energy sector in India</li> <li>• Issues in the wind energy sector in India</li> <li>• Benefits of wind energy projects</li> <li>• Further measures required</li> </ul>
<b>Conclusion</b>	The wind energy sector has been complementing the solar energy sector in fulfilling India's goals of becoming a power surplus country through green transition. Stable policies, supply chain resilience and single window clearances are necessary to resolve the bottlenecks that persist in the sector. This must be complemented by indigenous production of wind energy generation equipment that has multiple spin off effects. Further, ongoing reforms in the power sector must be ramped up to exploit the full potential of the wind energy sector as India cannot be developed nation without the versatile contribution of the wind energy sector.

<b>UPSC Syllabus</b>	<b>Wind energy in India</b>
<b>Why was this question asked?</b>	Given the accelerated pace of development and demand for energy, would you consider renewable energy as a viable option for India's future (UPSC CSE 2012)
<b>Introduction</b>	India has pledged at the United Nations' Framework Convention on Climate Change (UNFCCC) to increase the share of renewables in the energy mix to 50% by 2030. Wind energy becomes a major pillar of the strategy to achieve the pledge. India has advanced by strides in capacity augmentation in the wind energy sector. Yet it encounters problems like intermittency and financial and administrative issues. The initial capital is also a cause for concern. Thus a thorough review of the issues in the sector is necessary so as to devise novel measures to resolve the bottlenecks in the sector.
<b>Body</b>	<b>Status of the wind energy sector in India</b> <ul style="list-style-type: none"> <li>• At 46 GW of installed capacity as of 2024, India has the 4<sup>th</sup> largest</li> </ul>

installed wind power capacity in the world.

- Gujarat followed by Tamil Nadu and Karnataka picture among the top three states in terms of installed wind power capacity. They also represent the power surplus states of the country.
- The first offshore windfarm is expected to come up near Dhanushkodi in Tamil Nadu. Lower fluctuations in energy generation, elimination of land acquisition issues and higher energy density are some of the advantages that offshore wind energy farms offer.
- Inter State Transmission charges have been waived for interstate buying and selling of wind energy furthering the reform of renewable energy landscape in India.
- National Institute of Wind Energy has been conducting prospecting studies to gauge the wind power potential and creating a database of possible wind power sites for future exploration.
- Along with the above measures, accelerated depreciation benefit for wind power generation equipment and generation based incentive scheme for new wind energy projects have been put in place for increasing the share of wind energy in the total energy mix.

#### **Issues in the wind energy sector in India**

- **Competition:** Wind energy faces stiff competition from the solar energy. The solar module prices have gone down by 85% in the past 15 years. Solar energy thus costs Rs. 2.50 per unit versus Rs. 3.20 per unit for wind power.
- **Intermittency:** Wind energy is best generated early morning, during and after precipitation and near shores. This intermittency and distance from the demand centers makes the wind power an unattractive option for energy buyers.
- **Supply chain disruption:** COVID-19 saw the exit of major wind power equipment makers from India partly due to supply chain disruptions and partly due to policy fluctuations like reverse auctions. Thus, the sector as a whole is not insulated from supply chain disruptions.
- **Land acquisition:** Long drawn litigations owing to land acquisition issues is one of the major challenges facing the wind energy sector.
- **Offshore generation:** Offshore generation costs 2.5 times the onshore generation despite India possessing 23.7 lakh square kilometers of Exclusive Economic Zone.

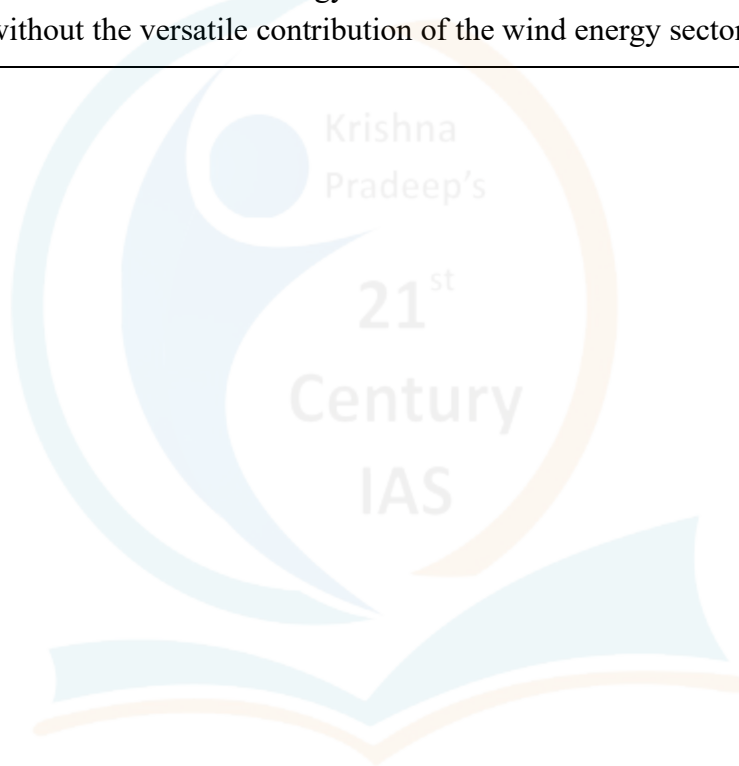
### **Benefits of wind energy projects**

- Complements solar energy in bridging land utilization and demand fluctuations that characterize the renewable energy landscape.
- Green mobility is genuinely achieved if most of the electricity is generated from renewable sources. Presently most of the electricity used in electric vehicles is drawn from highly polluting thermal sources.
- Low maintenance as they do not emit pollution and minimal moving parts. The turbines of wind power plants have high durability compared to thermal power as they are exposed to hot steam which result in corrosion and structural damage in the long run.
- Localized energy generation is a peculiar feature of wind power projects. They don't need vast lands. They can be installed on farm lands and steep mountains. Thus remote parts of the country can enjoy energy security due to wind power.
- Wind power generates good paying yet labor intensive jobs across the supply chain. Notwithstanding this, it becomes the backbone of manufacturing industries in the locality where it is installed. Thus jobs are generated both before and after the commission of wind power projects.

### **Further measures required**

- **Single window clearance:** A single window clearance with respect to land acquisition, environmental permissions, and legal issues must be ensured to enhance ease of operations for Original Equipment Manufacturers in the wind energy sector.
- **Battery Energy Storage:** Battery Energy Storage Systems needs robust support in the form of low-cost Lithium supply agreements with Lithium producers to create a battery manufacturing ecosystem that would reduce the cost of such systems. This in the long term will reduce intermittency in power distribution associated with the sector.
- **Renewable Energy Bonds:** Certain portion of the capital raised through the Sovereign Green Bonds must be earmarked for the wind energy sector to meet its necessary financing needs.
- **Offshore renewable purchase obligation:** To create an assured market for offshore wind energy generators, a renewable purchase obligation must be put in place until a robust market is developed for offshore wind energy.

	<ul style="list-style-type: none"><li>• <b>Late Payment Surcharge:</b> The rules regarding this must be implemented in letter and spirit to counter the cash flow challenges that power generation companies face as a result of late payment by discoms.</li></ul>
<b>Conclusion</b>	The wind energy sector has been complementing the solar energy sector in fulfilling India's goals of becoming a power surplus country through green transition. Stable policies, supply chain resilience and single window clearances are necessary to resolve the bottlenecks that persist in the sector. This must be complemented by indigenous production of wind energy generation equipment that has multiple spin off effects. Further, ongoing reforms in the power sector must be ramped up to exploit the full potential of the wind energy sector as India cannot be a developed nation without the versatile contribution of the wind energy sector.



# Science and Technology

**Q.29) Fundamental physics has been exploring new dimensions of fundamental particles called quarks. In the light of this statement, briefly explain quarks, types of quarks and its properties. Elucidate the significance of quarks and initiatives undertaken to explore these inquisitive particles. 15 marks (250 words)**

Topic- Quantum Physics	
Introduction	Quarks are elementary particles that combine to form fundamental particles called hadrons, the most stable of which form neutrons and protons – the building blocks of atomic nuclei. The properties and the function of these quarks hold decide the fate of evolution and death of stars. They determine whether stars will become white dwarfs, neutron stars or black holes. There are 6 types of quarks also called as flavors.
Body	<ul style="list-style-type: none"> <li>• Types of quarks</li> <li>• Properties of quarks</li> <li>• Significance of quarks</li> <li>• Initiatives undertaken to explore the quarks</li> </ul>
Conclusion	Quarks are just one but an important pillar of delving into the deep ocean of particle physics. Deep knowledge of their characteristics and interactions can help us explore unknown dimensions of reality. International collaborations, knowledge and funds transfer along with robust investment on Research and Development is the way forward in understanding these inquisitive particles.

<b>UPSC Syllabus</b>	<b>Quantum Physics</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the work of ‘Bose-Einstein Statistics’ done by Prof. Satyendranath Bose and show how it revolutionized the field of physics. (UPSC CSE 2018)</b>
<b>Introduction</b>	Quarks are elementary particles that combine to form fundamental particles called hadrons, the most stable of which form neutrons and protons – the building blocks of atomic nuclei. The properties and the function of these quarks hold decide the fate of evolution and death of stars. They determine whether stars will become white dwarfs, neutron stars or black holes. There are 6 types of quarks also called as flavors.

**Body****Types of quarks:**

- Up: It is the lightest of all quarks represented by 'u' symbol.
- Down: It is the second lightest of all quarks and represented by symbol 'd'.
- Charm: It is the third most massive quark with a symbol 'c'.
- Strange: It is the third lightest of all quarks with symbol 's'.
- Top: It is also referred to as truth quark and is the most massive of all elementary particles. It is represented by symbol 't'.
- Bottom: It is also known as beauty quark and is a product in almost all top quark decays. It is represented by symbol 'b'.
- All these quarks have anti-quarks with same mass but have opposite electric charge and magnetic moment.

**Properties of quarks:**

- Due to the strong forces between them, quarks are never found in isolation. They can only be found in large hadrons.
- Quarks have fractional electric charges like  $1/3$ ,  $2/3$  etc unlike whole numbers that characterize protons and electrons.
- A quark of one flavor can transform into a quark of another flavor only through weak interaction.
- According to quantum chromodynamics, each quark and anti-quark carries color, the combination of which determines the attraction or repulsion between different flavors of quarks.
- Quarks are considered to be point like entities with their mass not being more than  $10^{-4}$  times the size of proton.

**Significance of quarks:**

- Quarks are often termed as the building blocks of existence. Understanding them is crucial to understanding the evolution of universe.
- Exploring quarks aids in the study of high energy processes like implosion of stars, black hole and gravitational lensing around black holes.
- Understanding quarks is crucial to decipher the structure of proteins that is key to our understanding of the biological processes and healing a disease.
- Discovery of geological processes inside the earth and heavenly bodies will be facilitated if we study the quarks as quarks carry color based on their interactions with other quarks. By studying the color variations, deducing the complex geological processes

	<p>will get an upshot.</p> <p><b>Initiatives undertaken to explore the quarks:</b></p> <ul style="list-style-type: none"> <li>• Relativistic Heavy Ion Collider at CERN has found evidence for liquid like quark exhibiting perfect fluid like motion.</li> <li>• Stanford Linear Accelerator Center in California was the first to give scientific evidence of quarks as 3 unknown particles emerged when muons were fired at protons.</li> <li>• Quark gluon plasma state was achieved when two heavy nuclei were smashed with the speed of light at the Super Proton Synchrotron at CERN in 2000.</li> <li>• Further, India is supplying components worth \$140 million and expert help to the Fermilab's new High Intensity Superconducting Particle Accelerator.</li> </ul>
<p><b>Conclusion</b></p>	<p>Quarks are just one but an important pillar of delving into the deep ocean of particle physics. Deep knowledge of their characteristics and interactions can help us explore unknown dimensions of reality. International collaborations, knowledge and funds transfer along with robust investment on Research and Development is the way forward in understanding these inquisitive particles.</p>

**Q.30) 'A major space faring nation must place due emphasis on manned space missions.' In light of the above statement, critically analyse the significance of manned space missions over unmanned space missions. What are the initiatives take by India and the countries across the globe while enumerating the challenges involved in such missions? Also suggest way forward that can aid India in its manned mission activities.(15 marks, 250 words)**

Topic- Space Technology	
<p><b>Introduction</b></p>	<p>Manned space mission carry astronauts to space with some docking in the International Space Station and some orbiting the earth through a space module. Only three countries in the world, namely Russia, The USA and China have launched their own crewed spacecraft. This demonstrates the challenges that are congenital to any crewed space mission. India has announced Gaganyaan as its first manned space mission, the first for any developing country across the globe having its own spin-off effects.</p>
<p><b>Body</b></p>	<ul style="list-style-type: none"> <li>• Significance of manned space missions:</li> <li>• Criticisms against manned space missions:</li> </ul>

	<ul style="list-style-type: none"> <li>• Challenges with manned space mission:</li> <li>• Way forward</li> </ul>
Conclusion	<p>Manned space missions have evoked a lot of reproaches from its critics. Despite this, it is an inspirational programme for any nation owing to its socio-economic and geopolitical impacts. Numerous challenges can be resolved through indigenous, international and multi-sectoral collaboration. Systemic challenges like poor R&amp;D and nascent private sector participation must be resolved through a long term vision to make India a major space power in the world.</p>

<b>UPSC Syllabus</b>	<b>Space Technology</b>
<b>Why was this question asked?</b>	<p><b>Q.</b> India has achieved remarkable success in unmanned space missions including Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space mission, both in terms of technology and logistics? Critically explain. <b>(UPSC CSE 2016)</b></p>
<b>Introduction</b>	<p>Manned space mission carry astronauts to space with some docking in the International Space Station and some orbiting the earth through a space module. Only three countries in the world, namely Russia, The USA and China have launched their own crewed spacecraft. This demonstrates the challenges that are congenital to any crewed space mission. India has announced Gaganyaan as its first manned space mission, the first for any developing country across the globe having its own spin-off effects.</p>
<b>Body</b>	<p><b>Significance of manned space missions</b></p> <ul style="list-style-type: none"> <li>• <b>Manned mission to Mars:</b> National Aeronautics and Space Administration remarks that the long term benefits of manned space mission will help in sending a manned mission to Mars, the next most habitable planet after earth in the solar system.</li> <li>• <b>International reputation:</b> It gives a shot in the arm for the nations at the diplomatic high table. China building Tiangong space station is a testimony to this.</li> <li>• <b>Mineral exploration:</b> Moon and other asteroids are thought to have rare earth elements that have military, scientific and technological applications. Manned space missions will complement such exploration.</li> <li>• <b>Spin-off effects:</b> Micro-gravity experiments like studying the growth of protein crystals and microgravity experiments</li> </ul>

covering production of semiconductors and certain pharmaceuticals would have similar products made on earth.

- **Space tourism:** Blue Origin and Virgin Galactic have made manned sub-orbital and orbital flights to space. This make yield revenues from space enthusiasts making it a commercial venture.

#### **Criticisms against manned space missions**

- **High Risk:** The death of Kalpana Chawla in the Columbia Space Shuttle Disaster and other such incidents have made space faring a recipe for disaster. Micro glitches can cause mega failures forcing the scientists to caution against such ventures.
- **Luxury proposition:** A single flight of the space shuttle costs \$450 million on an average. Using such astronomical sums to send multiple unmanned flights will yield better results comparatively.
- **Health:** Space radiation is associated with cancer, aging and endocrine disruptions. Astronauts make a big bet on their health while becoming part of space missions.
- **Irrational:** Humanoid robots like Sophia can actuate and conduct multiple experiments like humans thereby eliminating all the health and training obligations that space farers have to go through, Thus, manned space missions become irrational from this perspective.
- **Space junk:** The space stations and other junks that the manned space missions create pose threat to orbiting earth observation and positioning satellites. Further, the 'Kessler Syndrome' through which the space junk disintegrates and pollutes the space creating sea of hazardous particles rotating at escape velocity.

#### **Challenges with manned space mission**

- **Research and Development:** Just 0.7% of the GDP is spent by India on Research and Development versus 4% of the GDP in Israel. This may come to haunt us in the form of poor human resource base, fractured raw material supply chain and below par private sector participation.
- **Indigenous rocket:** The highest capacity rocket i.e. GSLV LVM 3 can carry is 10 tonnes to Low Earth Orbit. Still the GSLV's safety record and operational efficiency is not scot free. Thus, optimizing the existing rocket technology is also one of the major hindrances to the manned mission.
- **Technology Transfer:** Crew training, reinjection module, space

	<p>survival and crew escape systems needs technology transfer apart from years of indigenous research. On time technology transfer is a big obstacle in such manned missions.</p> <ul style="list-style-type: none"> <li>• <b>Funds:</b> Just Rs. 12,000 crore is allocated to the Department of Space in this year's budget. Manned space missions cannot be sustained at this allocation as there are projects like Shukrayaan and Mangalyaan 2 in the pipeline.</li> <li>• <b>Private Sector Participation:</b> India's space programme is spearheaded by the public sector with miniscule private sector participation. This hinders the investment and eking out commercial value out of an activity that may sustain such space missions in future.</li> </ul> <p><b>Way forward</b></p> <ul style="list-style-type: none"> <li>• <b>Research and Development:</b> India must increase its research and expenditure beyond 0.7% of GDP to at least 2% of the GDP according to global standard.</li> <li>• <b>Commercialization:</b> ISRO can commercialize its products through the INSPACE and NSIL thereby shoring up its resource base to concentrate on core missions like interplanetary travels, etc.</li> <li>• <b>Private sector participation:</b> Foreign Direct Investment norms have been made flexible to attract investments in launch systems, satellite development etc.</li> <li>• <b>Collaboration:</b> Collaborations in projects like NISAR with NASA must be imitated in Launch Vehicle Development and Crew Module Development.</li> <li>• <b>Perspective plan:</b> A long term space policy enumerating India's space vision is the need of the hour to give clarity consequently motivating the players in the Indian space sector.</li> </ul>
<p><b>Conclusion</b></p>	<p>Manned space missions have evoked a lot of reproaches from its critics. Despite this, it is an inspirational programme for any nation owing to its socio-economic and geopolitical impacts. Numerous challenges can be resolved through indigenous, international and multi-sectoral collaboration. Systemic challenges like poor R&amp;D and nascent private sector participation must be resolved through a long term vision to make India a major space power in the world.</p>

**Q.31) Artificial Intelligence space is now being overtaken by Artificial General intelligence. In the light of the above statement, state how different it is from Artificial Intelligence. Elucidate the challenges posed by such complex systems while mentioning requisite measures to be adopted to mitigate the threats posed by them. 15 marks (250 words)**

Topic- Artificial General intelligence	
Introduction	ChatGPT rolled out in 2022 marked the rollout of Artificial General Intelligence (AGI) that is difference from narrow Artificial Intelligence (AI) as Artificial General Intelligence can come up with human like text responses. Governments have been cautious about the challenges posed by such a system (first proposed in its crude form by Alan Turing in 1950) to regulate to to make it more ethical and safe.
Body	<ul style="list-style-type: none"> <li>• Significance of Artificial General Intelligence</li> <li>• Difference between AI and AGI</li> <li>• Challenges posed</li> <li>• Measures to be adopted to mitigate the threats</li> </ul>
Conclusion	Artificial General Intelligence (AGI) as a natural succession to AI is truly a double-edged sword. With its promise of bringing revolution in social and economic spheres, it holds great relevance in countering new age challenges like law and order, climate change, cyber security etc. But its possible misuse needs a structural response which must be developed through the efforts of broad spectrum of stakeholders. Learnings from the regulation of AI can also be inculcated in devising deliberate responses.

<b>UPSC Syllabus</b>	<b>Artificial General intelligence</b>
<b>Why was this question asked?</b>	<b>Q.</b> Introduce the concept of Artificial Intelligence (AI). How does AI help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of AI in healthcare? (UPSC Mains 2023)
<b>Introduction</b>	ChatGPT rolled out in 2022 marked the rollout of Artificial General Intelligence (AGI) that is difference from narrow Artificial Intelligence (AI) as Artificial General Intelligence can come up with human like text responses. Governments have been cautious about the challenges posed by such a system (first proposed in its crude form by Alan Turing in 1950) to regulate to to make it more ethical and safer.
<b>Body</b>	<b>Significance of Artificial General Intelligence:</b> <ul style="list-style-type: none"> <li>• Personalized medicine: AGI can investigate hue date sets of</li> </ul>

genomes and give both populations based and individualized medicinal recommendations. Further, automated image diagnosis can predict exact diseases of lungs, heart obstructions etc.

- Business Intelligence: Market analysis and prediction of prospects of specific companies and analysis of potential market for the product of a firm can be facilitated through AGI.
- Policy making: Traffic congestion in metro cities have become a conundrum for policy makers. Historical data of vehicle movement, new vehicle registration and emission data from automobiles can be utilized in an AGI platform to make informed decisions with high level of precision.
- Crime prevention: Facial Recognition through AGI cameras can alert possible movement of suspects and hardcore criminals. This may lead to quick resolution of cases and averting judicial delay.
- Education: AGI can diagnose the weak points of students and adapt to provide customized learning materials thereby catering to the unique needs of students.

#### **Difference between AI and AGI:**

- AGI can take new independent decisions as humans do through reasoning, analysis and exhibiting emotional states while AI can perform only defined functions like text to speech, chatbots catering to canceling an order, bots prescribing a meal plan after scraping through internet etc.
- AGI is capable of self-learning through interactions, reading books and making assessments on patterns of human behavior while AI requires frequent upgradations and additional training to strengthen the data base.
- AGI requires astronomical computing power is necessary through further miniaturization of existing chipsets and an exhaustive initial training but AI requires satisfactory computing power as present in the smartphone chipsets.
- AGI is still under development with some developers questioning the safety of such systems. On the other hand, AI has been a reality with active use being promoted across all major fields.
- Examples for AGI include GitHub Copilot, image generation, code generation etc. Likewise examples for AI include Image recognition, chatbots, predictive text etc.

#### **Challenges posed:**

- The amount of computational power demanded by such systems raises environmental concerns owing to the power required to

	<p>maintain the cloud infrastructure related to it.</p> <ul style="list-style-type: none"> <li>• Since they can out do humans in most tasks, they can replace humans in a host of jobs resulting in massive unemployment.</li> <li>• AGI based cyber-attacks might be impossible to resolve as they do not follow specific patterns and can use big data and block chain to explore vulnerabilities to exploit them.</li> <li>• Human relationships may be replaced by AGI robots expressing superior emotional capabilities may trump the present human-human relationship structure.</li> <li>• Governments short on expert human resources may find it as a regulatory nightmare with multiple stakeholders to be satisfied without affecting entrepreneurial zeal.</li> </ul> <p><b>Measures to be adopted to mitigate the threats:</b></p> <ul style="list-style-type: none"> <li>• Global partnership: Pacts like Global Partnership on Artificial Intelligence and Asilomar Principles on Beneficial AI must be woven to objectively regulate the development of AGI.</li> <li>• Indigenous resources base: India’s own resource base must be bolstered by intensive research and development and academia-industry collaboration in order to understand the threats and opportunities posed by AGI and work on them in an assiduous manner.</li> <li>• Pilot study: Any roll out of AGI systems must be preceded by a small scale pilot study to avert any possible technological disaster.</li> <li>• Cyber security: Blockchain based cyber security systems involving quantum principles needs to be developed in order to enhance cyber resilience of our critical infrastructure.</li> <li>• Contingency systems: A central switch as an emergency mechanism must be mandated in order to switch off these systems if they demonstrate any anti-human behavior.</li> </ul>
<p><b>Conclusion</b></p>	<p>Artificial General Intelligence (AGI) as a natural succession to AI is truly a double-edged sword. With its promise of bringing revolution in social and economic spheres, it holds great relevance in countering new age challenges like law and order, climate change, cyber security etc. But its possible misuse needs a structural response which must be developed through the efforts of broad spectrum of stakeholders. Learnings from the regulation of AI can also be inculcated in devising deliberate responses.</p>

**Q.32) Electric vehicles (EVs) are the future of sustainable transport. In the light of this statements critically analyze the benefits of adopting electric vehicles. Enumerate the steps taken by the government to drive its adoption and further reforms needed to drive their faster adoption. 15 marks (250 words)**

Topic- Transportation sector	
Introduction	14% of all new cars sold are electric in 2024, a jump from 9% in 2021. This signals the rise of Electric Vehicles(EVs) as a sustainable transport option in future. From eliminating non-point pollution to promoting fuel efficiency, EVs have cross-sectoral benefits. Notwithstanding this, they face multidimensional challenges to their smooth rollout amidst the government taking innovative measures to drive their adoption.
Body	<ul style="list-style-type: none"> <li>• EVs are the future of sustainable transport</li> <li>• Challenges in the adoption of EVs</li> <li>• Steps taken by the government to drive adoption of EVs</li> <li>• Further reforms necessary for their faster adoption</li> </ul>
Conclusion	Electric Vehicles (EVs) are a part of any country's plan to greening their transport sector. This contributes Intended Nationally Determined Contributions made at UNFCCC by individual member nations along with providing green jobs to millions of individuals. To fructify this, the inherent issues plaguing the EV ecosystem must be tackled in a time bound manner. Innovative measures covering safety, reusability and better standards can go a long way in fulfilling the green mobility vision of any country through the faster rollout of EVs.

<b>UPSC Syllabus</b>	<b>Transportation sector</b>
<b>Why was this question asked?</b>	<b>Q. What are the alternative fuels available for the transport sector? Discuss their characteristics, advantages and disadvantages in their utilization. (UPSC CSE 2007)</b>
<b>Introduction</b>	14% of all new cars sold are electric in 2024, a jump from 9% in 2021. This signals the rise of Electric Vehicles(EVs) as a sustainable transport option in future. From eliminating non-point pollution to promoting fuel efficiency, EVs have cross-sectoral benefits. Notwithstanding this, they face multidimensional challenges to their smooth rollout amidst the government taking innovative measures to drive their adoption.
<b>Body</b>	<p><b>EVs are the future of sustainable transport:</b></p> <ul style="list-style-type: none"> <li>• Green transport: Global temperatures have gone past 1°C since</li> </ul>

the advent of industrial revolution. A green transport option that doesn't trap greenhouse gases like the fossil fuel transport is the need of the hour.

- Energy security: 80% of the fossil fuel needs of India are met through imports. India pumped nearly \$132 billion in 2023-24 for crude oil imports with the trade deficit expected to reach \$276 billion in 2025. Thus, EVs can be a source of energy security for India by cutting down fuel imports for the transport sector.
- Urban Heat Island effect: Urban congestion and entrapment of effluents can increase the temperature of central business district by 2°C compared to the peripheral areas. This Urban Heat Island effect can be mitigated by faster adoption of EVs.
- Fuel efficiency: EVs convert 77% of the energy from grid into power at wheels versus 12%-30% of the energy stored in gasoline being converted into power at wheels by fossil fuel vehicles. Thus, EVs are fuel efficient than conventional vehicles that run on gasoline.
- Resource efficiency: Less moving parts in EVs means less repairs and minimal need to extract resources. Plastic parts in EVs can be recycled and reused. Thus EVs are a shining example of resource efficiency.

#### **Challenges in the adoption of EVs:**

- Raw material: China based battery makers named CATL and BYD have more than 50% market share in lithium ion batteries. Along with this, few countries have lithium mines which pose challenges to raw material supply chain resilience. Thus, adoption of EVs is not a walk on the cake as far as raw material supply is concerned.
- Chemical hazard: Lithium ion batteries have known carcinogenic chemicals. Their improper disposal and recycling poses threat to human, animal and ecosystem health: thus jeopardizing the one health concept.
- Accidents: India is a tropical country. Optimum operating temperatures for lithium batteries is from 15°C to 35°C. Frequent heatwaves have led to fatal battery explosions affecting the unhindered adoption of these EVs.
- Supporting infrastructure: Charging stations and battery swapping units are suffering from lack of standardization. This along with intermittent power in some regions has affected adoption of EVs.
- Not truly green: India relies on thermal power for more than 65% of its energy needs. Considering this, one can question whether

	<p>EVs that run on electricity produced from fossil fuels are truly green?</p> <p><b>Steps taken by the government to drive adoption of EVs:</b></p> <ul style="list-style-type: none"> <li>• State specific policies: Assam has been providing subsidy on 2 wheelers as a percentage of the showroom price to ensure their faster adoption.</li> <li>• Tax exemptions: Under Section 80EEB of the Income Tax Act, EV buyers can avail tax exemption upto Rs. 1.5 lakh for the interest paid on the loans raised against EVs.</li> <li>• PLI Scheme for Automotive Sector: Rs. 25,938 crore was earmarked to develop manufacturing ecosystem for advanced automotive components that complement the EV manufacturing ecosystem.</li> <li>• PLI Scheme for National Programme on Advanced Chemistry Cell Battery Storage: Rs. 18,100 crore was earmarked for 7 years in 2021 to build a battery manufacturing ecosystem in India to cater to the local demand.</li> <li>• FAME India Scheme: 7,000 e-buses, 5 lakh e-3 wheelers and 10 lakh e-2 wheelers are being supported under the FAME II launched in 2019 with an outlay of 10,000 crores.</li> </ul> <p><b>Further reforms necessary for their faster adoption:</b></p> <ul style="list-style-type: none"> <li>• Battery swapping policy: Unifying the battery specifications through a government policy can streamline the rollout of battery swapping infrastructure, thus owning EVs will become an attractive proposition.</li> <li>• Special e-mobility zone: Special zones must be created where only EVs can be operated in line with the global examples like that of Europe and China.</li> <li>• Duty reductions on electric vehicles: States have been imposing one-time lifetime tax on EVs. This has to be rescinded for the sake of faster adoption of EVs amidst rising fossil fuel prices driven by crisis in West Asia.</li> <li>• Safety standards: BIS must lay down standards for lithium ion batteries. This may prove to be fruitful in averting fatal accidents and induce better resilience to increased operating temperatures.</li> <li>• Standardization: Standardization of charging ports and battery slots have been a persisting demand from concerned stakeholders. This can complement the charging infrastructure by improving their efficiency and use value.</li> </ul>
<p><b>Conclusion</b></p>	<p>Electric Vehicles (EVs) are a part of any country's plan to greening their</p>

	transport sector. This contributes Intended Nationally Determined Contributions made at UNFCCC by individual member nations along with providing green jobs to millions of individuals. To fructify this, the inherent issues plaguing the EV ecosystem must be tackled in a time bound manner. Innovative measures covering safety, reusability and better standards can go a long way in fulfilling the green mobility vision of any country through the faster rollout of EVs.
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**Q.33) Anti-microbial resistance has scaled new heights. In the light of the statement, enumerate the reasons behind the spike in anti-microbial resistance. Explain its impacts on humans, animals and larger ecology. Mention the steps adopted at national and global level to contain the menace. What further measures must be resorted to in order to suppress the anti-microbial resistance? 15 marks (250 words)**

Topic- Anti-microbial resistance	
Introduction	Anti-microbial resistance occurs when microbes like bacteria, virus, fungi etc no longer respond to anti-microbials. Anti-microbial resistance has been pointed out as the culprit behind a range of disorders that plague the humans, animals and larger ecology affecting the economic growth in the long run. Deadly derangement like black fungus infection witnessed in the backdrop of COVID-19 is an example of this. A range of reasons have been attributed to this phenomenon.
Body	<ul style="list-style-type: none"> <li>Reasons behind the spike in the anti-microbial resistance</li> <li>Impacts on humans, animals and larger ecology</li> <li>Steps adopted to contain the menace</li> <li>Further measures necessary to suppress the phenomenon</li> </ul>
Conclusion	Antimicrobial resistance threatens to reverse the gains made over decades in containing infectious diseases. Whatever the reasons may be behind their incidence, institutional efforts can only suffice to a limited extent. Containing antimicrobial resistance demand a Jan Andolan of sorts apart from safeguarding the ecosystem integrity through the inculcation of one-health concept that may address the menace of anti-microbial resistance holistically.

<b>UPSC Syllabus</b>	<b>Anti-microbial resistance</b>
<b>Why was this question asked?</b>	<b>Q.</b> Can over use of antibiotics without doctor's prescription causing multi-drug antibiotic resistance in India? What are the available

	mechanisms for monitoring and control? Critically discuss the various issues involved. (UPSC CSE 2014)
<b>Introduction</b>	Anti-microbial resistance occurs when microbes like bacteria, virus, fungi etc no longer respond to anti-microbials. Anti-microbial resistance has been pointed out as the culprit behind a range of disorders that plague the humans, animals and larger ecology affecting the economic growth in the long run. Deadly derangement like black fungus infection witnessed in the backdrop of COVID-19 is an example of this. A range of reasons have been attributed to this phenomenon.
<b>Body</b>	<p><b>Reasons behind the spike in the anti-microbial resistance:</b></p> <ul style="list-style-type: none"> <li>• Agriculture: Tetracyclin is major antibiotic used in poultry feeds contributing to antimicrobial resistance. Apart from its effects on birds, fatal diseases of kidney, liver and heart are an added bane for humans consuming the poultry.</li> <li>• Awareness: Over the counter antimicrobials are sold without any restraint. The use of broad spectrum antibiotics to treat common cold is also a cause behind antimicrobial resistance.</li> <li>• Treatment: Not adhering to treatment protocols lead to frequent recurrence of diseases like TB thereby increasing the use of stronger antibiotics and thus resulting in antimicrobial resistance.</li> <li>• Technical: Widal's test to diagnose Typhoid has been inaccurate for years. This misdiagnosis induces people to use antimicrobials without any absolute demand to do so.</li> <li>• Public health: Poor sanitation and mixing of clean water with sewage water increases this risk of serious infections demanding further use of antibiotics. As a consequence, overuse and frequent use results in increased antimicrobial resistance.</li> </ul> <p><b>Impacts:</b></p> <p><b>On humans:</b></p> <ul style="list-style-type: none"> <li>• Demographic dividend: Global Leaders' Group on antimicrobial resistance states that antimicrobial resistance can reduce life expectancy by 2 years and cost \$ 855 billion annually until 2035.</li> <li>• Non-developmental expenditure: Enormous sums are spent on developing antimicrobials which could have been used to fund education, industrial development and nutritional and food security.</li> <li>• Social: Stigma attached against TB patients is a tough pill to swallow. Social ostracisation can affect the mental health of patients affecting the social fabric in the long run.</li> </ul>

**On animals:**

- Animals' immune system get compromised due to the excessive use of antibiotics. This may lead to a situation where productivity may be equated with anti-microbial usage hindering animals' life expectancy.
- Superbugs: Some microbes like penicillin become extremely drug resistant as the recent FAO report (2024) remarks that isolates of S aureus (a gram positive broad spectrum bacterium) exhibited resistance to penicillin across 90% of the sources from which it was collected.

**On larger ecology:**

- Pandemics become a new normal as microbes become drug resistant due to abuse of antimicrobials.
- Contamination of waterbodies with anti microbials can affect their economic, social and ecosystem value threatening aquamarine resources.
- Invasive alien species having better resilience than native species may thrive as excessive usage of anti microbials might have scuttled the natural immune response of native tree and plant species.

**Steps adopted to contain the menace:**

- Chennai declaration: An informal declaration was adopted by the medical community at a conference in Chennai in 2013 to prescribe antibiotics in a responsible manner.
- National Action Plan on Antimicrobial Resistance: It is an interministerial vision plan creating a surveillance network involving labs to collect data and lay down data driven policies to contain antimicrobial resistance.
- AMR Surveillance Network: Approximately 30 labs in 24 states have been setup under this network to collect data at micro level to gauge the incidence of antimicrobial resistance. It was envisioned under the National Action Plan on Anti-Microbial Resistance.
- Red line campaign: Ministry of Health and Family Welfare urged people not to use medicines marked with red line which are broad spectrum antibiotics and to only use it under the prescription of doctor.
- Nikshay Poshan Yojana: Nutrition is being incentivised for TB patients. This may go a long way in reducing the anti-biotic usage as better nutrition reduces TB recurrence and minimizes the antibiotic usage in turn curbing antibiotic resistance.

	<p><b>Further measures necessary to suppress the phenomenon:</b></p> <ul style="list-style-type: none"> <li>• Banning the antibiotic use in animal feed and promoting the consumption of poultry fed on organic feeds.</li> <li>• Improving nutrition security through food fortification as better nutrition is inversely proportional to the incidence of infectious diseases.</li> <li>• Regulation of fixed dose combination containing broad spectrum antibiotics whose usage further supplements the antimicrobial resistance.</li> <li>• Awareness generation through ASHA activists at the cutting edge level may further reduce the abuse of antimicrobials for common diseases.</li> </ul>
<p><b>Conclusion</b></p>	<p>Antimicrobial resistance threatens to reverse the gains made over decades in containing infectious diseases. Whatever the reasons may be behind their incidence, institutional efforts can only suffice to a limited extent. Containing antimicrobial resistance demand a mission mode working apart from safeguarding the ecosystem integrity through the inculcation of one-health concept that may address the menace of anti-microbial resistance holistically.</p>

**Q.34) Discuss the NISAR mission that is set to be launched by the end of 2024. Explain briefly such joint-satellite missions realized by ISRO through international cooperation. 15 marks (250 words)**

Topic- Space Technology	
Introduction	<p>NASA-ISRO Synthetic Aperture Radar(NISAR) is a NASA-ISRO joint mission to co-develop and launch a dual band Synthetic Aperture Radar on an earth observation satellite. It is set to be launched in 2024 heralding a new era of space cooperation between 2 major space faring nations. Its significance stretched from earth observation to disaster management with unique features among the joint-space missions launched till now.</p>
Body	<ul style="list-style-type: none"> <li>• About the mission</li> <li>• Objectives of the mission</li> <li>• Significance of the mission</li> <li>• Other joint-satellite missions realized by ISRO through international cooperation</li> </ul>
Conclusion	<p>Space is emerging to be the new arena of strategic cooperation apart from its scientific and developmental benefits. Earth observation and hazard</p>

mapping have become important interventions in tackling climate change. Space cooperation missions like NISAR have great potential in exploring new boundaries through their spin-off effects. Greater private sector participation must also be ensured to garner investments and undertake riskier and unique missions in the space sector for holistic advancement.

<b>UPSC Syllabus</b>	<b>Space Technology</b>
<b>Why was this question asked?</b>	<b>Q.</b> The safe landing of NASA's 'Curiosity' Rover has sparked many possibilities. What are those and how could humankind benefit from them. (UPSC CSE 2012)
<b>Introduction</b>	NASA-ISRO Synthetic Aperture Radar (NISAR) is a NASA-ISRO joint mission to co-develop and launch a dual band Synthetic Aperture Radar on an earth observation satellite. It is set to be launched in 2024 heralding a new era of space cooperation between 2 major space faring nations. Its significance stretched from earth observation to disaster management with unique features among the joint-space missions launched till now.
<b>Body</b>	<p><b>About the mission</b></p> <ul style="list-style-type: none"> <li>• The planned mission life of the satellite will be for 3 years providing crucial insights into the complex geological processes.</li> <li>• NASA will provide L-band Synthetic Aperture Radar (SAR) and a solid-state recorder while ISRO will provide satellite bus, S-band SAR and launch vehicle.</li> <li>• The satellite will be the first radar imaging satellite to use dual frequencies.</li> <li>• The satellite will be carried in a GSLV Mark – II launch vehicle to the dawn to dusk type sun-synchronous orbit at an altitude of 747 km.</li> </ul> <p><b>Objectives of the mission</b></p> <ul style="list-style-type: none"> <li>• Elevation mapping: It can map the elevation of Earth's land and ice mass four to six times a month at resolutions ranging from 5-10 meters. Digital Elevation Maps can be prepared from such observations for scientific use.</li> <li>• Earth Observation: It will study the changes in the Antarctic cryosphere measuring changes in the thickness of polar ice and ice-sheet collapse.</li> <li>• Geological processes: It will also explore the evolution and state of Earth's crust to understand tectonic changes and plate movements.</li> </ul>

	<ul style="list-style-type: none"> <li>• Disaster Management: It will over the course of operation will observe and measure natural hazards like earthquakes, tsunamis, volcanoes and landslides.</li> </ul> <p><b>Significance of the mission</b></p> <ul style="list-style-type: none"> <li>• Scientific collaboration: The mission paves the way for technology and knowledge sharing and exposure to international best practices in satellite manufacturing and management providing long term benefits to ISRO.</li> <li>• Disaster resilience: UNESCAP predicts that, India loses 1.7% of its GDP every year owing to the damage caused by disasters. NISAR will provide crucial data to create hazard maps which will in turn result in targeted interventions in hazard management.</li> <li>• Spin-off effects: Unknown benefits can be yielded due to collaboration between ISRO and NASA as data from the observations of the Antarctic cryosphere can aid in managing Himalayan cryospheric ecosystems.</li> <li>• Spatial planning: Resolution of urban congestion, geo-tagging of assets, land allocation for housing and commercial purposes in hazard free zones and compensatory afforestation can be objectively fostered through the use of data collected from NISAR.</li> <li>• Awareness: Such missions will spark scientific fire in young minds to make them pursue astrophysics as a career option thereby improving the human resource base in the long run.</li> </ul> <p><b>Other joint-satellite missions realized by ISRO through international cooperation:</b></p> <ul style="list-style-type: none"> <li>• MEGHA-TROPIQUES: The joint Indo-French mission was launched in 2011 to study the tropical atmosphere and climate related aspects such as monsoons, cyclones etc.</li> <li>• SARAL: It was also a joint Indo-French mission to study ocean through altimetry. It was launched in 2013 and the data from it currently made available to global scientific community.</li> <li>• UNNATI: More than 60 participants from 30 countries have been accommodated in 8-week capacity building programme for nano-satellite development.</li> <li>• GAGANYAAN: India is collaborating with a host of countries like France, Russia and the US for its manned space mission. This marks a new era of space cooperation with collaboration in crucial missions impacting nation's soft power.</li> </ul>
<b>Conclusion</b>	Space is emerging to be the new arena of strategic cooperation apart from

	<p>its scientific and developmental benefits. Earth observation and hazard mapping have become important interventions in tackling climate change. Space cooperation missions like NISAR have great potential in exploring new boundaries through their spin-off effects. Greater private sector participation must also be ensured to garner investments and undertake riskier and unique missions in the space sector for holistic advancement.</p>
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**Q.35) ‘Artificial Intelligence (AI) has been making strides in resolving judicial delay around the world’. Discuss. What are the inherent threats posed by AI through its extensive use in resolving judicial delay? Suggest novel methods to counter these threats for the smooth roll-out of AI in judicial processes. 15 marks (250 words)**

Topic – Artificial Intelligence (AI)	
Introduction	<p>Artificial Intelligence (AI) refers to the systems endowed with the intellectual processes characteristic of the humans. AI can reason, learn from past experience, generalize and discover meaning on a wide span of issues. The use of AI in resolving judicial delay has been picking up pace as people become aware of their legal rights and exercise the same owing to higher per capita income and increasing literacy rates. Notwithstanding its benefits, AI comes with its own set of problems like privacy, cybersecurity etc. undermining judicial merit. Apart from these issues, it has been making giant strides in judicial sphere across the globe.</p>
Body	<ul style="list-style-type: none"> <li>• Examples of AI use in judiciary</li> <li>• Significance of AI use in judicial processes</li> <li>• Threats posed by AI</li> <li>• Methods to counter threats</li> </ul>
Conclusion	<p>Artificial Intelligence (AI) has the ability to alter the lives and livelihoods of millions of people around the world. Its use in judiciary is of great interest as the institution is plagued by record backlogs affecting the trust imposed by citizens in the judicial process. But it also comes with a basket of uninvited threats spanning from AI based cyber-attacks to social bias learnt through datasets. Thus, an agile approach involving the public and private sectors is necessary to make AI transformative by eliminating the multifarious risks that it poses as a disruptive technology that can mold or mar the future of both nations and individuals.</p>

<b>UPSC Syllabus</b>	<b>Artificial Intelligence (AI)</b>
<b>Why was this question asked?</b>	<b>Q:</b> Introduce the concept of Artificial Intelligence (AI). How does AI help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of AI in healthcare? <b>(UPSC CSE 2023)</b>
<b>Introduction</b>	Artificial Intelligence (AI) refers to the systems endowed with the intellectual processes characteristic of the humans. AI can reason, learn from past experience, generalize and discover meaning on a wide span of issues. The use of AI in resolving judicial delay has been picking up pace as people become aware of their legal rights and exercise the same owing to higher per capita income and increasing literacy rates. Notwithstanding its benefits, AI comes with its own set of problems like privacy, cybersecurity etc. undermining judicial merit. Apart from these issues, it has been making giant strides in judicial sphere across the globe.
<b>Body</b>	<p><b>Examples of AI use in judiciary:</b></p> <ul style="list-style-type: none"> <li>• Prometea AI, Argentina: It took 83 days to produce 1000 rulings regarding labor rights. With Prometea AI, it took 5 days. Thus, AI can significantly cut short administrative delay in justice administration.</li> <li>• AI Judge: Estonia is implementing ‘AI Judge’ project. The software tool will be fed with tons of legal documents and case laws. It will decide cases with disputed amount less than 7000 Euros.</li> <li>• SUVAS: An AI based tool called SUVAS (Supreme Court Vidhik Anuvaad Software) is being used to translate court judgements for better accessibility thereby breaking language barriers in justice delivery.</li> <li>• Casetext: It is a legal research tool used to find case laws, statutes and regulations easily and effectively for lawyers who dwell on encyclopedic books to extract case laws to argue their point.</li> </ul> <p><b>Significance of AI use in judicial processes</b></p> <ul style="list-style-type: none"> <li>• Judicial delay: Indian sub-ordinate courts are sitting on a heap of around 4 crore cases. This affects the trust in the judicial process. Thus, AI help resolve this pendency to a great extent.</li> <li>• Human rights: Article 21 of our Constitution earmarks the Right to Life as a fundamental right. But more than 2/3<sup>rd</sup> of the jail inmates are undertrials affecting owing to long drawn judicial process. AI use can resolve the long drawn judicial process and</li> </ul>

lead to their early release if not found guilty.

- **Accessibility:** Approaching courts has been a costly affair and understanding the processes and judgments in vernacular languages is near impossible due to the dearth of translators and associated staff. AI can resolve this to great extent thus improving accessibility to judiciary to vulnerable sections and budding lawyers.
- **Ease of doing business:** Deciding civil and commercial cases involves assessing large data sets regarding taxation, sales, auxiliary expenses etc. Thus, land disputes take a whopping 20 years to be resolved. AI can gaze through these large data sets and can aid in arriving at objective decisions. Thus, in the long run, it will improve ease of doing business.

### **Threats posed by AI**

- **Privacy:** In the Puttuswamy Judgement (2017), the Supreme Court remarked that the right to privacy as a part of the fundamental right under Article 21 of the Constitution. AI in judiciary and other fields and gather sensitive data without requisite encryption methodology. This may create a dent on the privacy of the common citizens.
- **Fictitious case laws:** In 2023, a Manhattan Federal Judge in the US fined \$5,000 against a lawyer for submitting fictitious legal research generated using ChatGPT. The platform autonomously conceptualizes new fictitious cases based on previous patterns fed into it.
- **Bias:** Racial, gender and caste based bias can be learnt by these AI platforms and provide biased judgements in return. It may also project the social bias prevalent in the minds of the coders and prompt writers.
- **Cyber security:** Recent cyber-attack on AIIMS compromised 4 crore health records with Rs. 200 crore as ransom. Such cyber-attacks may become the order of the day of significant judicial processes are decided through the use of AI.

### **Methods to counter threats**

- **Bletchley Declaration:** At the AI Safety Summit held in the UK in 2023, 29 countries came together to pledge to thwart both the unintended and intended risks posed by advanced AI. They intend to develop mechanisms to counter the threats posed by advanced AI. Their implementation on the ground holds great importance to make the AI safe, not just efficient.
- **Set of guidelines:** The UK Judiciary released a set of guidelines

	<p>prohibiting the use of generative AI in legal research and analysis except for composing mails and summarizing large bodies of text. Such guidelines must be released in India too.</p> <ul style="list-style-type: none"> <li>• Asilomar principles: Guidelines for AI should be inculcated at the research stage itself. A set of principles was accepted important though leaders from around the world on AI. Countries must enforce such principles to avert bias in AI predictions.</li> <li>• Global Partnership on AI: Multistakeholder groups have been created for exchanging views among the public, private and academic actors through multiple summits of the Global Partnership on Artificial Intelligence. This facilitates the development of broad standards which will achieve a certain degree of uniformity regarding AI regulation.</li> <li>• An in house regulatory mechanism for AI: India must develop its own in-house regulatory capacity for the development of AI. This will align India's AI regulations with the global norms and guidelines thereby facilitating ease of doing business as the multi-national companies transfer data across the borders on a day to day basis.</li> </ul>
<p><b>Conclusion</b></p>	<p>Artificial Intelligence (AI) has the ability to alter the lives and livelihoods of millions of people around the world. Its use in judiciary is of great interest as the institution is plagued by record backlogs affecting the trust imposed by citizens in the judicial process. But it also comes with a basket of uninvited threats spanning from AI based cyber-attacks to social bias learnt through datasets. Thus, an agile approach involving the public and private sectors is necessary to make AI transformative by eliminating the multifarious risks that it poses as a disruptive technology that can mold or mar the future of both nations and individuals.</p>

**Q.36) 'Nuclear energy, despite its advantages, forms a minimal portion of the total energy mix in India'. Discuss. What are the innovative mechanisms through which the share of nuclear energy in India's total energy mix can be increased? 15 marks (250 words)**

Topic – Nuclear Energy in India	
Introduction	Nuclear power has traveled a long way from being used a destructive tool to now being used mainly for civilian purposes. Apart from the threat of mutually assured destruction, the evolution of technology and safety features have increased its adoption. Despite the energy being clean and having the potential to cater to energy security needs, it faces lots of

	challenges which are of administrative, operational and technical nature. Their minimal contribution to India's energy mix demands a thorough analysis regarding the contours of nuclear energy adoption in India.
Body	<ul style="list-style-type: none"> <li>• Status of nuclear energy in India</li> <li>• Advantages of Nuclear Energy</li> <li>• Challenges for nuclear energy in India</li> <li>• Mechanisms to increase the share of nuclear energy</li> </ul>
Conclusion	Nuclear energy holds the promise to fulfill the goal of affordable and clean energy to all. With issues regarding storage of hydrogen fuel and volatility in the gas market, nuclear energy seems a viable option owing to the inherent advantages like peak load capacity and customization that it offers. But systematic efforts by stakeholders covering institutional, sectoral and society must be ensured for the smooth roll-out of nuclear energy that can meet India's increasing demands for clean and sustainable fuel.

<b>UPSC Syllabus</b>	<b>Nuclear Energy in India</b>
<b>Why was this question asked?</b>	<b>Q:</b> With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. <b>(UPSC CSE 2018)</b>
<b>Introduction</b>	Nuclear power has traveled a long way from being used a destructive tool to now being used mainly for civilian purposes. Apart from the threat of mutually assured destruction, the evolution of technology and safety features have increased its adoption. Despite the energy being clean and having the potential to cater to energy security needs, it faces lots of challenges which are of administrative, operational and technical nature. Their minimal contribution to India's energy mix demands a thorough analysis regarding the contours of nuclear energy adoption in India.
<b>Body</b>	<p><b>Status of nuclear energy in India</b></p> <ul style="list-style-type: none"> <li>• Nuclear energy contributed to 3.11% of the total power generation in India as of 2020-21.</li> <li>• It is the fifth largest source of electricity in India after coal, gas, hydroelectricity and wind-power.</li> <li>• India has 23 nuclear reactors with an installed capacity of 7.83 GW with 10 more reactors under construction with a combined capacity of 8 GW.</li> </ul>

- Indian nuclear plants suffer from low capacity factor owing to the lack of nuclear fuels as India is still transitioning into second stage of its nuclear programme to extensively use Thorium based fuels.

#### **Advantages of Nuclear Energy:**

- Clean fuel: India pledged at the UNFCCC, to reduce emission intensity of its GDP by 45% by 2030 from 2005 levels. Clean fuel supplied by nuclear plants will be a crucial factor in attaining this goal.
- Enough reserves: India boasts 25% of the world's Thorium reserves. With the 2<sup>nd</sup> phase of nuclear programme on cards, India can exploit its ample Thorium reserves to feed new nuclear power plants.
- Current Account Deficit: India relies on imports for 80% of its crude oil demand. Most of this is to fuel the automobile sector. Nuclear energy can drive Electric Vehicle adoption thereby reducing the imports of crude oil to satisfy automobile sector.
- Peak load: Nuclear power doesn't suffer from intermittency and seasonality associated with solar and wind energy. It can function throughout the year with a robust supply chain for fuel.
- Locational factors: Nuclear plants apart from geological factors and earthquake resilience, poses few locational challenges if any. They can be situated anywhere thereby reducing the distance between generation centers and demand centers.

#### **Challenges for nuclear energy in India**

- Safety concerns: The Civil Liability for Nuclear Damage Act, 2010 introduced supplier liability in addition to operator liability in case of a nuclear accident. This is against the annex in the Convention on Supplementary Compensation for Nuclear Damage, 1997. This higher liability becomes unattractive for foreign Original Equipment Manufacturers to supply components to India.
- India kept out of NSG: India is still out of the Nuclear Suppliers' Group due to a technical hold placed by China. This has hampered the easy access to modern nuclear technologies with better efficiency and safety profile.
- Competition: The capital cost involved in the construction of localized solar and wind energy plants is a just a miniscule proportion of the cost involved in commissioning a nuclear plant. Thus, nuclear energy faces stiff competition from solar and wind energy.

	<ul style="list-style-type: none"> <li>• Technology: India suffers from the dearth of requisite technology. This impedes its efficiency in streamlining the roll-out of more nuclear plants.</li> <li>• Land acquisition issues: Local citizen groups opposed the land acquisition for the Jaitapur Nuclear Powerplant fearing improper disposal of nuclear waste generated and risk of accidents associated with nuclear powerplants.</li> </ul> <p><b>Mechanisms to increase the share of nuclear energy</b></p> <ul style="list-style-type: none"> <li>• Awareness generation: Nuclear powerplants have received a lot of critical review despite their huge potential in energy security. Social and behavior change communication must be ensured to minimize the critical reviews attributed to them.</li> <li>• Diplomatic maneuvers: India should make serious efforts at the diplomatic high tables for its inclusion in the Nuclear Suppliers' Group (NSG). This will improve its access to cutting edge nuclear technologies with better safety record.</li> <li>• Social and technical audit: Citizens and experts must be engaged to assess the safety during the operation of nuclear plants. Any deviations in waste management through cutting corners by the company can be nixed at its bud itself.</li> <li>• Faster transition: India must ensure faster rollout of fast breeder reactors and eventual transition to thorium based reactors to achieve self-sufficiency in the supply of nuclear fuels. This will avert any incipient bottlenecks in the supply chain of fissile material.</li> <li>• Tweaks in liability: A sort of flexibility should be introduced in the liability regime to attract foreign equipment manufacturers to setup their plant in India. This can also boost local jobs while cutting costs in commissioning the nuclear plants.</li> </ul>
<p><b>Conclusion</b></p>	<p>Nuclear energy holds the promise to fulfill the goal of affordable and clean energy to all. With issues regarding storage of hydrogen fuel and volatility in the gas market, nuclear energy seems a viable option owing to the inherent advantages like peak load capacity and customization that it offers. But systematic efforts by stakeholders covering institutional, sectoral and society must be ensured for the smooth roll-out of nuclear energy that can meet India's increasing demands for clean and sustainable fuel.</p>

# Indian Economy

**Q.37) “India's gross Goods and Services Tax collections hit a record high of Rs 2.10 lakh crore in April 2024.” In light of the above statement, discuss the factors responsible for strong GST collections. Critically analyze the functioning of the Goods and Services Tax regime in the country. Suggest measures to make it more effective. 15 marks (250 words)**

Topic- Goods and Services Tax	
Introduction	Goods and Services Tax which was introduced on July 1, 2017 heralded a new integrated and technology intensive indirect tax regime replacing the complex Value Added Tax regime that was in vogue till then. Recently, monthly average GST revenues have gone from Rs. 82,294 crores in 2017-18 to Rs. 1.68 lakh crore in 2023-24 due to various factors.
Body	<ul style="list-style-type: none"> <li>• Factors driving strong GST collections</li> <li>• Achievements of the GST regime</li> <li>• Issues in the GST regime</li> <li>• Way forward</li> </ul>
Conclusion	Goods and Services Tax despite its drawbacks has brought structural changes in the indirect tax regime in the country. Further it has induced a behavioral shift among tax payers towards greater compliance. A still more robust GST can address the concerns of wide spectrum of stakeholders. Cooperative federalism along with inter-state cooperation is necessary to reform the GST regime to make it more effective, efficient and economic.

<b>UPSC Syllabus</b>	<b>Goods and Services Tax</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the rationale for introducing GST in India. Bring out critically the reasons for the delay in the rollout of the regime. (UPSC CSE 2013)</b>
<b>Introduction</b>	Goods and Services Tax which was introduced on July 1, 2017 heralded a new integrated and technology intensive indirect tax regime replacing the complex Value Added Tax regime that was in vogue till then. Recently, monthly average GST revenues have gone from Rs. 82,294 crores in 2017-18 to Rs. 1.68 lakh crore in 2023-24 due to various factors.

## Body

### Factors driving strong GST collections:

- Anti-fraud mechanism: Fake invoicing has been countered by using Business Intelligence and Fraud Analytics mechanisms that uses Artificial Intelligence and Big Data Analysis to counter frauds.
- Technology: E-way bill has made it nearly impossible to evade taxes during the interstate movement of goods. Through tracking and destination based taxation, there has been a consistent 10% growth in revenues year-on-year.
- Composition scheme: Composition scheme has reduced compliance burden amongst the MSME's while improving revenue collections.
- Stricter compliance norms: Linking of PAN cards, digitization of economy and time stamping of bills have tightened the compliance norms driving better collections.

### Achievements of the GST regime:

- **Record collections:** In April 2024, GST collections went past Rs. 2 lakh crore. This is one of the achievements of the GST regime compared to the previous regime where tax evasion gave rise to a strong parallel economy.
- **Constitutional promise:** Article 301 promises freedom of trade, commerce and intercourse across the length and breadth of India. E-way bill under GST has streamlined inter-state flow of goods by eliminating checks and long queues at inter-state borders.
- **Consumer:** Through input tax credit mechanism, GST has ensured customer centricity by minimizing the final price of goods for consumers and enforcing it through the National Anti-Profitteering Authority. Its functions have now been taken over by the Competition Commission of India.
- **Technology:** The GST Network forms the Information Technology backbone of the GST regime mitigating corruption in the collection system, reducing cost of collection and aiding informed policy making.
- **Global standard:** GST like system has been followed by many countries across the world like New Zealand, Singapore, Australia etc. Thus, it aligns with the global taxation standards.

### Issues in the GST regime:

- Glitches in the tax portal has more than often come under criticism notwithstanding cyber security concerns that lurks the

	<p>public service systems world over.</p> <ul style="list-style-type: none"> <li>• There have been reproaches against the 4 tax slabs that the present system has, affecting the simplicity of the tax regime.</li> <li>• How the regime can tax the large informal economy with a host of shell companies is still a mystery.</li> <li>• States have time and again voiced their concerns about the GST Compensation Scheme as the Centre failed to compensate States during the COVID contingency.</li> <li>• Crucial items like petrol, diesel, liquor and real estate have been kept out of the GST regime driving inflation and jeopardizing the holism that is a characteristic feature of the regime.</li> </ul> <p><b>Way forward:</b></p> <ul style="list-style-type: none"> <li>• Simplifying the tax portal to improve the compliance among the brick and mortar businesses and startups is a dire necessity.</li> <li>• Number of tax slabs should be reduced to two to reduce the complexity and improve compliance of the tax regime.</li> <li>• Essential items should invite zero rate to reduce burden on the under privileged sections of the society. For example, items like sanitary pads had invited 12% tax before 2018. It was tax exempted only after it drew widespread criticism.</li> <li>• Exempted items like petrol, liquor and real estate must be brought under the GST net to keep inflation under check in the long term.</li> <li>• A part of the GST must be shared with the local bodies as they too contribute to the growth of our economy and address people's problems at the cutting edge level.</li> </ul>
<p><b>Conclusion</b></p>	<p>Goods and Services Tax despite its drawbacks has brought structural changes in the indirect tax regime in the country. Further it has induced a behavioral shift among tax payers towards greater compliance. A still more robust GST can address the concerns of wide spectrum of stakeholders. Cooperative federalism along with inter-state cooperation is necessary to reform the GST regime to make it more effective, efficient and economic.</p>

**Q.38) Critically analyze the functioning of Telecom Regulatory Authority of India (TRAI) in recent years. What are the challenges faced by regulatory institutions in general in remaining independent and autonomous? Suggest pragmatic reforms necessitated to refine the functioning of these bodies. 15 marks (250 words)**

Topic- Statutory Bodies	
Introduction	Recently, the Supreme Court declined the administrative allocation of spectrum curtailing central government's discretion in allocation precious national resources. This assumes new found importance as the Telecommunications Bill, 2023 vested several regulatory functions in the hands of the Central Government affecting the regulatory writ of the Telecom Regulatory Authority of India (TRAI). TRAI as a regulatory body had its hits and misses as a neutral umpire regulating market competition.
Body	<ul style="list-style-type: none"> <li>• Achievements of the TRAI</li> <li>• Criticisms against the functioning of the TRAI</li> <li>• Challenges faced by regulatory institutions</li> <li>• Way forward</li> </ul>
Conclusion	Telecom Regulatory Authority of India (TRAI) is a victim of the larger malaise that is infested in the regulatory regime as a whole. Over the board reforms are necessary amidst the challenges faced by regulatory bodies. Political and bureaucratic will won't suffice. It also demands parliamentary and civil society oversight. It is only through these measures, the systemic issues plaguing the Indian regulatory scenario can be ameliorated.

<b>UPSC Syllabus</b>	<b>Statutory Bodies</b>
<b>Why was this question asked?</b>	<b>Q. Discuss the role of the Competition Commission of India in containing the abuse of dominant position by the Multi-National Corporations in India. Refer to the recent decisions. (UPSC CSE 2023)</b>
<b>Introduction</b>	Recently, the Supreme Court declined the administrative allocation of spectrum curtailing central government's discretion in allocation precious national resources. This assumes new found importance as the Telecommunications Bill, 2023 vested several regulatory functions in the hands of the Central Government affecting the regulatory writ of the Telecom Regulatory Authority of India (TRAI). TRAI as a regulatory body had its hits and misses as a neutral umpire regulating market competition.

## Body

### Achievements of the TRAI

- Tele density had grown by 1.92% in 50 years from 1948-98. But it grew by 18% in just 10 years of TRAI's existence from 1998 to 2008.
- Between 2014-20, there was an increase of 228% in the rural internet subscriber base. This has been possible in the backdrop of Telecommunications Tariff Orders released by TRAI from time to time.
- TRAI recently imposed Rs. 1 crore fine on a telecom operator for not taking action on consumers regarding Unsolicited Commercial Calls (UCC) that result in deductions for unsuspecting consumers in the name of caller tunes and value added services.
- TRAI facilitated the swift rollout of 5G and also recommended visionary objectives like inculcating telecom infrastructure in the National Building Code.
- Recognizing the Telecom as a sunrise sector, TRAI floated consultation paper on National Broadcasting Policy so as to make India a 'Global Content Hub'.

### Criticisms against the functioning of the TRAI

- Call drop problem: Recent spate of call drops has affected the quality of telecommunication service. TRAI has been found wanting in devising decisive responses to ameliorate the problem.
- 2 player scenario: VI lost 6.8 lakh subscribers in March, 2024. Predatory pricing and aggressive customer acquisition has led to a 2 player scenario affecting competition.
- Basic mobiles: The tariff for basic mobile phones have been shunted into irrelevance as a 4G monthly validity pack and a tariff pack for basic mobile phone costs the same.
- Telecommunications Bill, 2023: The bill severely curtailed the writ of TRAI apart from allowing the appointment of a person from the private sector as the TRAI Chairman. Critics argue that it may lead to favoritism and lead to a spoils system of sorts.
- Trust deficit: TRAI has floated consultation paper on licensing and regulating Online Communication Services like voice messaging and video calls on whatsapp, skype, etc. This attracted rebuke from industry doyens demonstrating trust deficit between the industry and The TRAI since TRAI can break end-end encryption and store data transmitted through these Online Communication Services.

	<p><b>Challenges faced by regulatory institutions</b></p> <ul style="list-style-type: none"> <li>• Overlapping jurisdiction: Contention between IRDAI and SEBI over the Unit Linked Insurance Policy is a case in point where overlapping jurisdiction leads to unnecessary litigation jeopardizing the animal spirits of investors.</li> <li>• Vacancy: Many regulator bodies are plagued by vacancies with no timely appointments affecting their efficient functioning.</li> <li>• Policies: Policy stability is a concern posed by regulatory bodies. Constant tussle involving Adjusted Gross Revenue issue affected the viability of Vodafone-India in the Indian telecom scenario.</li> <li>• Poor oversight: 66 children died in Gambia after consuming Indian made cough syrup. This demonstrated the poor oversight and regulatory capacity of regulatory bodies.</li> <li>• Customization: Small and Medium Enterprises (SMEs) don't have a specific regulator to resolve their concerns with respect to unfair competition from big companies, labour issues and certification procedures.</li> </ul> <p><b>Way forward</b></p> <ul style="list-style-type: none"> <li>• Damodaran Committee recommended a super regulator to make transparent and timely appointments, transfers and other issues facing regulatory bodies.</li> <li>• Rationalization of multiple regulators improving role and goal clarity is the need of the hour to improve their efficiency.</li> <li>• Policy stability with a long term vision plan that addresses the concerns of industry stakeholders cannot be overstated for establishing a sound regulatory regime in India.</li> <li>• Vacancies must be filled in a time bound manner with Parliamentary oversight thereby improving the accountability of individual stakeholders.</li> <li>• Customized regulatory bodies in new arenas like AI, MSMEs, Fintech etc are necessary for making India an attractive destination to unicorns and startups thereby reaping the demographic dividend in an efficient manner.</li> </ul>
<p><b>Conclusion</b></p>	<p>Telecom Regulatory Authority of India (TRAI) is a victim of the larger malaise that is infested in the regulatory regime as a whole. Over the board reforms are necessary amidst the challenges faced by regulatory bodies. Political and bureaucratic will won't suffice. It also demands parliamentary and civil society oversight. It is only through these measures, the systemic issues plaguing the Indian regulatory scenario can be ameliorated.</p>

**Q.39) Inheritance tax was in news recently. State the differences between wealth tax and inheritance tax. Critically analyze the imposition of such a tax and need for reforms in the present direct tax's regime. 15 marks, 250 words)**

Topic- Taxation in India	
<b>Introduction</b>	An Oxfam Report named “Survival of the Richest” released in 2023 stated that from 2012 to 2021 40% of the wealth generated had gone to top 1% of the population. In this backdrop, there have been calls to impose an inheritance tax with its own pros and cons. This points at the structural issues that have been hollowing out the core of the India’s direct taxes regime.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Differences between wealth tax and inheritance tax</li> <li>• Merits of imposing inheritance tax</li> <li>• Demerits of imposing inheritance tax</li> <li>• Reforms required in the Direct Taxes Regime</li> </ul>
<b>Conclusion</b>	Inheritance tax has found its admirers because of the reeling poverty and high inequality post liberalization that profoundly impacted the Indian economy. But it comes with its baggage of grievous dysfunctions which can hamper entrepreneurial spirit obstructing full exploitation of India’s demographic dividend. Thus, there is a necessity to reform the present direct taxes regime to make it more progressive by reducing tax rates, broadening tax base and improving compliance so that it may satisfy every stakeholder who complements the economic growth of India.

<b>UPSC Syllabus</b>	<b>Taxation in India</b>
<b>Why was this question asked?</b>	<b>Q.</b> Do you agree with the view that, in a country like India, a tax on wealth would be a useful supplement to the income tax? Argue the case in the light of Raja Chelliah Tax Reform Committee Report. <b>(UPSC CSE 1995)</b>
<b>Introduction</b>	An Oxfam Report named “Survival of the Richest” released in 2023 stated that from 2012 to 2021 40% of the wealth generated had gone to top 1% of the population. In this backdrop, there have been calls to impose an inheritance tax with its own pros and cons. This points at the structural issues that have been hollowing out the core of the India’s direct taxes regime.
<b>Body</b>	<b>Differences between wealth tax and inheritance tax:</b>

- Wealth tax is a tax imposed on earned income. It was levied at 1% of the net income of an individual earning above Rs. 30 lakh drawing its powers from the Wealth Tax Act of 1957.
- On the other hand, inheritance tax is imposed on unearned income of an individual like property or assets inherited from the parents. In India, Estates Duty was imposed as a variant of inheritance tax at a high rate of 85% drawing its powers from the Estate Duty Act, 1953.
- The Wealth Tax was abolished by the Union Budget 2016-17 and replaced by a surcharge of 2% on those earning above Rs. 1 crore annually. Inheritance tax was also abolished in 1985 due to administrative costs and concerns associated with collecting the tax.
- A wealth tax is not a one-time exercise; it is levied annually on the earned income. On the other hand, inheritance tax is levied only during the actual inheritance of property from parents. Thus, it is a one-time exercise.

#### **Merits of imposing inheritance tax:**

- Income inequality: The number of billionaires in the country increased from 101 to 166 between 2020 and 2022 at the height of COVID-19 crisis. This points at a regressive tax regime that perpetrates inequality thus solidifying the claims to impose inheritance tax.
- Political voice: Recent electoral bonds saga demonstrates that those super rich funding the political parties have a disproportionate voice in determining policies of the nation. Thus, the amount of wealth a person holds has become directly proportional to the strength of his political voice. This calls for such a tax to bolster the political voice of the poor and the marginalized by reducing inequality through such a tax.
- Demand generation: Any productive economy slows down if there is no consumption growth. High inequality hampers consumption consequently savings and investments. Demand generation becomes orphan in such a setup calling for the levying of an inheritance tax.
- Diversifying economy: Revenue generated from inheritance tax can fund diversified set of innovations by a broad spectrum of stakeholders owing to redistribution effect. Thus, it can diversify economic activities in the long term.
- Social expenditure: Japan has 55% inheritance tax despite being

an advanced country. This has resulted in Japan having inequality less than the OECD average. Thus, inheritance tax can fund social expenditure on health, education and skill development improving the human development and reducing inequality in the long term.

**Demerits of imposing inheritance tax:**

- Money laundering: 1970s was the height of black economy in India. Hawala, underworld and political economy operated in tandem due to such wealth disincentivising inheritance tax.
- Flight of super-rich: According to the Henley Private Health Migration Report, around 6,500 millionaires rescinded their Indian citizenship in 2023 to permanently settle abroad. This affects the investment potential as these are angel investors watering Indian startups to become unicorns of the future.
- Dwarfism: A psychological conditioning may infest the commercial minds whereby any growth and wealth accumulation would be deemed as a futile effort as the government may absorb it in future. A sort of dwarfism in Indian companies with great potential might be witnessed that come short in capital, competition and scale with global majors like Walmart, Tesla, JPMorgan etc., in their respective fields.
- Tax expenditure: Estate duty was abolished in 1985. Redemptions, deductions, objective assessment and cost of collection made it an unattractive proposition. In this era of bitcoins and digital money, any such inheritance tax can drive honest tax payers to become tax evaders using cryptocurrencies and other such mechanisms.
- The case of China: As labor costs surge in China, complex manufacturing giants are exploring their bases in India to cut costs. This can drive employment and innovation in India. Inheritance tax, if proposed can make these giants lose their steam regarding shifting their base to India.

**Reforms required in the Direct Taxes Regime:**

- The composition of direct tax in the total tax revenue has gone down from 21% in 1970 to 14% in 1990. This points at the narrow tax base. Thus, broadening the tax base mitigating impact of regressive taxes (indirect tax) like GST is of great import to make India a \$5 trillion economy.
- There is no tax on agriculture. Small farmers holding less than 2 hectares are at parity with an agriculturist holding 100 hectares.

	<p>This hypocrisy in the name of food security has become a bane for the progressive taxation regime further driving inequality.</p> <ul style="list-style-type: none"> <li>• Direct tax to GDP ratio in India is 6.5% versus 33% in OECD countries. Large companies claim enormous deductions effectively paying zero or nil taxes thus hampering overall development.</li> <li>• There are more than half a dozen income tax slabs in India. Simplicity and compliance becomes a cruel joke in such a system inhibiting awareness and filing of taxes. Therefore, a direct taxes code is necessary to dismantle this Gordian knot.</li> <li>• Enormous tax rates on corporations incentivized them to evade taxes through treaty shopping, tax avoidance, inaccurate financial statements etc. Thus, rationalization of tax rates on corporations cannot be overstated.</li> </ul>
<b>Conclusion</b>	<p>Inheritance tax has found its admirers because of the reeling poverty and high inequality post liberalization that profoundly impacted the Indian economy. But it comes with its baggage of grievous dysfunctions which can hamper entrepreneurial spirit obstructing full exploitation of India's demographic dividend. Thus, there is a necessity to reform the present direct taxes regime to make it more progressive by reducing tax rates, broadening tax base and improving compliance so that it may satisfy every stakeholder who complements the economic growth of India.</p>

**Q.40) Tourism as a sector despite its enormous potential suffered heavily due to the COVID-19 pandemic highlighting the systemic weaknesses in the sector. But lifting of lockdown norms led to revenge tourism resulting in uninvited problems. Discuss. Mention the interventions of the government to promote tourism. Highlight how tourism can be made more sustainable and remunerative for holistic development. 15 marks, 250 words)**

Topic- Tourism sector	
Introduction	<p>India is the world's most populous country with both intra and interstate tourism getting a fillip amidst growing per capita incomes. In this backdrop, tourism as a part of the service sector has been a go to option for lakhs for a steady employment. Of late the sector as a whole has come global scrutiny for its disastrous impacts on environment. Further, the systemic issues plaguing the sector has also gained spotlight necessitating further reforms.</p>

<b>Body</b>	<ul style="list-style-type: none"> <li>• Potential of the tourism sector</li> <li>• Systemic weaknesses in the sector</li> <li>• Interventions by the government to promote tourism</li> <li>• Making tourism into a More sustainable venture</li> <li>• Way Ahead</li> </ul>
<b>Conclusion</b>	<p>Tourism can enhance income, develop heritage and project soft power of a country; but it faces certain challenges including seasonal nature, poor policy support and poor skill quotient among the service providers. These systemic issues need holistic redressal before turning the Dharamsala Declaration into a living reality. Supporting schemes like UDAN, Bharatmala and Sagarmala which address the ‘access’ dimension of the tourism sector should also be given due emphasis to make tourism a thriving sector satisfying the developmental aspirations.</p>

<b>UPSC Syllabus</b>	<b>Tourism sector</b>
<b>Why was this question asked?</b>	<p><b>Q.</b> The issue of tourism in core areas of tiger reserve forests in the country is a subject matter of debate. Critically examine various aspects of this issue, keeping in view relevant recent judicial pronouncements. <b>(UPSC CSE 2012)</b></p>
<b>Introduction</b>	<p>India is the world’s most populous country with both intra and interstate tourism getting a fillip amidst growing per capita incomes. In this backdrop, tourism as a part of the service sector has been a go to option for lakhs for a steady employment. Of late the sector as a whole has come global scrutiny for its disastrous impacts on environment. Further, the systemic issues plaguing the sector has also gained spotlight necessitating further reforms.</p>
<b>Body</b>	<p><b>Potential of the tourism sector:</b></p> <ul style="list-style-type: none"> <li>• <b>Employment:</b> As per The Ministry of Tourism, Travel and Tourism as a sector had provided 8 crore direct and indirect jobs in the year 2019-20. Thus, tourism is a major sector to exploit demographic dividend of India.</li> <li>• <b>Cultural preservation:</b> Cultural circuits like Kashi Vishwanath Circuit, Buddhist Circuit and Sufi Circuit induces the regional governments to culturally preserve these places to garner more revenue out of incoming tourists.</li> <li>• <b>Awareness:</b> Tourism is a tool to raise awareness regarding declining natural resources. Jungle Safaris are not just an</li> </ul>

adventure activity; they are learning experiences of a lifetime. Further, tourism increases the soft power of a country.

- Security: Jammu and Kashmir faces sky-high unemployment. This drives youth towards militancy. Exploiting the full potential of tourism in such places can curb the unemployment in turn mitigating the militancy.

#### **Systemic weaknesses in the sector:**

- Fragmented: The sector as a whole is fragmented, unorganized and unskilled. Lack of competency in foreign language further affects the attractiveness of Indian tourist destinations.
- Unsustainable: Revenge tourism after COVID-19 and traffic jams in remote Joshimath and the issue of land subsidence there has further affected the sustainability credentials of the sector.
- Seasonal: Tourism is mainly seasonal. Examples like Amarnath Yatra, eco-tourism, etc. are seasonal. They don't provide jobs year round highlighting the inherent vulnerabilities in the sector.
- Variety: India has an underdeveloped adventure, academic, MICE (Meetings, Incentives, Conferences and Exhibitions) and tribal tourism sector despite inherent advantages India enjoys in these themes.

#### **Interventions by the government to promote tourism:**

- Swadesh Darshan Scheme: Infrastructure and human capital development along with destination management is done under the scheme that was launched in 2015.
- Dharamsala Declaration: It envisages long term revenue goal of \$ 1 trillion through tourism by 2047. It aims at making India a global leader in tourism.
- PRASHAD Scheme: Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive provides financial assistance to the State governments for infrastructure development at tourist destinations.
- VISA on arrival: e-VISA and VISA on arrival have been extended to the citizens of 167 countries in medical, AYUSH, business, tourist categories.
- Dekho Apna Desh Initiative: Promotional activities are undertaken to increase tourism in more than 50 destinations across the country.

#### **Making tourism into a more sustainable venture:**

- Judicial activism: National Green Tribunal and Judiciary have

	<p>been active in regulating tourism by inviting writ petitions. Taj Trapezium Zone to regulate polluting vehicles and industries around Taj Mahal was a result of judicial verdict.</p> <ul style="list-style-type: none"> <li>• Entry pass: Carrying capacity of environmentally and geologically sensitive places must be calculated beforehand and entry passes must be fixed in a year to promote sustainable tourism.</li> </ul> <p><b>Way Ahead</b></p> <ul style="list-style-type: none"> <li>• A separate tourist police trained in specifics of hospitality must be conceptualized to ensure safety of tourists amid rising concerns regarding fraud and sexual harassments against foreign tourists.</li> <li>• Foreign language training, sensitization of hawkers, sellers and hoteliers apart from unions among workers of tourism sector can regulate prices of various services while improving bargaining power of these unorganized workers.</li> <li>• Further standardization of destinations through certifications like Blue Flag verification for beaches can help ensure more tourist outfall at a destination.</li> </ul>
<p><b>Conclusion</b></p>	<p>Tourism can enhance income, develop heritage and project soft power of a country; but it faces certain challenges including seasonal nature, poor policy support and poor skill quotient among the service providers. These systemic issues need holistic redressal before turning the Dharamsala Declaration into a living reality. Supporting schemes like UDAN, Bharatmala and Sagarmala which address the ‘access’ dimension of the tourism sector should also be given due emphasis to make tourism a thriving sector satisfying the developmental aspirations.</p>

**Q.41) ‘The Micro, Small and Medium Enterprises (MSMEs) in our country have failed to realise their full potential’. In light of the above statement, state the significance of MSMEs in the country’s economic growth and mention the problems faced by them at multiple levels. Elaborate on the measures required to rejuvenate them. (15 marks, 250 words)**

<p>Topic- Manufacturing sector in India</p>	
<p>Introduction</p>	<p>Micro, Small and Medium Enterprises (MSMEs) have been the building blocks of India’s industrial ecosystem. Their importance lies in their potential of providing employment, contributing to exports and in ensuring balanced regional development. Of the 6.4 crore MSMEs nearly 99% qualify as micro enterprises with most of them being in the unorganized</p>

	sector facing challenges at multiple levels. A thorough review of their functioning is necessary to arrive at the possible solutions to resolve their plight.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Significance of MSMEs in the country's economic growth</li> <li>• Multidimensional problems faced by MSMEs</li> <li>• Procedural level</li> <li>• Operational level</li> <li>• Measures required to rejuvenate</li> </ul>
<b>Conclusion</b>	Micro, Small and Medium Enterprises (MSMEs) play a critical role in an economy that is marred by jobless growth and inadequate investment rates. MSMEs suffer from various bottlenecks that affect their growth trajectory by hindering access to markets, capital and skilled human resources. Thus a motley of interventions is necessary from formalizing their presence to exploring their market potentials in near and far away nations. Only then they can clock double digit growth, come out of the dwarfism phenomenon and contribute to India becoming a \$5 trillion economy.

<b>UPSC Syllabus</b>	<b>Manufacturing sector in India</b>
<b>Why was this question asked?</b>	<b>Q.</b> Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard. <b>(UPSC CSE 2023)</b>
<b>Introduction</b>	Micro, Small and Medium Enterprises (MSMEs) have been the building blocks of India's industrial ecosystem. Their importance lies in their potential of providing employment, contributing to exports and in ensuring balanced regional development. Of the 6.4 crore MSMEs nearly 99% qualify as micro enterprises with most of them being in the unorganized sector facing challenges at multiple levels. A thorough review of their functioning is necessary to arrive at the possible solutions to resolve their plight.
<b>Body</b>	<p><b>Significance of MSMEs in the country's economic growth</b></p> <ul style="list-style-type: none"> <li>• It contributes to 29% of the Indian GDP. Thus, it plays a crucial role in India's growth story.</li> <li>• MSMEs contribute to 45% of the total goods exports. Thus, they are crucial for India in earning her precious foreign exchange.</li> <li>• Balanced Regional development would be a wishful thinking without MSMEs as 60% of the MSMEs belong to rural India.</li> </ul>

- MSMEs contribute to leveraging the demographic dividend as it is the second largest employer after the agriculture sector.
- Inclusive development is fostered by the MSMEs as 20% of them are owned by women.

### **Multidimensional problems faced by MSMEs:**

#### **Procedural level-**

- Average insolvency process takes approximately 8 years for MSMEs. This further increases the compliance cost and quicker exit hindering efficient use of capital in profitable ventures.
- More than 90% of the MSMEs are in unorganised sector with poor labour and safety regulations and are inaccessible to government initiatives that improve the position of MSMEs
- Many MNCs delay payments by a quarter jeopardizing cash inflows of these MSMEs and compromising their growth in the long run.
- According to the Asian Development Bank, 78% of the finance used by MSMEs is being met by informal sources increasing their cost of operations while decreasing the price competitiveness of their products.

#### **Operational level**

- Dwarfism – They suffer from a phenomenon called dwarfism. MSMEs avoid growing bigger to evade increased compliance burden regarding taxes, reporting etc. that is applicable for large firms. Thus, MSMEs don't achieve their full potential.
- Certification - Quality checks and certification issues plague MSMEs. Without cost effective mechanisms regarding this, they suffer from low export revenues.
- Digital presence - Currently less than 10% of the MSMEs sell their products digitally. This affects their market reach and thereby revenues.
- Fourth Industrial Revolution – Labour intensive MSMEs face stiff competition from MSMEs that have automated processes. Unemployment is a systemic challenge that the MSME sector is facing and will face in future.

#### **Measures required to rejuvenate**

- Delayed Payments – SAMADHAN, a delayed payment monitoring system was put in place where the buyer would pay a compound interest on the amount to be paid to the supplier for any payment delay beyond 45 days. Its implementation is of

	<p>great essence.</p> <ul style="list-style-type: none"> <li>• Registration – Efforts must be taken towards registering the MSMEs on the UDYAM portal which allows the MSMEs access collateral free loans from banks and financial institutions.</li> <li>• Implementing UK Sinha Committee recommendations – The committee had recommended to establish a government sponsored ‘Fund of Funds’ and to aggressively on-board MSMEs on digital platforms for marketing, procurement and receiving government benefits targeting MSMEs.</li> <li>• Clusters – Government can establish a separate cluster for MSMEs near major markets to facilitate knowledge transfer, access capital at competitive rates and gauge market demand all at once.</li> <li>• Certifications – A low cost certification mechanism must be devised for MSME products to fully exploit their export potential in the long term.</li> <li>• Innovation – Regional initiatives on the lines of the ASPIRE Scheme should be explored by setting up technology and incubation centres to promote entrepreneurship.</li> </ul>
<p><b>Conclusion</b></p>	<p>Micro, Small and Medium Enterprises (MSMEs) play a critical role in an economy that is marred by jobless growth and inadequate investment rates. MSMEs suffer from various bottlenecks that affect their growth trajectory by hindering access to markets, capital and skilled human resources. Thus a motley of interventions is necessary from formalizing their presence to exploring their market potentials in near and far away nations. Only then they can clock double digit growth, come out of the dwarfism phenomenon and contribute to India becoming a \$5 trillion economy.</p>

**Q.42) ‘A lack of infrastructure development signals barriers to growth and overall development. In light of the above statement, discuss the systemic problems faced in Infrastructure financing in India. Critically analyse the impact of the recently proposed framework of the Reserve Bank of India (RBI) to administer project financing. (15 marks, 250 words)**

<p>Topic- Infrastructure Financing</p>	
<p>Introduction</p>	<p>India has still been categorized as a lower middle-income country. Its growth has been impeded by the ailing infrastructure sector wanting in many aspects like clearances, safety and affordable and timely finance. In this regard, the Reserve Bank of India (RBI) recently came out with a framework</p>

	to administer project financing which has received critical reviews demanding more innovative measures to address the problem of infrastructure financing.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Systemic problems in Infrastructure financing</li> <li>• Fallouts of these problems</li> <li>• Pros of the RBI proposed framework</li> <li>• Cons of the RBI proposed framework</li> <li>• Further measures required</li> </ul>
<b>Conclusion</b>	Infrastructure is the backbone of an India that aims at satisfying the aspirations of 1.4 billion people. Its financing remains a simmering problem owing to sustained NPA problem, scarcity of finance, host of regulatory issues etc. This will impede the dream of India becoming \$5 trillion economy by achieving double digit growth. Innovative measures like deepening bond market, unique finance mechanisms and regulatory oversight are necessary to resolve this picture so that the bottlenecks in the infrastructure financing are resolved to a great extent.

<b>UPSC Syllabus</b>	<b>Infrastructure Financing</b>
<b>Why was this question asked?</b>	<b>Q.</b> Domestic resource mobilization, though central to the process of Indian economic growth, is characterized by several constraints? Explain. (UPSC CSE 2012)
<b>Introduction</b>	India has still been categorized as a lower middle-income country. Its growth has been impeded by the ailing infrastructure sector wanting in many aspects like clearances, safety and affordable and timely finance. In this regard, the Reserve Bank of India (RBI) recently came out with a framework to administer project financing which has received critical reviews demanding more innovative measures to address the problem of infrastructure financing.
<b>Body</b>	<p><b>Systemic problems in Infrastructure financing</b></p> <ul style="list-style-type: none"> <li>• NPA: The Infrastructure Leasing and Financing Services saga boomeranged the Non-Performing Assists (NPA) problem shooting up the cost of finance. This has strangulated the ease of infrastructure financing.</li> <li>• Clearances: Environmental, legal and administrative clearances come to haunt the infrastructure financing scenario. The best example is the limping Bullet Train Project plagued by</li> </ul>

litigations and land acquisition issues.

- Concessionaire agreements: Often bidders in Public Private Partnerships enthusiastically quote unrealistic bids and then find it difficult to fulfill project objectives. Thus, projects with such faulty concessionaire agreements find it hard time in accessing funds.
- Scarcity: As per the Isher Judge Ahluwalia Committee, India needs investments of approximately Rs. 40 lakh crore by 2030 in urban infrastructure to cater to its basic needs. But the realized sum is just a miniscule proportion of the requirement.

#### **Fallouts of these problems**

- Unemployment: According to CMIE, the unemployment rate in March, 2024 was 7.6%. Ancillary industries catering to infrastructure needs face job losses on the account of bottlenecks in infrastructure financing.
- Logistics cost: The logistics cost in India is 15% of the GDP versus 8% in OECD countries. This affects trade, commerce, real estate and sectors with promising export potential for the detriment of the nation.
- Balanced regional development: Development of peri urban and Tier 3 cities is jeopardized due to issues in infrastructure financing. This affects the long cherished goal of balanced regional development.
- Marketing: Rural to urban connectivity is impeded due to poor road infrastructure threatening market connectivity for farm produce. Doubling farmers' income would be a pipe dream without affordable infrastructure financing.

#### **Pros of the RBI proposed framework**

- Project delay: A review by the Ministry of Statistics and Programme Implementation in March, 2024 showed that nearly 50% of the 1,837 infrastructure projects were delayed. The RBI proposed framework is expected to reduce this by strict prudential norms while accessing finance.
- Clearances: It mandates that all mandatory pre-requisites must be in place before the financial closure. Thus, concerns of project delay after being financed is averted.
- Contingency: In exceptional circumstances, like increase in the scope and size of the project can invoke change in the schedule of the project. This provision has been carved out by the RBI to

	<p>induce certain flexibility in the framework.</p> <p><b>Cons of the RBI proposed framework</b></p> <ul style="list-style-type: none"> <li>• Provisioning: It mandates 5% provisioning against the total exposure by the banks at the construction stage itself. This may affect the credit disbursement by the banks in the short term.</li> <li>• Social impact: Positive Net Present Value of the project is a must before the banks disburse finance. This may affect infrastructure projects in peri urban and rural areas as these projects are socially viable as they have a role in minimizing poverty but not viable economically.</li> <li>• Cost of finance: Mandating prior clearances before accessing finance can lead to higher compliance costs and increase the overall cost of finance.</li> </ul> <p><b>Further measures required</b></p> <ul style="list-style-type: none"> <li>• Blended finance: Banks and Non-Banking Financial Companies (NBFCs) together can finance projects. After funding for few years, banks can handover these exposures to NBFCs since the nature of banks' deposits don't permit them to extend credit for longer duration.</li> <li>• Certification systems: Entities developing projects must be graded based on the past performance, compliance with regulatory norms and timely completion. It helps in allotting risky and crucial projects to those meeting certain criteria.</li> <li>• India Infrastructure Project Development Fund: The Rs. 100 crore corpus created under this mechanism must be fully utilized to develop feasible corpus of PPP projects and to execute them as and when the need arises.</li> <li>• Bond market: India's corporate bond market stood at 17% of the GDP in 2022 versus 86% of the GDP in South Korea. This poor penetration must be resolved by providing platforms for trading corporate bonds and respective guarantee mechanism for their better reach.</li> </ul>
<p><b>Conclusion</b></p>	<p>Infrastructure is the backbone of an India that aims at satisfying the aspirations of 1.4 billion people. Its financing remains a simmering problem owing to sustained NPA problem, scarcity of finance, host of regulatory issues etc. This will impede the dream of India becoming \$5 trillion economy by achieving double digit growth. Innovative measures like deepening bond market, unique finance mechanisms and regulatory oversight are necessary to resolve this picture so that the bottlenecks in</p>

	the infrastructure financing are resolved to a great extent.
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**Q.43) 'Depending on its nature, declining savings rate has numerous impacts on the nation's economic growth.' Analyse. What are the reasons attributed to India's sub-optimal household savings rate in recent years? Enumerate the measures necessary to increase the household savings rate. (15 marks, 250 words)**

Topic- Household savings	
<b>Introduction</b>	India aims at becoming a \$5 trillion economy riding on a double digit growth rate. Reaching and sustaining this growth trajectory demands that the savings rate doesn't dip beyond a certain threshold. Various reports point towards a declining savings and investment rates that can have impacts like unemployment, rising current account deficits and stunted infrastructure growth. The reasons behind this phenomenon must be explored to take novel measures to overcome the systemic challenge of low savings rate.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Impact of decline in savings rate</li> <li>• Social and Political Causes</li> <li>• Economic and External Causes</li> <li>• Measures necessary to increase India's household savings rate</li> </ul>
<b>Conclusion</b>	India's savings rate has declined from 22.7% in 2021-22 to 18.4% in 2022-23. This dip in the savings rate can have contagion effect on the whole economy. Challenges like inflation, jobless growth and poor monetary policy transmission can be attributed to this phenomenon. But targeted measures are necessary to increase the savings rate which in turn leads to greater investments and a crowding in of crucial Foreign Direct Investment. Thus a comprehensive bucket of institutional and cross-sectoral measures like deepening bond market, benchmarking lending rates, transition to greening transport etc. is necessary to sustain the household savings rate in the long run.

<b>UPSC Syllabus</b>	<b>Household savings</b>
<b>Why was this question asked?</b>	<b>Q:</b> Among the several factors for India's potential growth, savings rate is the most effective one. Do you agree? What are the other factors available for growth potential? (UPSC CSE 2016)
<b>Introduction</b>	India aims at becoming a \$5 trillion economy riding on a double-digit growth rate. Reaching and sustaining this growth trajectory demands that the savings rate doesn't dip beyond a certain threshold. Various

	<p>reports point towards a declining savings and investment rates that can have impacts like unemployment, rising current account deficits and stunted infrastructure growth. The reasons behind this phenomenon must be explored to take novel measures to overcome the systemic challenge of low savings rate.</p>
<p><b>Body</b></p>	<p><b>Impact of decline in savings rate:</b></p> <ul style="list-style-type: none"> <li>• Lower capital investments: Poor savings rate has a negative impact on capital investments. With 39.2 lakh crore of funding needs to boost urban infrastructure by 2030 as per the Ahluwalia Committee, low savings rate paints a grim picture on the capital investment scenario.</li> <li>• Current Account Deficit: Low savings rate results in high rates of interests for borrowing. Thus governments have to tap foreign sources for funds at cheaper rates. This fuels a cycle of consistent current account deficits.</li> <li>• Unemployment: As capital investment is scarce owing to lower savings rate, increased unemployment will be a natural consequence of it.</li> <li>• Crowding out effect: Firms borrow from banks for their investments in operations and machinery. Higher rate of interest on loans poses a tight option for firms. Either their operations slow down or altogether they may wind up their operations.</li> </ul> <p><b>Reasons behind India's sub-optimal household savings rate:</b></p> <p><b>Social Causes:</b></p> <ul style="list-style-type: none"> <li>• Rising Out of Pocket Expenditure on health amidst the rise of non-communicable diseases and waves of infectious diseases like COVID and NIPAH.</li> <li>• The higher education scenario is plagued by hefty donations on admissions and lack of industry relevant syllabus further affecting employability of college passouts. This reduced earning ability despite costly education has dented the household savings rate.</li> </ul> <p><b>Political Causes:</b></p> <ul style="list-style-type: none"> <li>• Geopolitical conflicts like the Russia-Ukraine war has led to skyrocketing in the prices of essential goods. The resulting inflation has had a dampening effect on the savings rate.</li> <li>• Freebies announced by various state governments is also one of the prime factors driving demand driven inflation in turn affecting the savings rate of the households.</li> </ul>

### **Economic Causes:**

- Lag in monetary policy transmission has hindered the anti-inflation measures taken by the RBI. The delay has complements the poor savings rate.
- India is facing a structural issue of stunted manufacturing sector and its subsequent contribution to the GDP. Labor intensive manufacturing industries are on the decline due to automation. All these chain of events lead to unemployment and further dip in the household savings rate.

### **External Causes:**

- Trade wars, protectionism and currency manipulation have led to record high current account deficits and low foreign exchange reserves. All these force the interest rates on borrowing to become dearer. This dearer borrowing rates stunts investments and in turn leads to poor savings rate.
- Capital flight due to fluctuations in the FEDX rate in the US also impacts access to affordable finances for industrialists in India. This is also one of the prime reasons fueling low savings rate.

### **Measures necessary to increase India's household savings rate:**

- Check on inflation: The RBI through moral suasion and other such means impose a check on inflation. Further, the Government must take necessary measures rein in inflation in the price of essential goods through market intervention operations.
- Policies: Labour intensive industries must be promoted. Production Linked Incentive like schemes in the MSME sector with export orientation must be given due emphasis to increase the savings rate and curb inequality.
- Bond market: India's corporate bond market is just 17% of the GDP versus 86% of the GDP in South Korea. Deepening bond market leads to investments and this in turn may boost the household savings rate.
- EBLR: For better monetary policy transmission, the RBI mandated External Benchmark Based Lending Rate (EBLR). Along with this, long term repo operations must be frequently resorted, to improve the monetary policy transmission and thereby reduce the cost of borrowing.
- EV: Indian relies on import for 80% of its crude oil needs which may reach upto \$104 billion in 2025. Any cuts by the OPEC can

	drive up inflation in India dampening the savings rate. Thus, a time bound transition to Electric Vehicles (EV) is a sine-qua-non to improve the savings rate.
<b>Conclusion</b>	India's savings rate has declined from 22.7% in 2021-22 to 18.4% in 2022-23. This dip in the savings rate can have contagion effect on the whole economy. Challenges like inflation, jobless growth and poor monetary policy transmission can be attributed to this phenomenon. But targeted measures are necessary to increase the savings rate which in turn leads to greater investments and a crowding in of crucial Foreign Direct Investment. Thus a comprehensive bucket of institutional and cross-sectoral measures like deepening bond market, benchmarking lending rates, transition to greening transport etc. is necessary to sustain the household savings rate in the long run.

**Q.44) 'India is lagging behind China and the USA despite reforming the patents ecosystem'. Discuss. Illustrate how patents drive economic growth and additional measures necessary to overhaul the present patent ecosystem. (15 marks, 250 words)**

Topic- Patents in India	
<b>Introduction</b>	Patent refers to exclusive right granted for a process or a product. In India, it is usually granted for a period of 20 years from the date of filing an application. India despite being one among the top 5 countries in the number of patent applications filed by its innovators, is plagued with systemic issues ranging from corruption to vacancies in the patents office. Procedural improvements like reduced application fee and awareness generation have been made but still demands further measures for comprehensive reform of the entire ecosystem.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Improvements and reforms in the patent ecosystem</li> <li>• Challenges persisting in the patent ecosystem</li> <li>• Patents drive economic growth</li> <li>• Additional measures to overhaul the patents ecosystem</li> </ul>
<b>Conclusion</b>	The vibrancy of patents ecosystem determines the growth trajectory of a nation. India patents ecosystem has come a long way through cutting time for the grant of patents to generating awareness on the utility of patents among budding innovators. But further measures are necessary to make it the best in class. India's \$5 trillion economy objective can only be achieved in the backdrop of a sound patents system. A sort of behavioral change is necessary both on the supply and demand side for holistic reforms.

<b>UPSC Syllabus</b>	<b>Patents in India</b>
<b>Why was this question asked?</b>	<b>Q.</b> In a globalized world, Intellectual Property Rights assume significance and are a source of litigation. Broadly distinguish between the terms – Copyrights, Patents and Trade Secrets. <b>(UPSC CSE 2014)</b>
<b>Introduction</b>	Patent refers to exclusive right granted for a process or a product. In India, it is usually granted for a period of 20 years from the date of filing an application. India despite being one among the top 5 countries in the number of patent applications filed by its innovators, is plagued with systemic issues ranging from corruption to vacancies in the patents office. Procedural improvements like reduced application fee and awareness generation have been made but still demands further measures for comprehensive reform of the entire ecosystem.
<b>Body</b>	<p><b>Improvements and reforms in the patent ecosystem:</b></p> <ul style="list-style-type: none"> <li>• Reduction in the time of patent examination from 72 months (in 2014) to 24 months (2020). This has improved the number of patents granted in a year.</li> <li>• 572% increase in the number of patents granted in 2021 compared to 2013. Streamlining the processes behind the granting of patents is a major reason behind this jump.</li> <li>• 80% reduction in the patent application fee for recognized educational institutions whether they are private, aided or public. Both domestic and foreign institutions are eligible for this fee reduction.</li> <li>• The Office of the Controller General of Patents, Designs and Trademarks imparted training to 10 lakh students on various aspects of the Intellectual Property Rights in order to safeguard their innovation and contribute to the economy.</li> <li>• India retained its 40<sup>th</sup> rank in the annual Global IP Index released by the World Intellectual Property Organization.</li> </ul> <p><b>Challenges persisting in the patent ecosystem</b></p> <ul style="list-style-type: none"> <li>• <b>Corruption:</b> Several entities/ persons have been booked by investigative agencies like CBI for demanding bribe for clearing the patent for a product.</li> <li>• <b>Vacancy:</b> There is a persisting problem of vacancies in the patents office. Further the lack of regional presence is affecting the accessibility in patent filing for small patent holders.</li> <li>• <b>Parallel mechanism:</b> Courts have the final say over patent</li> </ul>

disputes. This often leads to lengthy battles in the courts of law in turn affecting the ease of doing business in the long run. The Patent Office doesn't have a final say in the matter.

- **Foreigners:** A large number of patents are being filed by foreigners and Non-Resident Indians compared to Indian citizens. The high number of patents touted as being filed in India conversely benefits foreign firms.
- **Awareness:** The proper procedure, fees, standards and the utility of claiming a patent is not appreciated by a disproportionate number of innovators. The easy-going approach affects the commercialization of products further hindering cutting edge research in the long run.

### **Patents drive economic growth**

- **Recognition:** Patents provide recognition to the innovator. It is a sort of reward for the efforts and time invested by the innovator. It helps inculcate a design mindset among budding entrepreneurs and thereby generate greater employment.
- **Commercialization:** Inventions like engines were commercialized and became the backbone of international trade and further bolstering economic growth of a nation.
- **Recovering investment:** Research and development is a costly process. Those who fund it at least want the recovery of their capital. Patents are a gateway to such recovery. Thus drug development for rare diseases gets due emphasis owing to a robust patent ecosystem in respective countries.
- **Limited competition:** Patents limit the competition for a certain duration so that the market entry and familiarization of the new product doesn't face any difficulty. This will give surety to the innovators that they will have an assured market at least in the medium term.
- **Human capital:** After the patent expires, generic forms of the products benefit the consumers since they are sold at competitive rates. Generic drugs can reduce out of pocket expenditure and strengthen the general health of citizens. Health citizens are the drivers of economic growth.

### **Additional measures to overhaul the patents ecosystem**

- **Timely appointments:** Appointments to the patent office must be overseen by the respective Parliamentary Committee. This can aid in timely appointments and further improve the patents

	<p>ecosystem.</p> <ul style="list-style-type: none"> <li>• <b>In house dispute resolution mechanism:</b> Use of Artificial Intelligence and Block Chain can deter duplication of patents and can improve the dispute resolution mechanism.</li> <li>• <b>Regional presence:</b> Patents Office must increase its regional presence. This will improve the accessibility for small innovators and those in far-flung places to patent their innovation.</li> <li>• <b>Anti-corruption measures:</b> Corruption is proved, must invite serious actions from the anti-corruption authorities like the CBI, CVC, Lokpal etc. This may cleanse the patents ecosystem from arbitrary practices that hinder its overall efficiency.</li> <li>• <b>Awareness:</b> Awareness modules on patents must be adjoined with major skill development and seed funding programmes of the Union and the States. This will reduce the duplication of efforts by the patents office in the long run.</li> </ul>
<b>Conclusion</b>	<p>The vibrancy of patents ecosystem determines the growth trajectory of a nation. India patents ecosystem has come a long way through cutting time for the grant of patents to generating awareness on the utility of patents among budding innovators. But further measures are necessary to make it the best in class. India's \$5 trillion economy objective can only be achieved in the backdrop of a sound patents system. A sort of behavioral change is necessary both on the supply and demand side for holistic reforms.</p>

**Q.45) 'Insolvency and Bankruptcy Code (IBC) has made a progressive impact on banks in helping reduce their holdings of non-performing assets.' Analyze critically. What other measures have been taken to reduce the proportion of non-performing assets? Also state the impacts that high non-performing assets (NPAs) have on the larger economy and suggest measures to overcome the challenges persisting in the insolvency process. (15 marks, 250 words)**

Topic- Banking Reforms	
Introduction	<p>Insolvency and Bankruptcy Code, 2016 was enacted to give a structural and procedural roadmap for the disorganized insolvency process mired in multiple laws and adjudication mechanism till then. The regime has come a long way with a set of hits and misses. The regime has made a mark in reducing the sky high NPAs and bad assets that hampered the profitability of the banks while its drawbacks include astronomical haircuts and delayed adjudication that have been questioning the essentiality of the process itself.</p>

	It is still an evolutionary regime with systemic and time bound reforms required to secure its foundations that needs a critical review.
<b>Body</b>	<ul style="list-style-type: none"> <li>• Benefits accruing from the adoption of IBC</li> <li>• Issues in the IBC regime</li> <li>• Other measures taken to reduce the proportion of NPA</li> <li>• Impact of high NPA on the larger economy</li> </ul> Measures to overcome the challenges persisting in the insolvency process
<b>Conclusion</b>	Insolvency and Bankruptcy Code regime has laid a base to the faulty and dissected insolvency process prior to its enactment. Building on that base is of critical importance. The regime genuinely suffers from operational issues like high haircuts, lack of strict timelines, personnel issues etc. But it has a scope for improvement. Measures like strict timelines and precise guidelines must be etched into the law itself to eliminate any subjectivity in interpretation. The above-mentioned holistic measures can truly make the IBC regime a mechanism to reckon with in future.

<b>UPSC Syllabus</b>	<b>Banking Reforms</b>
<b>Why was this question asked?</b>	<b>Q:</b> It is being suggested that the commercial banks in India should reduce their holdings of nonperforming assets. Does it mean that the former should abandon social priorities? (UPSC CSE 1994)
<b>Introduction</b>	Insolvency and Bankruptcy Code, 2016 was enacted to give a structural and procedural roadmap for the disorganized insolvency process mired in multiple laws and adjudication mechanism till then. The regime has come a long way with a set of hits and misses. The regime has made a mark in reducing the sky high NPAs and bad assets that hampered the profitability of the banks while its drawbacks include astronomical haircuts and delayed adjudication that have been questioning the essentiality of the process itself. It is still an evolutionary regime with systemic and time bound reforms required to secure its foundations that needs a critical review.
<b>Body</b>	<b>Benefits accruing from the adoption of IBC</b> <ul style="list-style-type: none"> <li>• The time required for resolving insolvency decreased from 4.3 years to 1.6 years. Likewise, the overall recovery rate for the creditors increased from 26.5 cents on the dollar to 71.6 cents.</li> <li>• World Bank too has acknowledged the effectiveness of the Insolvency and Bankruptcy Code, 2016 in resolving insolvency</li> </ul>

cases in a time bound manner.

- It has brought in significant behavioral changes on the part of debtors. Loan repayment is no more an option, it is an obligation. Thus, most cases get resolved before getting admitted into the insolvency process itself.
- Strict timeline of 180 days and 270 days in exceptional cases has brought in the required urgency in the whole mechanism. Endless litigation and procrastination under the umbrella of vested interests will come to a halt.
- With 186 resolutions of Corporate Debtors, IBC had the highest number of resolutions to its credit in 2022-23 since its launch. This clearly demonstrates the success of IBC year-on-year.
- Gross NPA was 7.78% in 2022 and it has slipped to 3.2% in 2023. The role of IBC in reducing this NPA cannot be overstated.

#### **Issues in the IBC regime**

- The IBC regime is bereft with haircuts with just Rs. 1.83 lakh crore realized of the admitted claims amounting to Rs. 13.94 lakh crore. This amounts to 80% of the admitted claims being deducted in haircuts.
- According to a Parliamentary Standing Committee Report of 2021, more than 70% the cases admitted at INC have been languishing without any resolution beyond the 270-day limit set under the Act.
- Average time taken for the closure of cases has reached 614 days severely hampering the writ of the landmark legislation. The timelines set under the Act for the resolution of cases were on directory not mandatory in nature.
- As of 2021, more than half of the bench strength at the National Company Law Tribunal were lying vacant to resolve cases in an efficient manner.
- India has a dearth of competent Insolvency Resolution Professionals and Asset Reconstruction Companies / Bad Banks to lend a professional approach to the resolution process that the legislation perceived when it was enacted.

#### **Other measures taken to reduce the proportion of NPAs**

- National Asset Reconstruction Company Limited has been setup with an objective of resolving stressed assets valued above Rs. 500 crores.

- Stressed Assets Management Verticals have been created in Public Sector Banks to monitor large value accounts for pre-emptive action against the possibility of it becoming a stressed asset.
- Willful defaulters and companies with willful defaulters as directors/promoters on their company board have been barred from accessing capital markets to raise funds.
- Central Repository of Information on Large Credits (CRILC) setup under the RBI collects data containing default by the borrowing entities with exposure of Rs. 5 crore and above and disseminates them to banks so that they can exercise prudential regulation while disbursing loans.

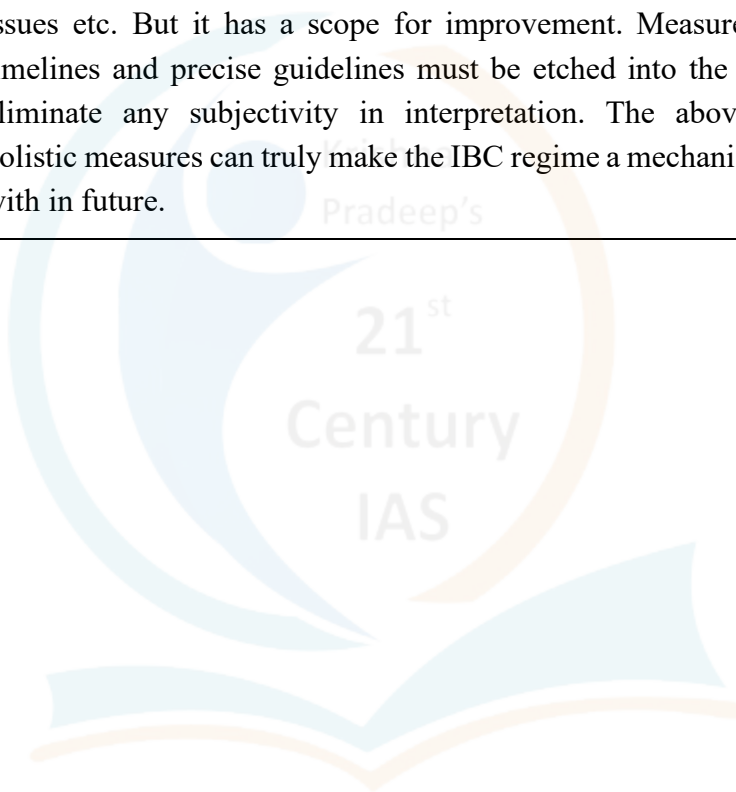
#### **Impact of high NPA on the larger economy**

- Crowding out effect: As high NPA reduce the available capital, there will be an upswing in the lending rates. Thus, private firms finding hard to raise capital either pack up or halt their investment plans for future.
- Unemployment: Stunted investment directly kills employment. Low demand, poor purchasing power as a result of inflation and stunted economic growth adds fuel to the fire.
- Inflation: Low capital base of banks force them to raise interest rates. This in turn feeds into the rising costs of raw materials and agricultural loans. The spiral gets completed with the consumer forced to pay higher rates for daily use items.
- Current Account Deficit: The State and the National Government has to borrow from foreign sources to fund their welfare objectives as a result of higher lending rates by domestic banks. The result will be a rising current account deficit hurting the overall economy in the long run.

#### **Measures to overcome the challenges persisting in the insolvency process**

- Reforms in the NCLT: Training NCLT members, conducting virtual hearings to address backlogs and planning recruitment in advance are some of the recommendations of the Parliamentary Standing Committee to improve the overall insolvency resolution regime.
- Unsolicited revisions in resolution plans must be curbed to enhance the transparency and objectivity in the resolution process.

	<ul style="list-style-type: none"> <li>• Information Utilities must be extensively utilized to establish defaults thereby avoiding delays in the Corporate Insolvency Resolution Process (CIRP) applications.</li> <li>• There should a cap on the haircuts beyond which the company must compulsorily go through resolution process so as to rejuvenate its fortunes. Such assets/companies must not go through liquidation process to prevent poor value realization.</li> </ul>
<b>Conclusion</b>	<p>Insolvency and Bankruptcy Code regime has laid a base to the faulty and dissected insolvency process prior to its enactment. Building on that base is of critical importance. The regime genuinely suffers from operational issues like high haircuts, lack of strict timelines, personnel issues etc. But it has a scope for improvement. Measures like strict timelines and precise guidelines must be etched into the law itself to eliminate any subjectivity in interpretation. The above-mentioned holistic measures can truly make the IBC regime a mechanism to reckon with in future.</p>



# Defence

**Q.46) ‘Despite various measures by the Union Government to improvise the indigenous defense production, the sector still faces multiple bottlenecks affecting the comprehensive national power.’ Discuss. Enumerate the steps required to increase the indigenous defense production. 15 marks (250 words)**

Topic – Defence Technology	
Introduction	India which has the world’s 2 <sup>nd</sup> largest standing army doesn’t have a robust domestic defense industrial setup. This is owing to the systemic issues that plagues the entire industrial ecosystem. There is need of deeper analysis of the nature of problems associated so that the country not only achieves self-reliance but also exports cost effective defense platforms to its close neighbours and strategic partners alike.
Body	<ul style="list-style-type: none"> <li>Government initiatives</li> <li>Multiple bottlenecks faced by the sector</li> <li>Negative impact on Comprehensive National Power</li> <li>Steps required to increase the indigenous defense production</li> </ul>
Conclusion	The recent Russia-Ukraine War has made it crystal clear that a country must have a solid defense production ecosystem if it must maintain strategic depth. Otherwise, its strategic autonomy will be compromised by the countries catering to its defense needs. India’s defense ecosystem suffers from human resources issues, offset concerns and a poor manufacturing base. Therefore, having a sound defense industrial base is necessary for both strategic autonomy and India’s global influence. Its realisation requires efforts on part of the volley of stakeholders that are responsible for the rollout of such a system.

<b>UPSC Syllabus</b>	<b>Defence Technology</b>
<b>Why was this question asked?</b>	<b>Q.</b> Analyse the multidimensional challenges posed by external state and non-state actors, to the internal security of India. Also discuss the measures requires to be taken to combat these threats. <b>(UPSC CSE 2021)</b>
<b>Introduction</b>	India which has the world’s 2 <sup>nd</sup> largest standing army doesn’t have a robust domestic defense industrial setup. This is owing to the systemic issues that plagues the entire industrial ecosystem. There is need of deeper analysis of the nature of problems associated so that the country not only

	achieves self-reliance but also exports cost effective defense platforms to its close neighbours and strategic partners alike.
<b>Body</b>	<p><b>Government initiatives</b></p> <ul style="list-style-type: none"> <li>• Revision of the Foreign Direct Investment (FDI) limit: FDI limit has been revised upwards to 74% under the automatic route to promote the indigenous manufacturing of complex defense platforms</li> <li>• Corporatization of the Ordnance Factory Board: Public listing of these firms improves the ability to raise investments, accountability and performance.</li> <li>• Mission Raksha Gyanshakti: To infuse a culture of Intellectual Property Rights (IPR) for the innovations in the defense sector, the mission was launched. It provides institutional and knowledge support to improve IP Rights of new innovations.</li> <li>• SRIJAN Portal: More than 10,000 earlier imported items are displayed on the portal for indigenisation by the Indian industries. This will give a signal to the Indian industries that there will be an assured demand for these products if they are manufactured indigenously.</li> <li>• Industrial Corridors: Industrial Corridors are being developed in Uttar Pradesh and Tamil Nadu to boost integrated ecosystem for defense production thereby generating employment, boosting indigenous production and improving the overall innovation potential in the country.</li> </ul> <p><b>Multiple bottlenecks faced by the sector</b></p> <ul style="list-style-type: none"> <li>• Lack of Research and Development: Only 0.7% of the GDP is being spent on Research and Development. Indigenous defence production is also dwarfed by this poor Research and Development Ecosystem.</li> <li>• State of the manufacturing sector: India's manufacturing sector is in deep distress, contributing only 13% to the GDP while it is 31.7% for China. This affects the institutionalization of an ecosystem for indigenous defense production.</li> <li>• Revenue expenditure: As per a Ministry of Defense report, on 27.67% of the total budgetary allocation on defense goes to capital expenditure with the rest being spent as revenue expenditure.</li> <li>• Partial success of Defense Offset Policy: The CAG report released in 2020 highlighted that only 8% of the total offset targets in terms of value had been realised. Most of the foreign manufacturers promise larger offsets to win contracts and then go back on their</li> </ul>

commitments.

- Lack of manpower at crucial places: DRDO is function with a shortfall of more than 800 scientists, this amounts to a more than 15% of its sanctioned staff strength.

#### **Negative impact on Comprehensive National Power**

- Border skirmishes: India's rivals gain confidence out of an ailing domestic defense ecosystem inspiring them to kick-start border skirmishes on the slightest difference of opinions.
- Demographic dividend: Mitigated employment generation as a consequence of dwarfed defense industry affects the full exploitation of demographic dividend.
- Soft power: India will find it difficult to make its point on the global high table for a permanent seat at the UN Security Council. India's soft power is intricately connected to the vibrancy of its defense ecosystem.
- Geopolitical blackmail: India relies on import for 90% of its defense equipments making it the world's largest defense importer as per SIPRI. In the event of a war, defense suppliers can hold India to a ransom for satisfying their national interests.
- Economic growth: In the long term, a country with poor credentials in defense sector is vulnerable to capital flights with the slightest hints of a geopolitical conflict. This in turn hampers sustained economic growth.

#### **Steps required to increase the indigenous defense production:**

- Research and Development: India should increase its research expenditure to at least 2% of the GDP in line with major economies like China, Brazil, and a host of EU countries.
- A comprehensive export policy: India's Defense Production and Export Promotion Policy visualises \$5 billion export of defense and aerospace items by 2025. Implementing it in letter and spirit is the need of the hour.
- Testing rigs: A low cost testing rig for private sector developers must be provisioned in order to cut costs during the product conceptualisation and development phase.
- Joint Ventures: India and Russia setup a joint venture to pump out AK-203 assault rifles with 70% indigenisation by 2026. Such examples can be emulated in manufacturing other defense platforms.
- Increase the defense budget: The defense budget as a proportion of the overall budget stood at 11.6% in 2018 against 30% in 1950.

	Thus, a respectable increase in the defense budget is necessary to improve the domestic defense ecosystem.
<b>Conclusion</b>	The recent Russia- Ukraine War has made it crystal clear that a country must have a solid defense production ecosystem if it must maintain strategic depth. Otherwise, its strategic autonomy will be compromised by the countries catering to its defense needs. India's defense ecosystem suffers from human resources issues, offset concerns and a poor manufacturing base. Therefore, having a sound defense industrial base is necessary for both strategic autonomy and India's global influence. Its realisation requires efforts on part of the volley of stakeholders that are responsible for the rollout of such a system.

