



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

- IAS SELF STUDY GUIDE -

SECURE SYNOPSIS

MAINS 2019

GS-III

APRIL 2019



NOTE: Please remember that following '*answers*' are *NOT* '*model answers*'. They are NOT synopsis too if we go by definition of the term. What we are providing is content that both meets demand of the question and at the same time gives you extra points in the form of background information.

INSIGHTS IAS



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General Studies Paper - III

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

Q) “Owing to the unparalleled transformation in the world of work, there are numerous transformational challenges that are bound to occur” Discuss the persistent future challenges in the world of work with the advent of the automation. (250 words)

Livemint

Why this question:

The article captures the analysis of recently released report by the International Labour Organization (ILO) that dwells on automation and employability aspects.

Key demand of the question:

The answer must provide for a detailed analysis of the impact of automation directly and indirectly on Job scenario. The report titled “Changing Business and Opportunities for Employer and Business Organizations” by ILO needs to be analyzed in detail.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

write a few introductory lines about the job scenario in India.

Body:

Answers must discuss the following aspects :

- Have a discussion on how Robotic automation is having the greatest impact, replacing low skilled jobs and simple assembly tasks and thus affecting employability factor and shrinking jobs in the economy.
- Discuss what Jobs are impacted by automation?
- Indian context of the situation – take cues from the article and quote the findings of the report.
- What needs to be done – focus on skilling, education system etc.

Conclusion –

Conclude with way forward, assert that with changing lifestyle, evolution of technology India needs to gear up with its policies directed for employment and skilling.

Introduction:

- India is in the midst of a massive jobs crisis. The unemployment rate has reached a 45-year high (6.1%) in 2017-18 as per leaked data from the Periodic Labour Force Survey (PLFS) report of the National Sample Survey Office (NSSO).
- According to the PLFS report, the unemployment problem is especially aggravated in India’s cities and towns. Aside from unemployment, there is employability crisis too in India as per a recently released ILO report.

Body:

The increasing Automation is threatening the jobs:

- According to the **International Labour Organisation (ILO)**, **60 per cent of the formal employment** in India relies on “**middle-skill**” jobs, including clerical, sales, service, skilled agricultural, and trade-related work, all of which are prone to automation.
- For instance, In the case of India, 51.8% of activities can be automated. Japan and Thailand run the risk of 55.7% and 54.8%, respectively, of their activities being automated. Over 40% of activities can be automated across the world.
- Similarly, an American medical school tested **IBM’s AI technology Watson** to analyse 1,000 cancer diagnoses. In 99% of the cases, Watson was able to recommend treatment plans that matched the suggestions of well-renowned oncologists.
- As the world gets more competitive, as manufacturing gets more competitive, it will use more automation, robotics, technology.

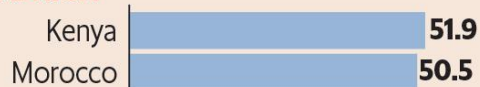


- New technologies like AI and Robotics improve the functional efficiency drastically than manual methods. Thus large industries will increasingly shift towards the automation in the quest of higher productivity.
- Automation threatens to **impact women more than men**, suggests the report. It points out that woman “are a large component of the workforce in retail, business processing outsourcing and textiles/clothing/footwear”. This is primarily because automation threatens sectors where women form a major part of the workforce.
- Information technology (IT), IT-enabled services (ITeS) and security services, followed by banking, will be the first sectors to feel the heat, wherein manual transactions and processing jobs will become obso. Huge numbers of services jobs in these sectors will be made redundant as a few lines of code will be able to perform the same tasks efficiently and effectively, according to PeopleStrong, a HR solution firm.

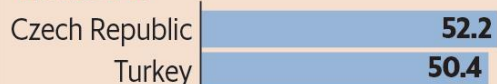
Countries with high potential for automation

Percentage of work activities that could be automated by adapting current technology.

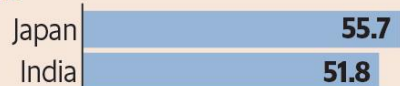
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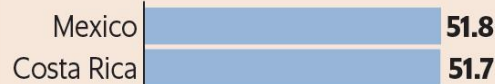
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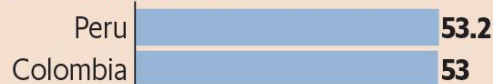
ASIA



NORTH AMERICA



SOUTH AMERICA



Measures to tackle the crisis:

- **Upskilling and Reskilling** as part of the present jobs to cater the need of the industries.
- **Incentivizing and encouraging automation in sectors** where it is critically necessary.
- Focusing on **increasing the efficacy and efficiency of Micro, Small and Medium scale industries**.
- Government needs to be inept in creating **new employment-generating sectors** and reform existing ones at a time when machines are systematically cutting down the workforce requirements in the principal labour-generating triumvirate of manufacturing and services sectors.
- Need to bring **structural changes in employment-stagnated areas like Textile, cotton industries** to increase employment opportunities in these areas.
- Government needs to bring more and more workers under formal economy so that they enjoy benefits of social security provided by government and companies.
- The concept of “smart” work and demand for specific skills must be encouraged in universities to redesign higher education and training and the state to facilitate job-market transition.
- Futuristic ideas such as **livelihood insurance and universal basic income presuppose state capacity to tax and distribute the additional income generated** should be pondered upon.

Conclusion:

- Automation has economy-wide implications at the macro level and workplace-level implications at the micro level for the worker. The fourth industrial revolution is in progress, India must **re-skill workers, rethink social policy, and examine the employment potential of new sectors such as care economy in the long-term**.

Q) With Supreme Court quashing the circular issued by the RBI on resolution of bad loans recently, is the debt resolution mechanism of RBI compromised ? Also discuss how these concerns can be addressed by the RBI ? (250 words)

The hindu

Why this question:



The recent controversy surrounding the RBI related to the February circular and its quashing by Supreme court as attracted attention, the article discusses in detail the repercussions for the economy by such a move.

Key demand of the question:

The answer must provide for an assessment of the circular, under what circumstances it came to be criticized by the apex court, what were the benefits it was trying to bring. Special emphasis should be to comment on the credit discipline and debt resolution mechanism of RBI.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Brief upon the scenario of the circular and highlight the apex court's verdict.

Body:

- The answer must first discuss in detail the salient features of the Feb circular of RBI on resolution of bad loans. How it could have helped manage debts of the Banking system ? what were the outcomes?
- Then move on to discuss how the circular aimed at undoing the credit discipline in the banking system- It had forced banks to recognize defaults by large borrowers with dues of over ₹2,000 crore within a day after an instalment fell due; and if not resolved within six months after that, they had no choice but to refer these accounts for resolution under the Insolvency and Bankruptcy Code.
- Why the verdict ?
- What needs to be done now ? – The RBI should study the judgment closely, and quickly reframe its guidelines so that they are within the framework of the powers available to it under the law.

Conclusion:

Conclude with necessity of reforms in RBI within the law limits.

Introduction:

- The Supreme Court order quashing a circular issued by the RBI on resolution of bad loans is a setback to the evolving process for debt resolution. According to data from the ratings agency ICRA, the voiding of the February 12, 2018 circular could slow down and complicate the resolution process for loans aggregating to as much as Rs.3.80 lakh crore across 70 large borrowers, including Rs 2 lakh crore across 34 borrowers was in the power sector.

Body:

Reserve Bank of India's "February 12 circular":

- Through a notification issued on February 12, 2018, the RBI laid down a revised framework for the resolution of stressed assets, which replaced all its earlier instructions on the subject.
- The circular introduced a new one-day default norm, as soon as there is a default in the borrower entity's account with any lender, all lenders singly or jointly shall initiate steps to cure the default.
- Banks were required to immediately start working on a resolution plan for accounts over Rs 2,000 crore, which was to be finalised within 180 days.
- In the case of non-implementation, lenders were required to file an insolvency application.
- This is basically to harmonise the framework for resolution of stressed assets.

RBI's rationale behind the introduction of the Circular:

- Indian banks' NPA as a percentage of advances is expected to be at 10.3 per cent as of March 2019, from 11.5 per cent in March 2018, according to RBI's financial stability report.
- Mounting bad loans, which crossed 10% of all advances at that point, and the failure of existing schemes such as corporate debt restructuring, stressed asset resolution and the Scheme for Sustainable Structuring of Stressed Assets (S4A) to make a dent in resolving them formed the backdrop to this directive.
- The circular was aimed at breaking the nexus between banks and defaulters, both of whom were content to evergreen loans under available schemes.
- It introduced a certain credit discipline — banks had to recognise defaults immediately and attempt resolution within a six-month timeframe.



- While borrowers risked being dragged into the insolvency process and losing control of their enterprises if they did not regularise their accounts.
- RBI data prove the circular had begun to impact resolution positively.

Impact of Supreme Court order of quashing Feb 12 circular:

- The order provides immediate relief to companies that have defaulted in repayments, especially those in the power, shipping and sugar sectors.
- However, many financial sector experts argued that the verdict could delay the process of stressed assets resolution, which had of late picked up pace.
- Since banks will have the choice of devising resolution plans or going to the National Company Law Tribunal under the IBC, the urgency that the RBI's rules had introduced in the system could be impacted.
- Voiding of the February 12 circular is credit negative for Indian banks. The circular had significantly tightened stressed loan recognition and resolution for large borrowers.
- The resolution of stressed loans impacted by the circular will be further delayed as the process may have to be started afresh.
- The Indian Banks Association had sought a relaxation in the RBI's norms for infrastructure and power companies.
- Banks will continue to have the option of referring a defaulting borrower under the IBC, in case the resolution plan fails. However, the resolution process, which was expected to be expedited, may get delayed.

Way forward:

- The RBI's good work done in debt resolution in the last one year should not be go in vain.
- It is true that the circular failed to take into account the peculiarities of specific industries or borrowers and came up with a one-size-fits-all approach.
- It is also true that not all borrowers were deliberate defaulters, and sectors such as power were laid low by externalities beyond the control of borrowers.
- The RBI could have addressed these concerns when banks and borrowers from these sectors brought these issues to its notice.
- It is now important for the central bank to ensure that the discipline in the system does not slacken.
- The RBI should study the judgment closely, and quickly reframe its guidelines so that they are within the framework of the powers available to it under the law.

Q) The current conditions of Indian Economy requires to strengthen domestic growth impulses by spurring private investment, that have remained inactive. Comment. (250 words)

[Livemint](#)

Why this question:

The article is in the backdrop of RBI's recent second successive repo rate cut, and retainment of neutral policy stance along with lowers projections for both GDP growth and inflation.

Key demand of the question:

In such a context it is necessary for us to evaluate steps required to strengthen the domestic growth and in this question special emphasis needs to be given to discuss role of private investment.

Directive word:

Comment— here we have to express our knowledge and understanding of the issue and form an overall opinion thereupon.

Structure of the answer:

Introduction:

Begin with brief introduction of recent measures taken by RBI to boost growth .

Body:

Discussion should have the following dimensions :

- The highlights of the RBI policies recently taken.
- Importance private investment in boosting Indian economy – In the conditions of RBI looking to use monetary tools to stimulate economic growth wherein a benign inflationary environment has helped the central bank edge into an expansionary monetary space it is essential and crucial for private investors to aid the growth.
- Discuss in detail role of private investment , provide for a comparison with that of public investment.



- What are the challenges faced by the private investors ?
- What needs to be done to stimulate them.

Conclusion:

Conclude with significance of such steps.

Introduction:

- The Reserve Bank of India (RBI) recently carried out a second successive interest rate cut in a span of two months while maintaining a **neutral monetary policy stance**, reflecting the central bank's concerns about sluggish economic growth in India and abroad. The central bank cut its benchmark repo rate by 25 basis points (bps) to 6% in first week of April 2019.

Body:**RBI's measures to spur economy:**

- Coupled with a 25 bps rate cut in February, RBI is clearly looking to use monetary tools to stimulate economic growth.
- RBI has been **increasing systemic liquidity** through a combination of tools, including buying government securities from the market through its **open market operations (OMO)** and conducting **three-year dollar-rupee currency swaps**.
- In addition, a benign inflationary environment has helped the central bank edge into an expansionary monetary space.
- RBI's concerns about the slowing Indian economy are echoed in its revised macroeconomic projections.
- The central bank has revised its retail inflation projections downwards from its February estimates: 2.4% for Q4 of 2018-19 (against 2.8% in February) and 2.9-3% for the first six months of 2019-20 (3.2-3.4% earlier).
- RBI has also eased its liquidity coverage ratio norms that is expected to release more liquidity and help banks boost their lending activity
- There is now a clear shift in RBI's actions—from **inflation targeting to growth stimulation**.

Importance of private investment in boosting Indian economy:

- Achieving infrastructure investment of 5% of GDP requires considerably more private sector contribution.
- Private sector participation in infrastructure delivery helps deliver tangible benefits.
- The private sector has also delivered efficiently—both on project execution as well as operations.
- Private participation enhances public accountability
- Public private partnership (PPP) bring back trust in public utilities that execute them, improve service delivery and bridge resource gaps.
- Reviving the stalling private sector investments is crucial to accelerate the infrastructure build-up that India needs, aspires for, and deserves.

Challenges faced by the private investors:

- Investments in the corporate sector also witnessed a fall post-GFC from 16% in 2008 to around 10% in 2016, due to debt burdens, slowdown in private credit and twin balance sheets problems in the banking and corporate sectors.
- The investment ratio slowed down to around 30% after the global financial crisis (GFC) from 38% in 2007.
- Public investment can play a significant role as they have access to funds from multilateral institution, tax sources etc.
- The new investment realisation rate in transport infrastructure sector is falling since 2008 mostly due to issues like land acquisition, environmental clearances and other market conditions.
- Falling exports also seriously affected investment. Both Special Economic Zones (SEZs) and Exports Oriented Units (EOUs) have failed to deliver in terms of exports, investment and employment generation.

Way forward:

- **Broad-basing private investment** in infrastructure requires commitment and holistic efforts from both the Centre and the states.
- **Empower public institutions to drive transformation:**
 - Capable creditworthy public institutions are an essential prerequisite to attract private investment.
- **Rewire contracting frameworks:**
 - Expediting creation of a PPP think-tank institution as recommended by the Kelkar committee could help.
 - We should look beyond conventional build-operate-transfer models to annuity and investment-lite performance-contracting models.
 - This would require recalibrating risk-sharing, and reworking contracts with clear performance metrics.



- There is a pressing need for enhanced recapitalisation of public sector banks (PSUs) and also divesting the ownership.
- The government must revise these specific schemes, designed to augment production for exports, to suit the changing global environment and ensure proper functioning.
- **Create supply-side enablers to deepen the infrastructure financing ecosystem:**
 - Stalled projects need to be dealt with steadfastly to attract private developers.
 - Building capacity to implement the Insolvency and Bankruptcy Code will be crucial.
 - Creating a diversified and resilient financing ecosystem to facilitate a shift from overreliance on bank-led financing.
 - **Strengthening bond markets** and expeditious deployment of capital under the National Investment and Infrastructure Fund can help.
- CRISIL said that the problem of stressed assets in the banking system to push the investment cycle.
- India would need to find innovative mechanisms to attract investments into infrastructure to sustain its growth.

Conclusion:

- There is an urgent need to activate stalled projects and clean up balance sheets of corporate firms and the banking sector to revive the investment cycle. It is important to revive overall investment — especially in infrastructure — for balanced growth.

Q) What do you understand by Public finance management system & how it has the potential of increasing transparent & accountability ? Also elaborate on the challenges of adopting it. (250 words)

Why this question:

The question is about discussing Public finance management system and significance of transparency and accountability therein.

Key demand of the question:

The question is straightforward from the syllabus and doesn't require much deliberation.

Directive word:

Elaborate – Detail upon the topic by giving an in depth insight as to how and why it occurred, or what is the particular context. You must provide for a wider account of the same.

Structure of the answer:

Introduction:

In a few introductory lines define what you understand Public finance management system.

Body:

In brief discuss –

- What is Public finance management system? – trace its evolution.
- It is an end-to-end solution for processing payments, tracking, monitoring, accounting, reconciliation and reporting. It is implemented by Controller General of Accounts and administered by the Department of Expenditure, both in Ministry of Finance.
- Discuss how transparency and accountability are key to the PFMS.
- What can be done to implement these virtues in it ?
- Justify the above points using suitable examples.

Conclusion:

Conclude with significance of transparency and accountability in good governance and functioning of public systems.

Introduction:

- Public finance management system (PFMS), earlier known as **Central Plan Schemes Monitoring System (CPSMS)**, is a web-based online software application and an electronic fund tracking mechanism. It compiles, collates and makes available in real-time, information regarding all government schemes. Besides, it will significantly provide government real-time information on resource availability and utilisation across schemes.

Body:

- The PFMS Scheme has been rolled-out by the **Controller General of Accounts (CGA)** at the behest of Finance Ministry, Department of Expenditure as a cherished Public Finance Management (PFM) reform in the country.



Potential of PFMS to bring about Transparency and Accountability:

- The Scheme aims at **promoting transparency and bringing about tangible improvements in the overall Central Government Financial Management** as well as **implementation of various Central Government Schemes across the country**.
- The ambit of PFMS coverage includes Central Sector and Centrally Sponsored Schemes as well as other expenditures including the Finance Commission Grants.
- The PFMS aims to help in complete tracking and monitoring flow of funds to implementing agencies and ensuring timely transfer of funds.
- PFMS provides platform for **efficient management of funds** through tracking of funds and real time reporting of expenditure and receipts through Treasury and Bank Interface. It will help government to ascertain actual status of utilization of funds by multiple implementing agencies of central and the state governments.
- It allows government expenditure to adopt a **Just-in- Time (JIT) approach**, with payments made only when they are needed.
- It will also cut need for paper work and in long way help in monitoring and tracking of any unnecessary parking of funds by implementing agencies, thus minimising cases of delay and pending payments to large extent.
- PFMS is used for Direct Benefit Transfer (DBT) payments under MGNREGA and other notified schemes of the Government of India. It will help to plug leakages in system and help to manage and maintain data that government can use to develop more scientific approach.

Challenges of implementing PFMS:

- The intergovernmental resource transfer system in India continues to be It involves several conduits like the Finance Commission, Planning Commission and several Central Ministries.
- A direct transfer of resources to state budgets would seem to have merit in terms of
- Chartered accounts audit Centrally Sponsored Schemes rather than the Comptroller and Auditor General of India. The information on availability of funds and actual expenditure by the service delivery units, schools or health service units, often in remote areas, is limited.
- The lack of digitization to the last mile is another major challenge.

Conclusion:

- Government has made use of PFMS mandatory for Central Schemes. This is inline with the Digital India initiative and helps bring in transparency and accountability in finances of the Government.

Q) What do you understand by Currency chest ? Discuss its need and significance in the context of Indian economy. (250 words)

Economictimes

why this question:

Recently The Reserve Bank of India came out with guidelines for banks to set up new currency chests. Thus it is important for us to understand the significance of currency chests in Banking system.

Key demand of the question:

The answer must discuss in detail what are currency chests , its need and significance in the banking system.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

write a few introductory lines about the recent move by RBI.

Body:

Answers must discuss in detail the following points :

- What are Currency chests? – Currency chests are branches of selected banks authorized by the RBI to stock rupee notes and coins.
- Role of currency chests.
- Significance of recent guidelines –
- Area of the strong room/ vault of at least 1,500 sq ft. For those situated in hilly/ inaccessible places, the strong room/ vault area of at least 600 sq. ft.



- The new chests should have a processing capacity of 6.6 lakh pieces of banknotes per day. Those situated in the hilly/ inaccessible places, a capacity of 2.1 lakh pieces of banknotes per day.
- The currency chests should have Chest Balance Limit (CBL) of Rs 1,000 crore, subject to ground realities and reasonable restrictions, at the discretion of the Reserve Bank.

Conclusion –

Conclude with significance of currency chests.

Introduction:

- **Currency chests** are **branches of selected banks authorised by the RBI to stock rupee notes and coins**. The responsibility for **managing the currency in circulation is vested in the RBI**. The central bank advises the Centre on the number of notes to be printed, the currency denominations, security features and so on.

Body:

The Reserve Bank of India (RBI) has issued guidelines for banks to set up new currency chests.

- Area of the **strong room/ vault of at least 1,500 sq ft**. For those situated in hilly/ inaccessible places, the strong room/ vault area of at least 600 sq ft.
- The new chests should have a **processing capacity of 6.6 lakh pieces of banknotes per day**. Those situated in the hilly/ inaccessible places, a capacity of **1 lakh pieces of banknotes per day**.
- The currency chests should have **Chest Balance Limit (CBL) of Rs 1,000 crore**, subject to ground realities and reasonable restrictions, at the discretion of the Reserve Bank.

Need:

- The RBI offices in various cities receive the notes from note presses and coins from the mints.
- These are sent to the currency chests and small coin depots from where they are distributed to bank branches.
- As per the **RBI's annual report of 2017-18**, the currency management infrastructure consists of a network of 19 issue offices of the Reserve Bank, 3,975 currency chest and 3,654 small coin depots of commercial, co-operative and regional rural banks spread across the country.

Significance:

- Currency chests act as **networks of currency distribution**.
- The main function of currency chests is to facilitate note supply.
- As there are around 4102 currency chests, they help the RBI to undertake smooth supply of currency notes across the country.
- The cash reserve ratios of the commercial banks are also kept at currency chests.
- For example, in the demonetization process, the currency chests absorbed old notes and supplied new currency notes.

Challenges:

- In crunch situations, like demonetization, there are likely to be complaints from non-PSU banks about currency not being distributed equitably.
- The urban co-operative banks have recently been alleging that they are being allocated paltry sums from currency chests to cater to their clients.
- The regional distribution of these chests appears questionable as those living in rural areas too are complaining about non-availability of cash.
- With a number of small and payment banks on the anvil, ensuring that there is adequate number of currency chests in all parts of the country is an imperative.

Conclusion:

- Currency chests are imperative in maintaining the cash flow in the economy. Thus, it is vital to make sure that they are secure and function without any hindrances.

Q) The GST regime of the country requires compliance simplicity not conceptual simplicity. Comment in the light of recent controversies of making GST – a single rate platform. (250 words)

Livemint

Why this question:

The article discusses the Congress manifesto that promises to work towards a single GST rate, and to bring petroleum under goods and services tax. Thus it is important from the exam point of view to evaluate such a decision and its merits and demerits.



Demand of the question:

The answer must evaluate in detail the recent controversies surrounding GST, about making it a single rate platform. Evaluate the pros and cons of such a move.

Directive word:

Comment— here we have to express our knowledge and understanding of the issue and form an overall opinion thereupon.

Structure of the answer:

Introduction

Start by explaining the context of controversies surrounding GST with respect to single rate.

Body

- Differentiate between compliance simplicity and conceptual simplicity
- Why is the idea of single rate bad? – complex and diverse society with huge income variations, the idea of a tax rate that is the same for every product, whether consumed by the rich or poor, is bad from the point of view of political optics and equity.
- Explain the complexity of GST structure.
- Weigh the pros and cons of such a move.
- Conclude with what should be done?

Conclusion

Conclude with way forward.

Introduction:

- The Goods and Services Tax (GST) Council recently reduced tax rates on 22 items, of which seven were from the highest slab of 28%. GST was initially promoted as **one nation, one tax, and one market**. The multiple tax slabs had deferred this objective. However, the Finance Minister has reiterated that there is an eventual plan to move towards a single rate structure under GST.

Body:

- Conceptual simplicity is the ease of understanding the concept for everyone, as the one-rate goal suggests. Compliance simplicity refers to the ease with which most number of tax payers complies or agree to the taxation regime and pay up the taxes.

Present GST rate Structure:

- The GST regime has multiple tax slabs with five broad categories of **zero, 5 per cent, 12 per cent, 18 per cent and 28 per cent**. There are two more GST rates of 0.25 per cent for rough diamonds, precious stones and 3 per cent for gold, silver.
- A Cess, ranging from 1 to 15 per cent, is levied on demerit and luxury goods over and above the highest rate of 28 per cent.
- The complicated GST structure we began with can partly be explained by the messy federal bargaining in the GST Council and partly by a flawed incentive structure.

Reasons why India needs a single rate of GST:

- **Difficulty in tax administration:** Goes against the canons of taxation. A modern tax system should be **fair, uncomplicated, transparent and easy to administer**. It must yield revenues sufficient to cover the cost of government services and public goods.
- **Complicated taxation structure:** A World Bank study published in May 2018 said that the Indian GST rate was the second highest among the 115 countries with a national value-added tax. It was also the most complicated, with five main tax rates, several exemptions, a cess and a special rate for gold. The multilateral lender said that only five countries had four or more non-zero tax rates—India, Italy, Pakistan, Luxembourg and Ghana.
- Ghana introduced GST in 1995 with three different rates but soon abandoned it since it became too complicated to implement. China had a similar experience, and it too eventually rejected multiple rates in favour of a simple policy with one single rate across all industries.
- This skew violates the basic principle of revenue collection: **the lower the taxation rate, the higher the compliance**.
- **High compliance costs:** are also arising because the prevalence of multiple tax rates implies a need to classify inputs and outputs based on the applicable tax rate. Along with the need to apply the correct rate, firms are required to match invoices between their outputs and inputs to be eligible for full input tax credit, which increases compliance costs further.
- **Instability in tax regime:** The GST rates for various goods and services have been shifted from one slab rate to another over the past 1.5 years. The federal demands from states during GST Council Meetings to assuage



their fears are the main cause. Multiple rates create problems of classification, inverted duty structure and large-scale lobbying.

- **Estimation overshoot:** GST collections have not met with the monthly revenue and growth targets which validates the need for keeping certain goods in higher tax bracket

Limitations of single rate of GST:

- **Accentuates Revenue loss to states:** Standard rate might lead to concerns related to revenue losses of the state. The revenues loss prospects under multiple slabs will be much less as opposed to the single rate.
- **Progressive nature:** Makes the tax less regressive as it treats rich and poor in different way. A single GST rate structure in India would have made an apt case for **'equality' in taxes, but would have failed on the grounds of 'equity'**.
- While a single-rate structure might have made the tax system simpler, it would neither have been equitable and revenue-neutral nor would it have been acceptable to all states.
- **Higher Revenues:** GST collections are expected to increase further in the coming months due to an expanding tax base and better compliance, with more states using the e-way bill system.

Even **NITI Aayog member Bibek Debroy** had opined that Multiple rates a key problem with present GST. Various Committees were formed for simplifying GST Rate structure. **Example: Arbind Modi** committee had recommended a 12% GST rate, of which 5% would go to the Union government, 5% to the state governments and the other 2% to the third tier of government.

Way Forward:

- The first target should be to move to at least a three-rate structure, a lower rate for essential goods, a relatively high rate for luxury goods, and a standard rate for the majority of goods and services.
- The next step would be simplify the tax returns process.
- The scope for lowering the GST rate is umbilically linked to **direct tax reform**.
- A better way to make a tax system more just is by **lowering regressive indirect tax rates while widening the base for progressive direct taxes** on income and corporate profits.
- Many goods are still outside the GST net, which comes in the way of seamless flow of input tax credit. Key items outside its ambit are electricity, alcohol, petroleum goods and real estate. This aspect need to be looked into.
- Emulating the best practices. The GST in New Zealand, widely regarded as the most efficient in the world, has a single standard rate of 12.5 percent across all industry groups.

Conclusion:

- The problems of the complicated GST with multiple rate structure and high compliance costs are now evident. The next government —of whatever political persuasion—will have the onerous task of untangling the mess.

Q) What do you understand by Government Guarantees ? Why is there a need to review government Guarantees ? Discuss its significance. (250 words)

Reference

Why this question:

Recently the Ministry of Finance has asked all the departments to undertake a review of government guarantees given by respective ministries to their Central Public Sector Enterprises (CPSEs) or entities.

Key demands of the question:

The answer must discuss what are Government Guarantees, why is there a need to review them and their significance.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction

Introduce by defining what are Government Guarantees.

Body

The body of the answer should address the following dimensions:



- Guarantees are contingent liabilities which have the potential to impact the financial performance of the government.
- Discuss why their review is necessary?
- Significance – The review will look into aspects like whether the discharge of repayment obligations or interest obligations as per terms of the loan agreement and covenants and conditions met.

Conclusion

Conclude with significance of such steps.

Introduction:

- Government or Sovereign Guarantee is a **promise by the Government to discharge the liability of a third person in case of his default**. For example, the government sets up a special purpose vehicle (SPV) to construct a bridge. The SPV will likely borrow money to build the bridge on the strength of a government guarantee. **Article 292 of the Constitution of India** extends the executive power of the Union to the giving of guarantees on the security of the Consolidated Fund of India, within such limits, if any, as may be fixed by Parliament. Similar powers are given to **States under Article 293**.
- The Ministry of Finance has asked all the departments to undertake a review of government guarantees given by respective ministries to their Central Public Sector Enterprises (CPSEs) or entities.

Body:

The sovereign guarantee is normally extended for the purpose of achieving the following objectives:-

- To improve viability of projects or activities with significant social and economic benefits, undertaken by government or non-government entities under Public Private Partnerships;
- To enable public sector companies to raise resources at lower interest charges or on more favourable terms;
- To fulfil the requirement in cases where sovereign guarantee is a precondition for concessional loans from bilateral/multilateral agencies to sub-sovereign borrowers.

Need to review the Government Guarantees:

- Guarantees are contingent liabilities have the potential to impact the financial performance of the government.
- Guarantees are paid out of **the Guarantee Redemption Fund of the Government which is positioned in public accounts**.
- The FRBM Rules stipulates that the government cannot guarantee more than 0.5 per cent of the GDP of the respective financial year to CPSE/entities.
- The review will look into aspects like whether the discharge of repayment obligations or interest obligations as per terms of the loan agreement and covenants and conditions met.
- Further, the details of CPSEs or entities on due guarantee fee paid on time to the government should also be submitted.

Conclusion:

- Regular checks and balances are needed as due diligence of public finance is a vital attribute of the good governance. Further, these have the potential to alter the global standings of the sovereign bonds status which can affect in the long term.



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TOPIC: Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

Q) The lack of guarantee of a stable income with social security has devastating consequences, critically analyse the statement in the context of concept of Gig economy. (250 words)

Livemint

Why this question:

The article captures the menace of lack of stable income in Indian employment scenario. It discusses the relevance of Gig economy and how it has turned into an eyewash bearing to the lack of social security and guarantee of the income to individuals.

Key demand of the question:

The answer must explain the meaning, opportunities and challenges provided by a new trend in the job market – gig economy. How in today's digital age it is gaining popularity, but however there is much to understand about its relevance in providing Job security and stability.

Directive word:

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction:

Introduce with what you understand by a Gig economy.

Body:

- What is 'Gig Economy'? – A gig economy is a work environment where organizations hire temporary workers or freelancers instead of full-time long-term employees.
- Discuss how the trend is very strong in advanced economies like the US where there is large volume of cases where firms engage in short term contracts with workers.
- Then move on to discuss the demerits of Gig economy in Indian Job scenario – Low job-security, Worker's welfare compromised, Internet dependent thus requires only skilled labour, Security issues etc.
- Discuss what needs to be done to provide security and sustainable Jobs, what should be the policy focus in the employment sector.

Conclusion:

Conclude with importance of tackling such issues with effective policy measures.

Introduction:

- A gig economy is a work environment where organizations hire temporary workers or freelancers instead of full-time long-term employees. The trend is very strong in advanced economies like the US and European countries where firms engage in short term contracts with workers. Globally, growth in freelancers is expected to be one of the most significant employment related trends over the next couple of decades. In India too, the signs of freelancing is becoming increasingly relevant and attracting professionals

Body:

The challenges posed by Gig economy:

- It is making the work environment uncertain for the workers
- No labour welfare emoluments like pension, gratuity etc.
- Gig workers miss out on statutory safeguards with respect to unfair termination, minimum wages, paid leave, etc.
- Workers do not have the bargaining power to negotiate a fair deal with their employers.
- Banks and other financial service providers resist extending lines of credit when steady income is not assured
- In situations where teamwork is essential, gig worker teams formed and disbanded on a case-to-case basis will likely produce tardy, inconsistent and poor output
- Unionization of workers will be difficult.
- In industries such as information technology and pharmaceuticals where confidentiality becomes crucial, having control over the actions of a gig worker will be challenging.



Challenges in India:

- Minimum wages in India are woefully low. Earning an 'employee' status may not entitle them to more than what they currently make.
- Outside social security net: Social security laws like the EPF and ESI currently only cover employees earning below Rs 15,000 and Rs 21,000 per month, respectively.
- If drivers earn more, they may not be entitled to these benefits, even after they get employment status, leaving them in a position that isn't significantly better than before.
- Most Indian employment laws expressly prohibit dual employment, i.e. individuals cannot carry out two jobs if the total working hours exceed 8-9 hours a day based on location.
- Many gig workers work with multiple apps at the same time to supplement their income, which may become harder or illegal to do if they attain employment status with app operators.
- Security: A big drawback for a gig economy system was the lack of security for workers. Those working in the gig economy do not enjoy the same rights and protections as employed workers, such as health benefits, overtime pay and sick leave pay.

Measures needed:

- Basic labour protection like minimum wages, paid leave provisions and maternity benefits should be available to gig workers as well.
- The proposed Code on Wages and the Labour Code on Social Security are steps in the right direction.
- The state should balance the interests of business exigencies and social welfare.
- India can engage with the European Union and the United States, where discussion on protections in a gig economy is already underway.
- The government need to redefine labour laws that must not stifle innovation but certainly prevent exploitation.

Conclusion:

- The government needs to step in, not to regulate away flexibility but to build worker and workplace protection into the system. The business, as well as welfare considerations of the workers, should be well balanced.

Topic– Inclusive growth and issues arising from it.

Q) Discuss the highlights of proposed Nyuntam Aay Yojana (NYAY). Do you think this redistributive mechanism will facilitate macroeconomic drivers of growth in India and promise trickle-down economics? Critically analyse. (250 words)

[Indianexpress](#)

[Indianexpress](#)

Why this question:

The question is in the light of the recently announced election agenda by the Congress party of – Nyuntam Aay Yojana (NYAY).

Key demand of the question:

The answer must discuss in detail the highlights of the scheme and critically analyse its relevance with respect to the trickle down theory of economics.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer

Introduction:

write a few introductory lines bring out the highlights of the newly announced scheme.

Body:

Answers must discuss the following aspects :

- Discuss the Nyuntam Aay Yojana' (NYAY) or minimum income guarantee (MIG) — it proposes a cash transfer of Rs 6,000 a month (or Rs 72,000 a year) to the bottom 20% of the poor. Why it is



often being described as a 'dole', bad for fiscal health and worse — bad for the beneficiaries themselves because it would apparently make them lazy and dependent.

- Why is NYAY a redistributive mechanism?
- Discuss the logic of trickle-down economics.
- Critically analyse one-size-fits-all fiscal management – NYAY.
- What needs to be done – India's policymakers need to take changes in global thinking into consideration while framing their policies to fight poverty and inequality..

Conclusion –

Conclude with way forward.

Introduction:

- The idea of a minimum income guarantee (MIG) has caught up with political parties.
- A MIG requires the government to pay the targeted set of citizens a fixed amount of money on a regular basis. Congress party recently promised MIG programme called **Nyuntam Aay Yojana (NYAY)**, if the party was voted to power.
- A limited version of the MIG in the form of the PM KISAN Yojana is already being implemented by the NDA government at the Centre. State governments in Odisha and Telangana have their own versions of the MIG.

Body:

Highlights of NYAY:

- The Nyay scheme is targeted towards 5 crore families who are the poorest 20 per cent in India.
- Nyay scheme guarantees each family a cash transfer of Rs. 72,000 a year and as far as possible the money will be transferred to a bank account of a woman in the family.
- There will a design phase (3 months), followed by pilot and testing phases (6-9 months) before the rollout of the plan.
- The scheme will be implemented in phases and the estimated cost will be less than 1 per cent of the GDP in the first year, and less than 2 per cent of the GDP in the second year and thereafter
- As the nominal GDP grows and the families move out of poverty, the cost will decline as a proportion of the GDP.
- If brought to power, Congress announces the appointment of an independent panel of economists, social scientists and statisticians to oversee the design, testing, rollout and implementation of the programme. The programme will move from one stage to the other only after a go-ahead from the panel.
- The Nyay scheme would be a joint scheme of the central and state governments.
- Nyay scheme will be funded through new revenues and rationalisation of expenditure. Current merit subsidy schemes that are intended to achieve specific objectives will be continued.

NYAY a redistributive mechanism:

- **Guaranteed minimum income is a powerful idea that has already made some headway in various countries. Some European countries, for instance, guarantee a minimum income to their citizens.**
- **NYAY is a targeted cash-transfer scheme that guarantees Rs 6,000 per month to the recipients** — nothing more, nothing less. It can also be thought of as a massive non-contributory pension scheme.
- **Fights Poverty and vulnerability:** Poverty and vulnerability will be reduced in one fell swoop. It increases equality among citizens as envisaged in our DPSP.
- **Choice:** A UBI treats beneficiaries as agents and entrusts citizens with the responsibility of using welfare spending as they see best; this may not be the case with in-kind transfers. Nobel laureate **Amartya Sen** had also propounded that **choice** should be given to people, which will lead to development.
- **Better targeting of poor:** As all individuals are targeted, **exclusion error** (poor being left out) is **zero** though inclusion error (rich gaining access to the scheme) is 60 percent.
 - **Example:** The India Human Development Survey found that in 2011-12 about half of the officially poor did not have the BPL card, while about one-third of the non-poor had it.
- **Fighting technological unemployment:** With **0** on the rise, there is an increase in the automation leading to loss of many white and blue collared jobs. MIG can act as a sort of security net for the millions of people who will be left jobless by the tech revolution.
- **Supporting unpaid care workers:** Those with ill or differently abled relatives are often forced to quit their jobs and look after them full-time. MIG would allow care-workers to support themselves, encouraging care work and taking pressure off public services that provide care to the sick and elderly.



Challenges posed by NYAY:

- The first puzzle is whether the scheme would identify all those families with monthly income below Rs 12,000 and uniformly transfer Rs 6,000 a month to them. If yes, then for families with incomes exceeding Rs 6,000, the scheme would overshoot the target income. This would **subject the taxpayer to extra burden**.
- An alternative would be that the scheme would give each identified beneficiary family **the difference between Rs 12,000 and its actual income**.
- This gives rise to the second puzzle. Any future increases in income will attract equivalent reductions in transfers. So, families will have no incentive to increase their future incomes. Indeed, once included in NYAY, they would have the incentive to stop working altogether and let cash transfers 'do the work' to the full extent of Rs 12,000.
- The third puzzle is that the scheme also fixes the proportion of beneficiary families at 20% of the total. But fixing this proportion arbitrarily conflicts with the goal of minimum income of Rs 12,000 for all families. The 2011-12 National Sample Survey Office's (NSSO) expenditure survey gives us the latest estimates ranging from the poorest to the richest families.
- Calculations show that in 2018-19, a solid 40% of rural and 10% urban families had expenditures below Rs 12,000 a month. Evidently, targeting only 20% families is inconsistent with the goal of ensuring a minimum income of Rs 12,000 for all. The net will have to be widened quite considerably.
- An income of Rs 12,000 a month translates into Rs 1,44,000 a year. Adding numerous other existing in-kind transfers such as subsidised food, house, crop insurance, education and health insurance would likely bring this annual figure to Rs 2,00,000. In contrast, a hard-working family that earns Rs 3,00,000 must pay a tax of Rs 2,500. This tax is now covered by a tax credit, but this may change in the future.
- The final issue concerns financial feasibility. Based on coverage of 20% families and Rs 6,000 a family, proponents of NYAY have placed the cost at Rs 3.6 trillion – 13% of total GoI expenditures in the 2019-20 budget. But many families currently earn less than Rs 6,000 a month, and so will require a transfer of more than Rs 6,000 to cross the threshold of Rs 12,000. Also, a lot more than 20% families will have to be covered by the scheme, thereby making NYAY's true cost significantly higher than Rs 3.6 trillion.

Way Forward:

- **QUBRI (quasi-universal basic rural income):**
- It is targeted only at poorer people in the rural areas.
- The scheme is no longer universal.
- It excludes the not-so-poor in rural areas as morally it should.
- All the schemes, rural and urban, could be cash transfer schemes, which Aadhar and the digitisation of financial services will facilitate.
- Strengthening of institutions of the state to deliver the services the state must (public safety, justice, and basic education and health), which should be available to all citizens regardless of their ability to pay for them.
- The institutions of the state must be strengthened also to regulate delivery of services by the private sector and ensure fair competition in the market.
- A better solution to structural inequality is **universal basic capital (UBC)**. People own the wealth they generate as shareholders of their collective enterprises. Amul, SEWA, Grameen, and others have shown a way.

Topic: Agriculture issues; Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers

Q) Discuss the necessity of sustainable agriculture in India to build resilience against threats of climate vagaries. (250 words)

Hindustantimes

Why this question:

The article discusses that Agriculture in India needs to become more sustainable even as small and marginal farmers struggle to build resilience against many threats varying from climatic vagaries to lack of financial support, conducive environment etc.

Key demand of the question:

Climate change could hurt farmers' income by up to 20-25% in the medium term, according to the recent reports. Extreme weather events, temperature rise and lower rainfall all threaten to derail the Indian government's agenda of doubling farmers' income across the country. In such a scenario the



need of the hour is to move towards sustainable agriculture. Thus the answer must analyse the need, concerns and way forward associated with it.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

In a few introductory lines highlight the need for sustainable agriculture, support it with facts and recent reports.

Body:

In brief discuss –

- Discuss the significance of Agriculture and how it is central to the Indian economy – It accounts for 50% of the country's employment and 18% of its GDP.
- Concerns – number of risks, including adverse weather, competition from larger landowners or food corporations and price surges. Small farmers are a vulnerable population where social, market and economic pressures are huge, often leading to considerable distress.
- Take hints from the article and present a case study on community led solid waste management efforts.
- Role of climate vagaries – rise in the number of days with extremely high temperatures and a corresponding decline in the number of days with low temperatures. Extreme temperature shocks, when a district is significantly hotter than usual, results in a 4.7% decline in agricultural yields. Similarly, when it rains significantly less than usual there is a 12.8% decline.
- Need for sustainable and climate resilient agriculture and how it can be achieved?

Conclusion:

Conclude with what needs to be done, suggest way forward.

Introduction:

- Agriculture is the **most important sector** of Indian Economy. It accounts for **18 per cent of India's gross domestic product (GDP) and provides employment of around 50% of the country's workforce**. India is the world's largest producer of pulses, rice, wheat, spices and spice products. India has many areas to choose for business such as dairy, meat, poultry, fisheries and food grains etc. India has emerged as the second largest producer of fruits and vegetables in the world. **Climate change challenge and dependence of our population on agriculture** necessitates a look at the options of sustainable agriculture.

Body:

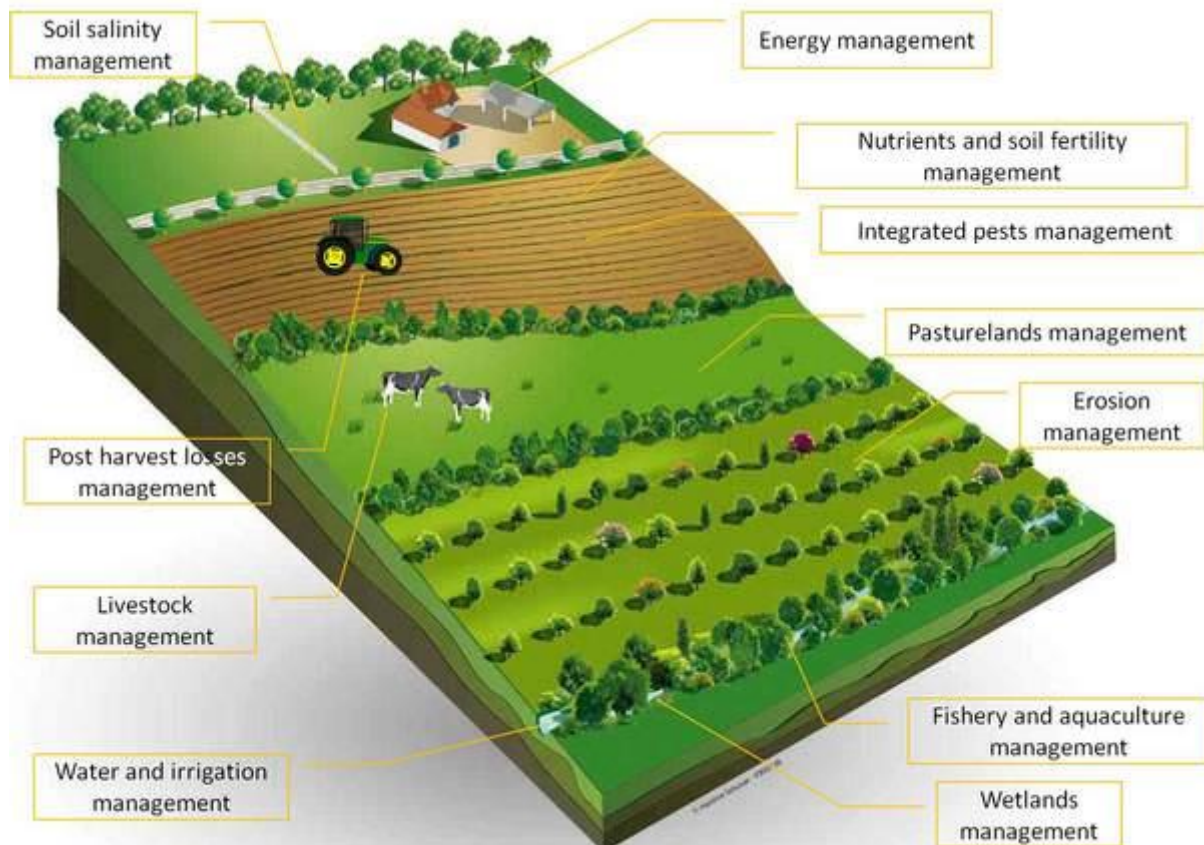
Concerns:

- **Land degradation:**
 - According to ICAR's reports, 37% of India's total geographical area is affected with degradation.
 - This is despite the big amount of fiscal budget being spent on defending soil even as we lose it to rain and wind.
 - India has **over 120 million hectares suffering from some form of degradation**.
- **Monsoon dependency:**
 - India is fortunate to have the monsoon, but it is also uniquely vulnerable to rising temperatures.
 - India is ranked **14th on the Global Climate Risk Index 2019**.
 - With **rain-fed agriculture** practised in **over 67% of our total crop area**, weather variability can lead to heavy costs, especially for coarse grains (which are mostly grown in rain-fed areas).
- **Water degradation:**
 - Only about 47.6% of the net sown area is irrigated.
 - Groundwater, which accounts for almost 60% of the irrigated area, is under severe strain with depletion of the water table and deterioration of water quality.
 - Subsidies for electricity consumed in agriculture have led to wasteful use of both energy and groundwater.
 - Due to increasing population growth and industrialisation, the availability of water to agriculture is expected to fall in the coming decades.
- **Climate Change Risks:**
 - Adverse climate change could lead to drop in yield and lower quality produce.



- It also poses a risk of increasing incidence of attacks by pests and insects.
- Any significant decline in summer rains would devastate Indian agriculture. Climate change related phenomena have consequences, especially for marginal farmers.
- Rise in average temperatures would significantly impact our kharif crops.
- **Declining income:**
 - According to one estimate, they may face a **24-58% decline in household income** and **12-33% rise in household poverty** through exacerbated droughts.
 - They potentially face a huge decline in household income and rise in household poverty through exacerbated droughts.

Sustainable agriculture includes:



Climate-smart agriculture:

- Promotion of conservation farming and dryland agriculture
- Providing each village with timely rainfall forecasts, along with weather-based forewarnings regarding crop pests and epidemics in various seasons
- Refocusing our agricultural research programmes on dryland research, with adoption of drought-tolerant breeds that could reduce production risks by up to 50%.
- A mandate to change planting dates, particularly for wheat, should be considered, which could reduce climate change induced damage by 60-75%.
- **Organic agriculture** enhances natural nutrient cycling and builds soil organic matter, which can also support resilience to climate change and sequester carbon in soils
- Mitigation of the adverse effects of climate change
- Watershed development and management
- Promoting **precision irrigation** and better **on farm water management practices** to optimize the use of available water resources, the component also supports micro level water storage or water conservation /management activities to supplement source creation.
- **Integrated Farming System** for enhancing productivity and minimizing risks associated with climatic variability to enable farmers maximising farm returns for sustained livelihood and mitigate the impacts of drought, flood or other extreme weather events with the income opportunity from allied activities
- **Soil Health Card** will provide information to farmers on soil nutrients status of their soil and recommendation on appropriate dosage of nutrients to be applied for improving soil health and its fertility.

**Conclusion:**

- **National Mission for Sustainable Agriculture (NMSA)** has been made operational which aims at making agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific integrated /composite farming systems; soil and moisture conservation measures; comprehensive soil health management; efficient water management practices and mainstreaming rainfed technologies.

Q) Problems in Indian cotton need ecological understanding, not biotechnology. Critically analyse. (250 words)

[Indianexpress](#)

Why this question:

The article captures the problems surrounding the Indian cotton Industry specifically at the crop level and emphasizes on how the issue is more related to ecological factors than the Biotechnological ones.

Key demand of the question:

The answer must cover a detailed discussion on the current situation of cotton growing areas and the problems facing them in India. One has to provide detailed critical analysis of the subject.

Directive word:

Critically analyse – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When ‘critically’ is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction:

Highlight the havoc of regional outbreaks of secondary pests, namely the American bollworm, that was induced by the ecological disruption and the subsequent dip in cotton production.

Body:

Discussion should have the following dimensions :

- highlight the trends of cotton yields and production currently in India.
- Discuss the ecological disruption factor leading to low yields.
- Explain other factors that are mostly ecological and not much related to BT cotton issues.
- Discuss what needs to be done?
- Take cues from the article to substantiate your answer with backing of facts.

Conclusion:

Conclude with way forward.

Introduction:

- India is the **only BT cotton-growing country** facing the problem of pink bollworm infestation. Losses caused by the pink bollworm infestation have raised questions about the sustainability of GM cotton, which accounts for over 90% of all cotton grown in the country.

Body:

Trends of cotton yields and production currently in India:

- Between 2003-04 and 2011-12, India's cotton output more than doubled — from 14 million bales (of 480 pounds or 218 kg each) to 29 million bales, 302 kg per hectare in 2002-03 to 566 kg in 2013-14.
- There was an expansion in crop area from 7.67 million hectares to 11.96 million hectares during this period, and an initial reduction in insecticide use with BT technology.
- The introduction of hybrid Bt cotton led to an initial reduction in insecticide use, but by 2012, insecticide use was at pre-2002 levels, and now targeted still newer induced secondary pests (for example, whitefly, mealy bugs, jassid).
- Resistance to insecticides and to BT toxins was developing in pink bollworm and American bollworm — quite likely other pests as well. Indian cotton farmers were now riding both the insecticide and biotechnology treadmills in the face of stagnant yields.

Reasons for low yield are mostly Ecological:

- Improved Indian F1 hybrid long season cotton varieties began to be introduced in the 1970s. They required increases in fertiliser and insecticide to protect against the native pink bollworm.
- As insecticide use grew, regional outbreaks of secondary pests, namely the so-called American bollworm, were induced by the ecological disruption.
- They caused havoc and suppressed yields.



- The use of long season varieties and the high cost of Indian hybrid BT seed that lead to sub optimal planting densities — this sets the ceiling on yield.
- In addition, yields are affected by inter-seasonal differences in rainfall, induced pest outbreaks and, the effects of increasing pest resistance to insecticides and to the BT technology.
- Most of central and south Indian cotton is rainfed, and low-density long season cottons are simply inappropriate, and further encourage late season build-up of pests and greater insecticide use.

However, Biotechnology also has its share in low yields.

- There was no substantial difference found between Bt and non-Bt cotton for germination and vigour, indicating that there is no substantial difference between transgenic Bt and control non-Bt cotton with regard to their weediness potential.
- Bt cotton hybrids do not have any toxic effects on the non -target species such as sucking pests. The beneficial insects remained active in both Bt and non Bt varieties.
- The growing number of farmers committing suicides in some cotton growing states has re-ignited the protests against the Bt Cotton.
- **Bt hybrids:**
 - Farmers in rain-fed regions were / are compelled to choose from a long list of Bt hybrids, most of which are late maturing, sucking pest-susceptible hybrids, that are unsuitable for rain-fed region.
 - Problem is with late maturing hybrids that do not perform well owing to the late-season moisture deficit in shallow soils, especially when they are sown late.
- High cost of Bt cotton seeds as compared to non Bt cotton seeds.
- Effectiveness up to 120 days, after that the toxin producing efficiency of the Bt gene drastically reduces.
- India is the only country whose intellectual property laws have never prevented its farmers from either saving or selling seeds.
- Over 70 countries that are members of the International Union for the Protection of New Varieties of Plants, for example, allow farmers to reuse seeds from a protected plant variety, but not to sell them.
- Hybrids lose their genetic stability when their seeds are replanted. This compels farmers to repurchase seeds each year, protecting corporate revenues.
- Normal cotton seed is largely unavailable to Indian farmers because of Monsanto's control of the seed market.

Measures needed:

- Planting rainfed short season high density (SS-HD) cotton as developed at CICR, Nagpur, and other institutions — cotton that could double yields, avoid pink bollworm infestations and hence reduce insecticide use.
- One view is that the solution to the problem may be to move swiftly to short-duration varieties i.e. Monsanto's first-generation Bollgard.
- Government must take decisions on GM technologies on the basis of scientific evidence.
- Government should adopt a participatory approach to bring together all stakeholders to develop regulatory protocols that restore trust in the process.

Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc., Investment Models.

Q) Holistic overview of the linkages between the different components of energy is the need of the hour to flip the ratio between fossils and renewables in the energy basket of emergent India. Discuss. (250 words)

[Indianexpress](https://www.indianexpress.com)

Why this question:

The article evaluates the pressing needs of re assessing India's energy directive to ensure future security of energy basket.

Key demand of the question:

One is expected to discuss the present scenario of India's energy basket viz. the renewable vs non-renewable equation. What should India's stand be to move forward with sustainable energy future.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.



Structure of the answer:

Introduction:

Brief upon the current energy situation of India, use facts and quote reports.

Body:

Discuss the following aspects :

- Explain in short the Energy situation , projection of India's energy future.
- Discuss the challenges – energy demand will move on an upward curve; indigenous supplies will fail to keep pace with this increase in demand; energy imports will rise in absolute and relative terms, and, the environment will face increasing stress. More specifically, coal will dominate, oil and gas will have significance; renewables, whilst on a rising trend, will account for a relatively inconsequential share and air pollution, depleting water tables and extreme weather conditions will presage ecological collapse.
- Conclude what needs to be done and suggest way forward in terms of – policy measures, holistic overhaul of the energy policy, need for energy revolution etc.

Conclusion:

Re-assert the significance of the need for sustainable energy and need for facilitation of a holistic overview of the linkages between the different components of energy (oil, gas, coal, renewables, nuclear, hydro, bio, non-commercial)

Introduction:

- India has its goal of achieving 175GW from renewable energy sources. In the INDC goals submitted under Paris Deal, it aims to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030.

Body:

India's current energy mix:

- India's thermal coal base, which still provides over **60 per cent of the country's overall electricity generation**, is still growing. India is the third largest emitter of green house gases – around 2.3 Giga tons annually.

CaseStudy: BP's most recent energy outlook published just a few weeks back. It avers that in 2040, fossil fuels (coal, oil and gas) will account for between 70-75 per cent of India's primary energy consumption — down from approximately 90 per cent today. Of that, coal will account for 45 per cent (down from the current 55 per cent); oil 20 per cent (down from 30 per cent today) and natural gas at the same levels as today of around seven per cent. Renewables market share will increase to 15 per cent up from the current 3-4 per cent. Consequently, India will import 95 per cent of its oil requirements; 60 per cent of its gas requirements and 30 per cent of its coal requirements (despite the fact that it contains the fifth largest deposits of coal in the world). India will meet its Paris commitments to reduce GHG emissions by 35 per cent in 2035 relative to 2005. But, given this level of fossil fuel consumption, it will be one of the largest absolute emitters of pollutants in the world.

Challenges faced to adopt renewable energy:

- **Huge Dependency on Coal:**

(1) Individual level:

- Roughly 15-20 million people in the coal belt are dependent on the coal industry, either directly or indirectly, for their livelihood.
- Jobs in the renewable energy sector will not be coming to the coal belt in large numbers.

(2) Industry level:

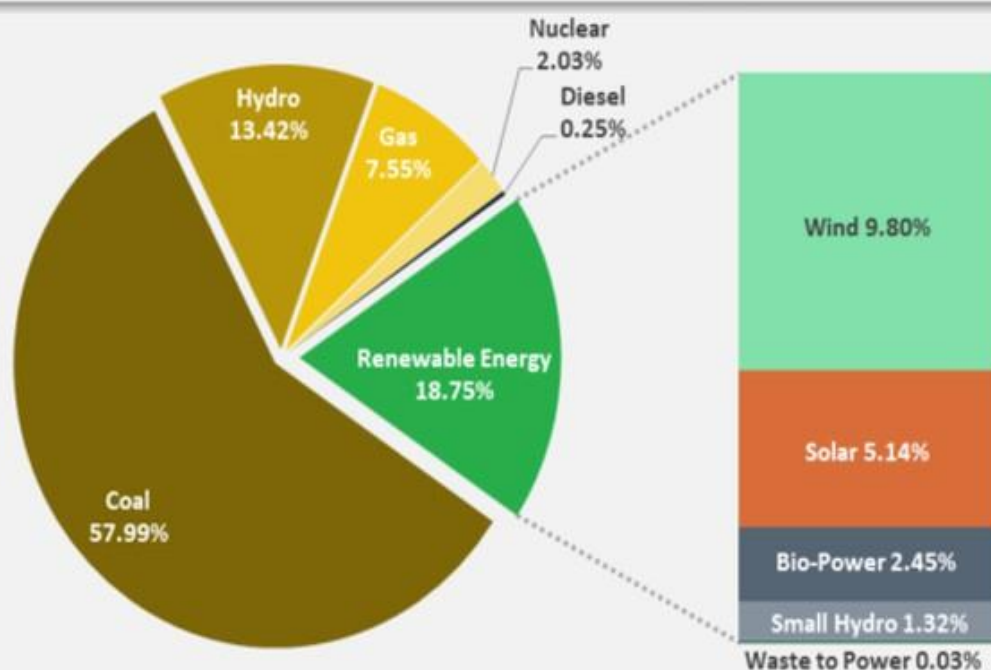
- Over 50 power plants in the country are dependent on the coal from Central India belt.
- According to the Integrated Energy Policy prepared by the Planning Commission of India, even under a least coal usage scenario, coal will supply more than 40% of the primary commercial energy even in 2031-32.



- The Union Cabinet recently approved a **new hydroelectricity policy** that, among other things, included large hydro projects within the ambit of renewable energy. However, DISCOMS are reluctant sign Power Purchase Agreements (PPAs) Hydro Power due to higher tariff, particularly, in the initial years.
- The **major commercial deterrents for the private developers are high capital cost and long payback period** due to high gestation period which may also create issues in financing.
- The other issue related to Hydropower projects is **financing and evacuation**. Hydro Power projects are **capital-intensive and financing** them for long such as 20 years is really a challenge.
- The **costs of transitioning to renewables** — whether calculated in terms of the sunk costs of stranded thermal power assets or the creation of transmission and distribution infrastructure to overcome the problem of “intermittency” (the sun does not shine all the time; nor does the wind blow with regularity) are huge.
- There are **technological** (like **storage or carbon sequestration**) and **regulatory** (**conservation norms, emissions standards**) issues to overcome before clean energy can be brought to scale.

India - Cumulative Installed Power Capacity Mix (%)

Renewables comprise almost 19% of India's total installed capacity, with solar accounting for over 5%. Among renewables, solar accounts for over 27% of the installed capacity



Data from CEA, MNRE (Installed Capacity as on 30 Sep 2017)

Source: Mercom India Research

Way forward:

- **Holistic approach:**
 - India must stop looking energy sector from a disaggregated picture and encourages a siloed approach to energy governance.
 - A **general equilibrium macro model** is required that **captures linkages** (between fuel usage, electricity, mobility, industry, and agriculture, on the one hand, and, ecology on the other) and **enables decision-makers** to consider the systemic implications of changes in one or more of these variables.
- **Appropriate institutional structures of decision-making:**
 - The current structure of multiple “energy” ministries (petroleum, coal, renewables, power, atomic) should be collapsed into one omnibus Ministry of Energy and Environment.
 - This will enable integrated decision making; it will also provide a platform for collaborative public-private and constructively “disruptive” innovation.
 - Besides, it will also bring sustainability to the fore of policy.
- **Legislation:**
 - The government should use its newly derived mandate to legislate an “Energy and Environment Security” Act.
 - The purpose should be to engage the public in the larger debate on how to weaken if not break the current unhealthy nexus between economic growth, energy demand and environmental degradation.



- It should be to elevate the objective of wreaking an energy “discontinuity” into a national priority.

Conclusion:

- ❖ IPCC’s special report on global warming warned that limiting global warming to 1.5 degrees would require rapid, far reaching and unprecedented changes in all aspects of society. India must speedup her efforts to shift towards renewable energy to meet her socio-economic goals in a sustainable manner.

Q) Achieving 24×7 power for all in rural India is a mandatory significant step to harvest the socio-economic benefits of electricity. Discuss along with measures suggesting methods of augmenting Saubhagya scheme. (250 words)

[The hindu](#)

[Livemint](#)

Why this question:

The question is to evaluate the linkage between 24×7 power supply to the rural India and the socio economic development associated with it. The article presents a detailed analysis of points in the same context.

Key demand of the question:

The answer must provide for a detailed narration of recent achievements made through Saubhagya scheme for rural electrification and the issues involved with it. The answer must appreciate the socio-economic progress associated with rural electrification.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

write a few introductory lines about the recent power for all drive of the government of India for the rural pockets of the country.

Body:

Answers must discuss the following aspects :

- Significance of power for all .
- Why is it essential for socio economic development of rural India?
- Discuss the steps to help rural India overcome electricity poverty and reap immense socio-economic benefits – real-time monitoring of supply at the end-user level, smart meters, focus on improving the quality of supply as well as maintenance services etc.
- Then move on to analyse the significance of Saubhagya scheme, discuss the merits and demerits associated.
- Stress on need to prioritize electricity access for livelihoods and community services such as education and health care, decent standard of living etc.

Conclusion –

Conclude with way forward.

Introduction:

- According to the Government of India, the **₹16,320 crore Saubhagya scheme funds the cost of last-mile connectivity to ‘willing households’**. The household electrification scheme, Pradhan Mantri Sahaj Bijli Har Ghar Yojana, or Saubhagya, has been implemented at an unprecedented pace. Of 26.04 million households targeted under the scheme, 99.93% households have got electricity connections as on 31 March, claims official website

Body:

- **Significance of power for all:** Electricity consumption is one of the most important indices that decide the development level of a nation. Electricity is the driver for India’s development.
- **Measures needed to augment Saubhagya:** In order to achieve 24×7 power for all, we need to focus on three frontiers:

Real-time monitoring of supply at the end-user level:

- We achieve what we measure. While the government is bringing all feeders in the country online, we currently have no provision to monitor supply as experienced by households.



- Only such granular monitoring can help track the evolving reality of electricity supply on the ground and guide DISCOMS to act in areas with sub-optimal performance.
- Eventually, smart meters (that the government plans to roll out) should help enable such monitoring.

PMO

- Named: 'Pradhan Mantri Sahaj Bijli Har Ghar Yojana aka **'Saubhagya'**
- Aims:
 - To provide electricity to un-electrified households by March 2019.
 - To provide subsidy on equipment like transformers, meters and wires.
- Budget: Rs 16000 crore
- **No price will be charged for the poor to get an electricity connection.**
- Thomas Alva Edison invented the bulb and said: *'We will make electricity so cheap that only the rich will burn candles.'*
- 4 crore people of the country are yet to get electricity.
- India which used to face power shortage, is now a power surplus country.
- Mr Modi said, the installed power capacity has increased by 12 per cent during last three years and 60 thousand Mega Watt power has been added.



DISCOMS need to focus on improving the quality of supply as well as maintenance services:

- Adequate demand estimation and respective power procurement will go a long way in reducing load shedding.
- Moreover, about half the rural population across the six States reported at least two days of 24-hour-long unpredictable blackouts in a month.
- Such incidents are indicative of poor maintenance, as opposed to intentional load-shedding.
- DISCOMS need to identify novel cost-effective approaches to maintain infrastructure in these far-flung areas.
- Some States have already taken a lead in this. Odisha has outsourced infrastructure maintenance in some of its rural areas to franchisees, while Maharashtra has introduced village-level coordinators to address local-level challenges. Such context-based solutions should emerge in other States as well.

Quality Customer Service:

- Finally, the improvement in supply should be complemented with a significant improvement in customer service, which includes billing, metering and collection.
- Success depends on curbing DISCOM losses and consumer honesty.
- Distributed generation could complement centralised grid electricity to resolve both, and ensure sustained use of electricity not just for rural households, but also for the entire rural economy including farms, schools, hospitals, and small businesses.
- It would lead to improved consumer satisfaction, as electricity truly becomes an enabler of prosperity in rural India.

Way forward:

- Given that **electricity is in the concurrent list**, it is for states to ensure quality, reliable and affordable electricity to consumers.
- We need **radically innovative approaches** such as the **proposed prepaid smart meters and last-mile rural franchisees** to improve customer service and revenue collection.
- Rural renewable energy enterprises could especially be interesting contenders for such franchisees, considering the social capital they already possess in parts of rural India.
- As we focus on granular monitoring, high-quality supply, better customer service and greater revenue realisation at the household level, we also need to prioritise electricity access for livelihoods and community services such as education and health care.
- Only such a comprehensive effort will ensure that rural India reaps the socio-economic benefits of electricity.



Q) Discuss the significance of National Investment and Infrastructure Fund (NIIF) and the need for Infrastructure funding in India. (250 words)

[Financialexpress](#)

Why this question:

Roadis, a private investor and operator of transport infrastructure worldwide and the National Investment and Infrastructure Fund (NIIF) have jointly set up a platform to invest in road projects in India. The platform would invest up to \$2 billion of equity targeting toll-operate-transfer models, acquisitions of existing road concessions and investment opportunities in the road sector with an aim to create a large roads platform in the country.

Key demand of the question:

The answer must discuss National Investment and Infrastructure Fund (NIIF) and need for infrastructure funding in India.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Briefly discuss the context of recent initiative – platform to invest in road projects in India.

Body:

- The question is straight forward, one must establish the details of National Investment and Infrastructure Fund (NIIF); composition, mandate and other important details.
- About NIIF: The government had set up the ₹40,000 crore NIIF in 2015 as an investment vehicle for funding commercially viable greenfield, brownfield and stalled infrastructure projects. The Indian government is investing 49% and the rest of the corpus is to be raised from third-party investors such as sovereign wealth funds, insurance and pension funds, endowments, etc. NIIF's mandate includes investing in areas such as energy, transportation, housing, water, waste management and other infrastructure-related sectors in India.
- NIIF currently manages three funds each with its distinctive investment mandate. The funds are registered as Alternative Investment Fund (AIF) with the Securities and Exchange Board of India (SEBI).
- Discuss the three associated funds – Master Fund, Fund of Funds, Strategic Investment Fund etc.
- Discuss the importance of infrastructure funding in India.

Conclusion:

Conclude with significance of NIIF and importance of infrastructure funding.

Introduction:

- National Investment and Infrastructure Fund (NIIF) is a fund created by the Government of India for enhancing infrastructure financing in the country.
- NIIF was proposed to be set up as a Trust, to raise debt to invest in the equity of infrastructure finance companies such as Indian Rail Finance Corporation (IRFC) and National Housing Bank (NHB).
- The idea is that these infrastructure finance companies can then leverage this extra equity, manifold. In that sense, **NIIF is a banker of the banker of the banker.**
- NIIF is envisaged as a **fund of funds with the ability to make direct investments** as required. As a fund of fund it may invest in other SEBI registered funds.

Body:

Objectives of NIIF:

- The objective of NIIF is to maximise economic impact through infrastructure development in viable projects both greenfield and brownfield, including stalled projects, mainly in the core infra sector.
- NIIF has been structured as a **fund of funds** and **set up as Category II Alternate Investment Fund (AIF) under the Securities and Exchange Board of India (SEBI) Regulations**. Total corpus of the fund is Rs. 40000 Crore.
- The **government will invest Rs.20, 000 crores** into it from budget while the **remaining Rs. 20,000 crores are expected to come from private investors. Government stake has been fixed at 49%.**
- **Fund of funds:** A fund focused on anchoring and investing in credible and reputed third party managers with a strong track record across diversified sectors within infrastructure services and allied sectors.



- This implies that there would be multiple alternative investment funds underneath the main fund. Examples of such funds include stressed-assets fund, renewable energy fund, brownfield projects fund etc
- **Master fund:** A fund focused on creating scalable sectoral platforms in core infrastructure and in collaboration with strong and reputed operating and financial partners.
- **Strategic fund:** A fund focused on investing in strategic assets and projects with longer term horizon across various stages of development.

Significance of NIIF:

- Provides equity / quasi-equity support to those Non Banking Financial Companies (NBFCs)/Financial Institutions (FIs) that are engaged mainly in infrastructure financing. These institutions will be able to leverage this equity support and provide debt to the projects selected.
- Invest in funds engaged mainly in infrastructure sectors and managed by Asset Management Companies (AMCs) for equity / quasi-equity funding of listed / unlisted companies.
- Provides Equity/ quasi-equity support / debt to projects, to commercially viable projects, both greenfield and brownfield, including stalled projects.
- Fund raising through suitable instruments including off-shore credit enhanced bonds, and attracting anchor investors to participate as partners in NIIF;
- Servicing of the investors of NIIF.
- Considering and approving candidate companies/institutions/ projects (including state entities) for investments and periodic monitoring of investments.
- Investing in the corpus created by Asset Management Companies (AMCs) for investing in private equity.
- Preparing a shelf of infrastructure projects and providing advisory services.

Need for infrastructure funding in India:

- There is a clear need for big money to finance the burgeoning infrastructure sector in the country.
- Large and continuous capital infusions are needed across both old and new infrastructure projects and across the spectrum, in roads, railways, ports, airports, energy et al.
- Given the sector's long-gestation periods, these projects need long-term patient money. NIIF can play a key role in this.
- Especially so in the current challenging circumstances when the bad loan problem at many banks and the IL&FS mess have made traditional infrastructure financiers tight-fisted.
- Starting off on a clean slate, NIIF, with government backing, professional fund managers with wide experience in infrastructure financing, and renowned international investors, is in a good position to raise funds and bridge the financing gap.
- It can also bankroll other financiers such as IRFC and NHB, thus helping capital outlays grow manifold.
- Rapid infrastructure development can give a major boost to the country's economic prospects and employment generation. NIIF as a potential major financier can be a game changer.

Conclusion:

- NIIF has investments held by **marquee foreign and domestic investors such as Abu Dhabi Investment Authority, Temasek and HDFC Group**. With the Centre's significant stake, **NIIF is considered India's quasi sovereign wealth fund**. Its portfolio now includes investments in ports and logistics, real estate and renewables. It is also said to have put in bids for four airports — Jaipur, Lucknow, Ahmedabad and Mangaluru — in the recent auctions.

Q) Discuss the problems plaguing private Airlines industries in India, Do you think the new aviation policy can bring some respite to the long suffocated competitive industry ? (250 words)

[Indianexpress](https://www.indianexpress.com)

Why this question:

The question is amidst the recent controversies surrounding Jet Airways, the problems faced by Indian aviation industry is alarming and one needs to assess the New aviation policy and the fixes it aims to bring.

Key demand of the question:

The answer must discuss the lacunae plaguing the airlines sector in India and explain the nuances of the new aviation policy.

Directive:



Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

Introduce by highlighting the alarming situation of airlines sector in India.

Body:

- The answer is straight forward and must be explained with recent cases such that ranging from Kingfisher airlines of the past to Jet airways of today.
- Quote suitable facts to express the current crisis situation in the Aviation industry in India.
- Discuss specific issues – competition, rise in the price of fuel, Government interventions, High operational costs, High cost of aviation turbine fuel, High service tax and other charges, Shortage of maintenance facilities, High foreign exchange rate, Competition from foreign airlines, Congestion at airports, Lack of qualified pilots and technical manpower etc.
- Discuss relevance of the new aviation policy; salient features and what solutions it has to offer.
- Role of the government to help manage the crisis facing the industry.

Conclusion –

Conclude with what needs to be done.

Introduction:

- The suspension of operations at Jet Airways — at one time India's largest private airline — announced recently, follows the troubles at Kingfisher, Air Deccan, and Sahara. The aviation sector is rife with hope and distress in a highly competitive market over the last 30 years.

Body:

The issues plaguing Airlines industries in India:

- **Increase in fuel prices**
 - Aviation turbine fuel (ATF) is one of the important sections of the industry.
 - The Centre charges 14% excise duty on ATF. The states pile on their own sales tax that can go as high as 29%.
 - ATF charges, vulnerable to currency movements, comprise a large chunk of Indian airlines' operating expenses—some 40% compared to 20% for foreign carriers.
 - As the price for oil has shot up, it had led to difficulties for airlines as they have not been able to absorb in the short term due to their business model.
- **Rupee depreciation:**
 - The rupee's depreciation is hitting carriers hard as it did a few years ago.
 - About 25-30% of their costs, excluding fuel, are dollar denominated—from aircraft lease rents and maintenance costs to ground handling and parking charges abroad.
- **Excessive parking and landing charges:**
 - High Airport (aeronautical) Charges levied by Airport Authority of India.
 - These charges payable at the International airports are higher than those payable at the airports designated as Domestic airports.
 - As a result, the domestic airlines in India are incurring additional costs at the international designated airports without deriving any extra facilities.
- **Fare wars:**
 - There is a cut throat competition faced by the top airline due to ticket pricing.
 - Established Airlines are threatened by low cost carriers, which are eating up their market share.
 - In order to consolidate their market share, top premium airlines were forced to reduce their ticket fares to around 15- 20 per cent.
 - Such a slash down in price will lead to a price war in the long run amongst the airlines with the only goal of increasing their market share.
 - A growing market for low-cost carriers (SpiceJet, IndiGo and GoAir) that affected the profitability of a full-service carrier like Jet
- **Loads of debt:**
 - To keep the operations afloat, the carriers take loans.
 - But poor operational efficiency, steady losses in the wake of higher fuel costs and a weaker rupee leads to non-payment of debts.



- No airlines company has been able to devise **a credible currency policy** to protect them against sharp currency movements.
- **Lack of Managerial Expertise:**
 - Indian aviation sector is struggling due to lack of managerial expert and expertise in the sector and lack of a regulator to monitor the industry

Relevance of the new aviation policy:

- The **new civil aviation policy (NCAP) 2016's** regional connectivity scheme doesn't help.
- The regional aviation policy is well-intentioned, but expecting private capital to flow to loss-making projects remains elusive.
- Its goal is laudable and it may well benefit potential flyers in smaller towns.
- The policy is also silent on the future roadmap for the state run Air India and the way forward for that airline.
- There is no word about removing the sales tax on ATF and other taxation measures levied on Indian carriers.
- The regional aviation policy unveiled by the previous government with incentives like 4% sales tax on ATF and no landing/ parking charges could not achieve the expected progress. Experts feel that the policy is too difficult to implement.
- Adding to the woes, the expected rise in helicopter operations, private flying and regional airlines is likely to add to the pressure.
- But the ticket price caps it imposes under the scheme, the fact that the viability gap funding will last only for three years and various operational issues, such as the lack of slots for connecting flights at major airports, mean that carriers are, by and large, left holding the can.

Way forward:

- The government can lower the excise duty on jet fuel further to bring down the operational costs of the airlines.
- NCAP's liberalization of foreign direct investment in the sector needs to be ironed out to attract investors.
- Bilateral treaties for international routes that Indian carriers are unable to take full advantage need to be looked into at the earliest.
- **Insolvency and Bankruptcy code** can be used to quickly resolve the issues in case of defaults and bankruptcy by airline companies.
- Aviation sector should have been better prepared to handle such an unforeseen situation, learning from the past situations – as fuel prices and rupee volatility were among the top reasons for one of the biggest aviation disasters of recent times.
- There is a need to **set up simulators to develop the skills of unemployed pilots**
- A **clear long-term policy roadmap** which is aligned to the industry's requirements is yet to emerge. One method could be opening up international routes faster for our airlines that are successful.
- The industry stakeholders should engage and collaborate with policy makers to implement efficient and rational decisions that would boost India's civil aviation industry.
- With the right policies and relentless focus on quality, cost and passenger interest, India would be well placed to achieve its vision of becoming the third-largest aviation market by 2025

Conclusion:

- Above all, the industry experts and the government should be mindful of the fact that India's aviation industry is largely untapped with huge growth opportunities, considering that air transport is still expensive for majority of the country's population, of which nearly 40 per cent is the upwardly mobile middle class.

Q) Energy mix is a step towards sustainability. Discuss. (250 words)

Reference

Why this question:

The question is in the context of increasing energy demands across the globe and amidst such a situation the only better solution is to have a mix of energy for sustainability.

Key demand of the question:

The answer must discuss the current scenario of energy crisis in the globe and in what way energy mix offers a key solution to the problem.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.



Structure of the answer

Introduction:

Introduce by highlighting the alarming situation of energy crisis.

Body:

- Discuss energy sustainability – the way we use it needs to be efficient, sustainable and whenever possible, renewable.
- Why is there a need to focus on energy mix for sustainable energy for our future.
- Explain how increased share of renewable energy in the global mix of energy sources need to be focused.

Conclusion –

Conclude with way forward.

Introduction:

- Energy availability, economic growth and sustainable development are grossly inseparable. Generating adequate power has been a major challenge for most countries across the globe. Energy is vital to every aspect of the socio-economic life. Increasing energy sources ensures energy security, which also enhances sustained growth in all sectors of the economy.
- Energy plays a vital role as an enabler for improving quality of life. Its links to other sectors such as water, climate, health, and agriculture must be strengthened through integrative policies. Without energy, attainment of the 2030 Agenda for Sustainable Development is at risk.

Body:

- Energy mix means how final energy consumption in a given geographical region breaks down by primary energy source. It includes fossil fuels (oil, natural gas and coal), nuclear energy, waste and the many types of renewable energy (biomass, wind, geothermal, water and solar). These primary energy sources are used to generate electricity, provide fuel for transportation, and heat and cool residential and industrial buildings.
- Sustainability is defined as the usage as per present requirements without hampering the needs of the future.

Current Energy mix scenario:

- **80%** of today's energy mix is **fossil-based**, and fossil energy will remain important, a reality that makes it imperative to address the environmental footprint of fossil fuels urgently.
- oil, gas and coal were the primary energies most used worldwide, although renewable, with hydropower on top, has been increasingly used and implemented.
- The current Nationally Determined Contributions (**NDCs**) widely fail to meet a 2°C temperature objective let alone the Paris agreement's goal of keeping warming temperatures well below 2°C.
- Since fossil fuels and producing, transporting, using energy are key components of most countries' economic development and contribute about three-quarter of global greenhouse gas emissions.
- No single energy resource can sustainably meet the energy demands of any country.
- Energy consumption is expected to increase dramatically over the next 50 years as the world's population grows and developing countries become more

Energy mix and sustainability:

- With environmental requirements for zero or low CO₂ emission sources and the need to invest in a sustainable energy mix, new energy sources must be
- Integrating all exploitable energy sources is a viable way of achieving stability in energy supply
- Energy mix certainly has the ability to harness all possible sources of energy and reduce the dependence on fossil fuels. This in turn reduces the pollution level.
- Energy mix can always support the energy requirements in a greener manner.
- All energy sources, including renewables, nuclear and high efficiency fossil fuel with carbon capture and storage (CCS), must be considered along with new business models and significant improvements in energy efficiency and productivity to ensure that the energy needed for sustainable development is available and affordable.

Challenges of Renewable energy:

- Renewables (wind, wave, solar, hydro) offer long-term, clean energy reserves but they have a low energy density, leave a large environmental footprint and their fluctuations in time require storage systems and back-up power plants.
- Nuclear fission offers a proven alternative but generates long-lived radioactive waste that requires transportation and re-processing
- Solar farms and Wind energy farms need huge swathes of land where acquisition becomes an issue.



- Issues of transmission, storage, distribution to end users are major hindrance still.

Way forward:

- Storage and the cost shall be key determinants for sustainability of renewables.
- Support distributed and off-grid generation systems, as well as the adoption of storage technologies
- Green energy is the way forward but it is not likely to end the need for coal-based thermal plants in world.
- The dependence of coal-based thermal power plants will continue for at least the next couple of decades.
- Hence, it would not be advisable to promote it at the cost of pushing thermal power plants to become unviable on account of renewable energy options.
- The two have to co-exist and supplement each other.
- It is important to ensure that climate resilience is fully integrated into planning energy infrastructure and investments that are at risk from climate change and variability.

Q) What are Renewable Energy Certificates (RECs) ? Discuss their need and significance. (250 words)

Reference

Why this question:

The question is in straightforward, based on the concept of REC's and their importance. Recently Renewable Energy (RE) companies have moved the Delhi High Court, seeking an exemption for Renewable Energy Certificates (RECs) under the goods and services tax (GST). Thus it is important for us to ponder on the theme from exam point of view.

Key demand of the question:

The answer must discuss the concept of RECs, their benefits and significance in balancing energy scenario.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

Introduce by defining REC's – Renewable Energy Certificates (RECs) are a type of environmental commodity intended to provide an economic incentive for electricity generation from renewable energy sources. One REC is created when one megawatt hour of electricity is generated from an eligible renewable energy resource.

Body:

- The answer is straight forward and explain concept and significance of REC's.
- Provide for introduction to Renewable Energy Certificate (REC) mechanism.
- Discuss the potential of renewable energy in India.
- Explain the issues currently facing REC's in India.

Conclusion –

Conclude with what should be done to overcome such issues.

Introduction:

- Renewable Energy Certificates (RECs), also known as **green energy certificates or tradable renewable certificates**, are proof that energy has been generated from renewable sources such as solar or wind power. One REC is created when one megawatt hour of electricity is generated from an eligible renewable energy resource. When you purchase RECs, renewable energy is generated on your behalf.

Body:

Significance:

- It is a market based mechanism which will help the states meet their regulatory requirements (such as Renewable Purchase Obligations (RPOs)) by overcoming the geographical constraints on existing renewable potential in different states.
- RECs unbundle the electricity component (commodity) from the green/environmental attributes of the power generated from renewable sources. Both the components can then be traded separately.
- Thus, RECs help in incentivizing the production of renewable energy over and above the RPO state limit as tradable certificates are not constrained by the geographical limitations of commodity electricity.



- Stand-alone projects built independent of the well-established auction regime have little incentive and a high risk perception, lacking purchase guarantees and payment default protections.
- The income generated from trading RECs will bolster such independent projects.
- REC market would provide appropriate opportunities for development of renewable energy based electricity. This would also allow investors in renewable energy technologies to hedge electricity price risk through electricity futures.
- RECs issued for quantum of electricity generated from renewable sources do not require scheduling over long Such electricity can be consumed locally and only RECs need to be transferred to the obligated entities.

Need for RECs:

- India has been richly endowed with renewable resources. Since the cost of electricity generated from such resources is expensive, large scale development of renewable resources did not take
- Concern about climate change and concerted action to reduce green house gas emissions are powerful drivers for renewable
- There is an uneven distribution of renewable energy in India with certain states generating a high percentage of electricity from renewable sources while others are not meeting the minimum percentage.
- Renewable Energy Certificates (RECs) would help make the renewable electricity market stable by maximizing the benefits while reducing the costs.

Conclusion:

- The REC mechanism is a market based instrument, to promote renewable sources of energy and development of market in electricity, leading to the sustainable development of the country.

Q) Amidst global dynamics surrounding Oil rich countries, India is witnessing a continuous non- secular rise in the price of the commodity. Critically analyse and suggest what should be India's way forward ? (250 words)

The hindu

Why this question:

The question is amidst the growing uncertainty of Oil imports for India amidst rising geopolitics that has encircled the oil rich countries and how it has changed the price scenario of India and created feeling of uncertainty.

Key demands of the question:

The answer must discuss the recent oil turmoil, the sanctions imposed by US on Iran – oil rich country, the affect it has on India etc. and it has impacted the secular pricing policy of Indian energy system.

Directive word

Critically analyze – When asked to analyse, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction

Introduce by highlighting the situation.

Body

The body of the answer should address the following dimensions:

- Current energy crisis – highlight the disbalance in demand -supply equation of global oil system.
- India's case – present dependence on oil imports, conditions of other types of energy sources and potential in future.
- How and why India needs to diversify its oil supplier base and increase domestic sources of energy.
- Way forward.

Conclusion

Conclude with significance of diversification of energy sources amidst such shortage of oil.

Introduction:

- Oil is one of the most important commodities in recent times. Much of the economy depends on oil and this is why prices of oil matter to almost every economy including India. India is one of the largest importers of oil



in the world. It imports nearly 70 percent of its total oil needs which accounts for one third of its total imports. For this reason, the price of oil affects India a lot.

Body:

Current energy crisis:

- India is the world's third-largest consumer of oil.
- With 85 per cent of its crude oil and 34 per cent of its natural gas requirements is being fulfilled by imports.
- In 2016, India imported 215 million tonnes of crude oil and at 13 per cent, Iran stood third among India's biggest oil suppliers, after Saudi Arabia and Iraq at 18 per cent each.
- India, the world's seventh-largest economy, was a key beneficiary of falling crude oil prices between 2013 and 2015. The biggest benefit of the fall in oil prices was evident in narrower twin deficits.
- With the US' decision to walk away from the Iran nuclear deal and to re-impose sanctions on Iran, upside risks to crude prices cannot be ruled out.
- United States announced that it would not extend beyond May 1 the 180-day waiver it had granted to eight countries, including India, to purchase oil from Iran.
- India will stop importing crude oil from Iran following the US move to end sanction waivers, and will use alternate supply sources such as Saudi Arabia to make up for the lost volumes.
- Petroleum Minister said the country plans to increase imports from major oil producing nations other than Iran, indicating that it will be acceding to the U.S. plan to reduce Iran's oil exports to zero.
- However, Ratings agency ICRA has estimated that stopping oil imports from Iran could cost Indian refineries as much as ₹2,500 crore.

Reasons for India to diversify its oil sources:

- Current account deficit:**
 - Higher crude oil prices will widen the trade deficit and current account deficit, given that the value of imports goes up with crude oil, and that the quantity imported tends to be sticky in general.
 - According to CARE, a permanent increase in crude oil prices by 10% under ceteris paribus conditions could translate into the current account deficit increasing by 0.4-0.5% of GDP.
- Rupee:**
 - The currency could be impacted if the trade and current account deficits were to widen. An increase in the import bill will tend to put pressure on the rupee.
- Inflation:**
 - There could be significant impact on inflation, given how crude oil prices move and the extent to which the government allows the pass-through to the consumer.
 - The crude oil price could be an important consideration when the Monetary Policy Committee meets for its bi-monthly meeting in June.
- Fiscal impact:**
 - There could be a two pronged impact on government finances both on the revenue side and on the expenditure side.
 - On the revenue side, higher oil prices mean more revenue for the states as tax is ad valorem; for the Centre, though, it may not materially impact the fiscal math as the duty rates are fixed.

DEPENDENCE ON IMPORTS

Year	% Import Dependency (Crude Oil)	% Import Dependency (Natural Gas)
2015-16	80.6	40.7
2016-17	81.7	44.5
2017-18	82.9	45.3
2018-19*	83.3	47.0

*(April-October/Provisional data)

Source: Ministry of Petroleum and Natural Gas

INDIA'S IMPORTS (FY '19)

Country	Value of Imports (\$ bn)	Share in total
Saudi Arabia	22.4	17.4
Iraq	20.6	16.0
UAE	12.3	9.6
Iran	11.6	9.0
Nigeria	9.5	7.4
Qatar	8.6	6.7
Venezuela	6.6	5.1
Kuwait	5.8	4.5
USA	4.7	3.7

Figures for 11 months; total POL imports \$ 128.7 bn

Source: CMIE

**Measures needed:****Short and medium term measures:**

- In the near- to medium-term, the government will need to take steps to diversify its supplier base and also work towards increasing domestic sources of energy supplies.
- Expedite the process of exploring domestic avenues and diversify its sources of oil supply.
- The strategic oil reserves being set up in cooperation with the UAE and Saudi Arabia are a good step in that direction
- It is imperative to explore how fuels can eventually be covered under the goods and services tax (GST), which is essential not only to reduce any undue burden on users but also to prevent leakages and achieve efficiency.
- To begin with, natural gas and aviation turbine fuels (ATFs) may be considered for inclusion, which might not cause substantial revenue loss for states but will foster confidence that other petroleum products will be brought under GST sooner rather than later.

Long-term measures:**Diversify Energy Basket:**

- The National Gas Grid or Pradhan Mantri Urja Ganga project, it has also been created to have a gas-based economy and enhance the share of gas in the energy basket.
- To overcome environment pollution, the Centre is promoting the use of environment-friendly transport fuel—CNG— by expanding the coverage of City Gas Distribution (CGD) network in the country.

Renewable energy sector:

- There is an urgent need for development of renewable sources as a substitute for conventional sources to meet the energy needs.
- Opening up the renewable energy sector for more investments will also help avoid over-dependence on oil from the global market to meet the country's ever-increasing energy needs.

Strengthening Public transport:

- Public Transport should be made available and user friendly so that Individual vehicles reduce and demand for oil decreases.

Expediting the migration to electric mobility:

- Since the transport sector accounts for around 70% of the total diesel sales in the country, it is an appropriate sphere for a transition from traditional fuels to electric motors.
- A favourable incentive mechanism (subsidy up to 60% of the total cost of an electric bus) to help the adoption of electric buses gain traction is already in place.
- The best approach thus is a multi-stage adoption. This calls for first identifying a specific set of routes for electric bus services in a particular big city and ensuring that all infrastructure needed for their seamless operation is in place before considering other sets of routes.

Expanding the biofuel blending in petrol:

- Increasing the blending proportion of domestically available biofuels in cooking gas and transportation fuel is another way to reduce India's reliance on imported crude oil.
- Methanol, produced from coal, should be given more weightage when it comes to blending. Besides, biodiesel supply should be augmented by making jatropha farming more productive through genetic modification.

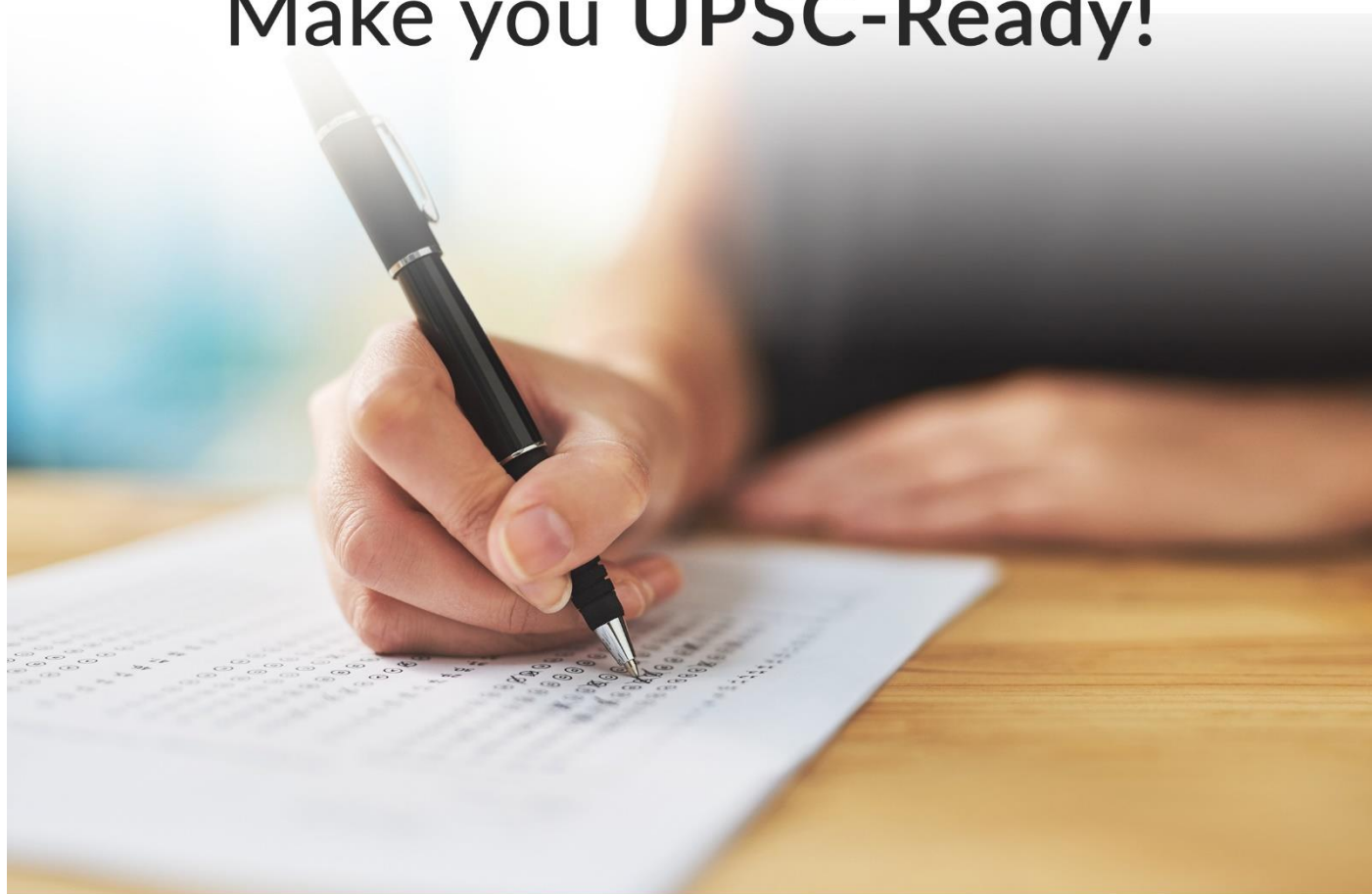
Conclusion:

- Reducing the country's reliance on oil imports would bode well for energy security, and make our financial markets less volatile in the event of untoward developments in the oil market. And savings from reduced oil imports could in turn be used to finance infrastructure projects, which are crucial for India's long-term growth prospects.



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Topic: Science and Technology- developments and their applications and effects in everyday life

Q) What is Hawking's theory of dark matter ? Discuss the recent findings and their significance. (250 words)

The hindu

Why this question:

Recently a group of scientists have ruled out Stephen Hawking's theory for mysterious dark matter. Dark matter remains one of the biggest mysteries in physics. Scientists know the mysterious substance makes up the majority of all matter in the universe, vastly outnumbering normal matter like stars, planets, and people. But no one is sure exactly what it is. Thus it is important for us to ponder a bit on such a theory.

Key demand of the question:

The answer must discuss in detail the theory proposed by Stephen Hawking and recent findings that justify the theory to some extent, one has to bring out the significance of such a finding in detail and what applications it bears in day to day life.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Briefly discuss the context of recent findings; the theory, its association with black holes and Dark matter.

Body:

Discuss the following points :

- What do the latest findings justify ? – researchers from the Kavli Institute for the Physics and Mathematics of the Universe (IPMU) in Japan has searched for the telltale sign of such minuscule black holes, and the result was pretty damning.
- What did Stephen Hawking propose? – Stephen Hawking proposed a theory that primordial black holes are a source of dark matter. He computed that the mass of the primordial black holes could range from as low as one-hundredth of a milligram to as high as more than the mass of a thousand Suns.
- What are primordial black holes? – Two Soviet physicists, Yakov Borisovich Zel'dovich and Igor Dmitriyevich Novikov, showed that at the initial instant of the big bang, the densities would have been very high at many points, resulting in the formation of small black holes. They were named 'primordial black holes'.
- What is dark matter?
- Significance – applications such as Gravitational lensing etc.

Conclusion:

Conclude with significance of such remarkable research.

Introduction:

- A group of scientists have ruled out Stephen Hawking's theory for mysterious dark matter. According to Hawking's theory, mysterious dark matter might be made up of tiny black holes created at the beginning of the universe. The scientists ruled out the possibility of primordial black holes being a major constituent of dark matter.

Body:

Hawking's theory of Dark matter:

- Stephen Hawking proposed a theory that **primordial black holes are a source of dark matter**.
- According to his hypothesis, black holes could have formed in the primordial stages of the universe long before the first stars formed.
- He computed that the **mass of the primordial black holes could range from as low as one-hundredth of a milligram to as high as more than the mass of a thousand Suns**.
- Two Soviet physicists, Yakov Borisovich and Igor Dmitriyevich, showed that at the initial instant of the big bang, the densities would have been very high at many points, resulting in the formation of small black holes. They were named 'primordial black holes'.



- In most galaxies, the stars closer to the centre and the stars at the edge of the galaxies take almost same time to make one revolution. This implied that something invisible and enveloping the galaxies was giving an extra push to the outer stars, speeding them up. This entity has remained as one of the central unresolved puzzles in cosmology since 1930s. It is named 'Dark Matter'.
- The material is considered to be a 'matter' since it appears to have gravitational attraction and it is 'dark' because it does not seem to interact with light (or for that matter any part of the electromagnetic spectrum).
- The elusive dark matter — which is supposed to be responsible for 85 percent of the universe's mass — remains hypothetical because all attempts to detect its particles through experiments have failed so far.

Recent findings and the significance:

- **Black holes are not radiant and will not be visible through any telescope. However, as first suggested by Albert Einstein, if by chance, a tiny primordial black hole eclipses a distant star, light rays of the star will bend around the black hole due to gravitational effect, resulting in the star appearing to be brighter than it originally is for a short while.**
- The research team used the **Hyper Supreme-Cam on the Japanese Subaru Telescope** located in **Hawaii** to look for any tell-tale evidence of primordial black holes between Earth and Andromeda galaxy **using gravitational lensing technique.**
- For one whole night, the research team took 190 consecutive images of Andromeda galaxy. If the Universe is filled with invisible teeny weeny primordial black holes, with masses lighter than the moon, as postulated by Stephen Hawking, then the team should have seen at least 1,000 gravitational lensing events.
- However, they were able to see at most one such candidate event, if not none. This implies Prof Stephen Hawking's theory that such black holes make up all of dark matter is wrong.
- It means we have to continue searching for the source of dark matter.
- The results have now confirmed that primordial black holes with masses similar or less massive than the moon can't contribute more than a percent of all dark matter

Conclusion:

- Although the existence of dark matter is generally accepted by the scientific community, some astrophysicists, intrigued by certain observations that do not fit the dark matter theory, argue for various modifications of the standard laws of general relativity. The discoveries of such life-defining phenomenon can further help find solutions to some of the challenges faced by humankind.

Q) Discuss the possible long-term psychological effects of interaction with social machines. Suggest what needs to be done to overcome these challenges ? (250 words)

Livemint

why this question:

In the era of rapid proliferation of smart home devices, the article analyses the psychological impact it is about to create in human minds.

Key demand of the question:

The answer must discuss in detail the growing dependence of social machines, its impact in terms of psychological affects and what needs to be done to overcome it.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

write a few introductory lines about the current situation.

Body:

Answers must discuss in detail the following points :

- Explain how the liability in the age of conversational AI is going to become layered and far more complex.
- Discuss the wide ranging effects of social machines? To what extent they can harm humanity.
- Give examples – iPad parenting, depending on smart devices to switch on and off the lights etc.
- What can be done to overcome it ?

Conclusion –

Conclude with way forward and suggest solutions.

**Introduction:**

- AI systems and devices will soon recognize, interpret, process, and simulate human emotions. A combination of facial analysis, voice pattern analysis, and deep learning can already decode human emotions for market research and political polling purposes.

Body:**Positive of Social Machines:**

- The more we use them, the more they are getting to learn about us, and the world we each uniquely inhabit, until eventually they will be able to respond so convincingly to everything we tell them that they will become indistinguishable from human companions.
- The conversational devices become the hub for all the connected devices in a home, they will be able to actively monitor the well-being of its inhabitants and guide them verbally on what to do in case of an emergency.
- Elderly people, particularly those with failing mental faculties, have begun to lean on these devices for answers, knowing that even if they are asking it a question for the 100th time, they will receive the same patient response, something no human caregiver could be expected to provide.
- Toy manufacturers such as Mattel have seized this opportunity to produce interactive toys that can actively engage with their young owners. The Hello Barbie doll uses cloud-based Artificial Intelligence (AI) to converse with children on topics as divergent as music, fashion and careers as well as abstract emotional topics such as how the child is feeling.
- Targeted emotional learning systems are also being tested for group settings, such as by analyzing the emotions of students for teachers, or workers for managers.

Challenges posed:

- These new developments in **conversational intelligence** are likely to throw up a whole host of challenges, the likes of which we have previously never had to consider.
- As good as these devices are as caregivers, no one has studied the long-term psychological effects of interaction with social machines, particularly in the context of the very old or very young.
- Parents, watching their children bark rude commands at digital assistants such as Alexa or Siri, have begun to worry that this rudeness will leach into the way kids treat people, or that kids' relationships with artificially intelligent machines will interfere with, or even preempt, human relationships.
- Humans seem to relate to AI as we do with most technology, attributing personalities to inanimate objects, imbuing appliances with intentionality, and generally projecting emotions onto the tech we use.
- When the experiences of bonding and belonging are absent in our environments, we are motivated to reproduce them through TV, film, music, books, video games, and anything that can provide an immersive social world. This is known as the **Social Surrogacy Hypothesis** — an empirically backed theory from social psychology — and it is starting to be applied to AI.
- According to a survey by the health company Cigna, **Generation Z is statistically the loneliest generation**, they interact with their peers at record lows and exhibit depressive symptoms at record highs.

The need of the hour:

- **Ethical norms** regarding uses of AI and our ability to regulate them in an intelligent and beneficial manner should keep pace with the fast changing technological capabilities.
- That is why we need AI researchers to actively involve ethicists in their work.
- **Conversational AI programmers** have had to **collaborate with psychologists** to figure out what those responses should be.
- Some of the world's largest companies like Baidu, Google, Alibaba, Facebook, Tencent, Amazon, Microsoft are cornering the market for AI researchers. They also need to employ ethicists.
- Additionally, regulators across the world need to be working closely with these academics and citizens' groups to put brakes on both the harmful uses and effects of AI.
- For governments to regulate, we need to have clear theories of harms and trade-offs, and that is where researchers really need to make their mark felt: by engaging in public discourse and debate on what AI ethics and regulation should look like.

Conclusion:

- It is clear that liability in the age of conversational AI is going to become layered and far more complex. Perhaps the time has come for us to create a brand new framework within which questions such as these should be asked and answered. The biggest hurdle to finding the right balance might not be achieving more effective forms of emotional AI, but finding emotionally intelligent humans to build them.



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Topic: Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.

Q) Discuss India's recent achievements in the field of Space Technology. How application of this technology has helped to prove a potential Space-based intelligence. (250 words)

The hindu

Why this question:

The question is in the backdrop of the event of recent launch of the country's first electronic surveillance satellite, EMISAT, from Sriharikota by the Indian Space Research Organization (ISRO).

Key demand of the question:

The answer must provide for a detailed narration of recent achievements in the field of Space Technology by India and the endeavours it is making in the field of space intelligence.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

write a few introductory lines about the recent surveillance satellite achieved by India.

Body:

Answers must discuss the following aspects :

- Have a discussion on how ISRO has achieved numerous milestones lately and has proved to harness space technology for national development.
- List out achievements like – Launching 104 satellites with one rocket, South Asia Satellite (GSAT-9) launch, Space Capsule Recovery, Mars Orbiter Mission, Remote Sensing and National Natural Resource Management System etc.
- Have a discussion dedicated specifically to Space-based electronic intelligence or ELINT and explain its significance.

Conclusion –

Conclude with way forward, assert the role of India space and the achievements it is making.

Introduction:

- The Indian Space Research Organisation (ISRO) has launched the country's first electronic surveillance satellite, **EMISAT**. It was launched on-board PSLV-C45. As many as 28 small satellites of international customers were also put in space as secondary riders. EMISAT is an advanced **electronic intelligence** (ELINT) satellite jointly developed by ISRO-DRDO. It is meant for electromagnetic spectrum measurements.

Body:

Over the last one year, the Indian Space Research Organisation (ISRO) took giant leaps forward, one success after the other.

- **INSAT:** The system is a network of satellites that facilitates **communication and broadcasting** across the south Asian region. It ushered in a revolution in India's television and radio broadcasting, telecommunications and meteorological sector.
- Created **Polarized Satellite Launch Vehicle** (PSLV) to make cost effective launch system. This has also increased international space collaboration by launching satellites of other nations at low costs.
- **Chandrayaan 1:** It has launched Chandrayaan 1 lunar probe mission in 2008.
- **Mangalyan:** ISRO has launched **Mars Orbiter Mission** in 2013 and created history by launching Mangalyan (mission spacecraft) into the Mars orbit in maiden attempt.
- **ASTROSAT:** It has launched first space observatory in 2015 to become fourth agency to do so after NASA, Roscosmos and ESA.
- **Scramjet:** Supersonic Combusting Ramjet has been launched by ISRO. This system works on Air-breathing Propulsion System which uses atmospheric oxygen to burn the fuel in the rocket.
- **RLV-TD:** ISRO demonstrated its **Reusable Launch vehicle** space shuttle RLV -TD to launch satellites around earth orbit and re-enter into the atmosphere.
- **104 satellites:** ISRO has created history by launching 104 satellites in one go.



- **Crew Escape module:** ISRO has test-launched Crew Escape Module paving the way for manned space mission Gaganyaan.

Besides, **NAVIC** (Indian Regional navigation satellites system) and **South Asia Satellite** are other missions which are a remarkable example of international coordination in the space arena. ISRO is preparing for its missions of **Aditya (Solar Mission)**, **Chandrayaan-II** and **Gaganyaan (Manned Space Mission)**.

Space Based Intelligence:

- Military satellites are used for several important functions, which include research, meteorology, and geodesy, in addition to **reconnaissance**.
- Space-based electronic intelligence or ELINT from the 436-kg EMISAT spacecraft will add teeth to situational awareness of the Armed Forces as it will provide **location and information of hostile radars placed at the borders**.
- The main capability of EMISAT is in **signal intelligence** — intercepting signals broadcasted by communication systems, radars, and other electronic systems. The **Ka-band frequency** that EMISAT is sensitive to, allows the EMISAT — **India's newest spy in the sky** — to **scan through ice, rain, coastal zones, land masses, forests and wave heights with ease**.
- This will be **another dimension to current land or aircraft-based ELINT**, according to defence experts.
- The recent PSLV-45 had PS-4 stage in rocket which carried an **ISRO test on Automatic Identification System (AIS)** related to **tracking ships on sea**.
- **AMSAT or the Radio Amateur Satellite Corporation**, India, has sent a payload called the **Automatic Packet Repeating System**. This is expected to help **amateur radio operators to get improved locational accuracy in their tracking and monitoring**.

Previous efforts:

- Earlier in the year 2019, ISRO launched MICROSAT R for the DRDO. **MICROSAT R** is an **imaging satellite**, meant for **military purposes**, but ISRO has not given out any details about it.
- India's **first exclusive defence satellite**, **GSAT-7** was launched in 2013. GSAT-7 was designed to provide communication capabilities over a wide oceanic region, including the Indian landmass. It helped in **marine communications** and helped the **Navy** in providing real-time inputs to Indian vessels.
- In December 2018, ISRO successfully launched its second advanced defence satellite exclusively for the **Indian Airforce**, called the **GSAT-7 A**. Dubbed the "**Angry Bird**", this satellite allows the Indian Air Force to interlink different ground radar stations, ground airbase and Airborne early warning and control aircraft. It also facilitates **exclusive frequency flight communication for the Indian Air Force**.
- **CartoSat-2A** was the first dual-use satellite, with capabilities of monitoring missile launches in India's neighbourhood. This was the first exclusive military satellite that was launched in April 2008. This was followed by CartoSat-2B in July, 2010.

Conclusion:

- Thus, EMISAT has added strength to **Indian Intelligence and Strategic systems**. At present, India has over 13 satellites, which can be used for **mapping surveillance and border areas**, and are primarily used for keeping an eye on enemies on both land and sea.
- However, there is a clear need for India to increase its investment in the military satellite arena. More importantly, India needs to invest in systems beyond navigation and communications and expand its existing infrastructure.

Q) Discuss the recent developments with respect to CRISPR technology also bring out the ethical concerns associated to it. (250 words)

Reference

why this question:

For the first time, four lizards have been genetically modified using the CRISPR-Cas9 gene editing tool.

Key demand of the question:

The question is about analyzing the significance of CRISPR technology and discussing the ethical angle associated with it.

Directive word:



Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

In a few introductory lines state the background of the context of question.

Body:

In brief discuss –

- What is CRISPR technology ?
- Scenario – Recently Scientists developed a new version of a gene drive that allows the spread of specific, favorable genetic variants, also known as ‘alleles,’ throughout a population. The new ‘allelic drive’ is equipped with a guide RNA that directs CRISPR to cut undesired variants of a gene and replace it with a preferred version. Using a word processing analogy, CRISPR-based gene drives allow scientists to edit sentences of genetic information, while the new allelic drive offers letter-by-letter editing.
- Significance of CRISPR technology, how it works.
- Ethical issues involved – clinical applications of the technology in human beings, lack of protocols, risk of mutations etc.

Conclusion:

Conclude with significance of such tools in path-breaking technology, to alter genes in order to tackle a number of conventional and unconventional problems, especially in the health sector.

Introduction:

- Scientists developed a **new version of a gene drive** that **allows the spread of specific, favourable genetic variants, also known as ‘alleles,’ throughout a population.**
- The new ‘allelic drive’ is equipped with a guide RNA that directs CRISPR to cut undesired variants of a gene and replace it with a preferred version. Using a word processing analogy, CRISPR-based gene drives allow scientists to edit sentences of genetic information, while the new allelic drive offers letter-by-letter editing.

Body:

- **CRISPRs** (clustered regularly interspaced short palindromic repeats) are sections of DNA, while **CAS-9** (CRISPR-associated protein 9) is an enzyme. Often described as “**a pair of molecular scissors,**” CRISPR is widely considered the most precise, most cost-effective and quickest way to edit genes.
- CRISPR technology is basically a **gene-editing technology** that can be used for the purpose of altering genetic expression or changing the genome of an organism. The technology can be used for targeting specific stretches of an entire genetic code or editing the DNA at particular locations. CRISPR technology is a simple yet powerful tool for editing genomes. It allows researchers to easily alter DNA sequences and modify gene function. Its many potential applications include correcting genetic defects, treating and preventing the spread of diseases and improving crops.

Working of CRISPR-CAS9 Technology:

- CRISPR-Cas9 technology behaves like a cut-and-paste mechanism on DNA strands that contain genetic information.
- The specific location of the genetic codes that need to be changed, or “edited”, is identified on the DNA strand, and then, using the Cas9 protein, which acts like a pair of scissors, that location is cut off from the strand.
- A DNA strand, when broken, has a natural tendency to repair itself.
- Scientists intervene during this auto-repair process, supplying the desired sequence of genetic codes that binds itself with the broken DNA strand.

But editing the genes using CRISPR-CAS9 raises grave **safety, social, and ethical concerns.**

- Study by Stanford University, U.S. , found that the CRISPR-Cas9 system introduces unexpected off-target (outside of the intended editing sites) effects in mice. The fear that the CRISPR system is being prematurely rushed for clinical use lingers. Three recent reports have exacerbated this fear even further.
- Studies highlighted that CRISPR-Cas9-edited cells might trigger cancer.
- **P53 protein:**
 - CRISPR-Cas9 system induced activation of a protein called P53. This P53 protein acts like a gatekeeper or guardian in the cells to keep them healthy and prevents them (the cells) from turning cancerous. In many cancers, cells lose their ability to repair deleterious genetic changes due to an impaired P53 function.



- In cells where editing is adequate, the cell's P53 protein may be dysfunctional. Therefore, a functional pP53 protein is good for the cells to be healthy but makes the Cas9-mediated editing process less effective.
- The impending danger of **mosaicism**, in which some cells inherit the target mutation, while others don't.
- Scientists are far from understanding **how exactly individual genes influence phenotypes**, or the visible traits of people.
- **Every gene likely influences multiple traits**, depending on the **environment it interacts**. This makes it hard to predict the ultimate outcome of an embryo-editing exercise without decades of follow-up.
- Every gene **influences trade-offs**, which scientists barely understand today. **Example:** while protecting against HIV, a deactivated CCR5 gene can also make people more susceptible to West-Nile Fever.
- Editing human embryos to repair disease-causing genes is **far more controversial**.
- **Issue of Designer babies:** The eyes of the mother, the hair of the father, the complexion from the maternal side and a cute little dimple from the paternal is what makes the kid loved by one and all. Designing the babies to look like celebrities might get the kids to thank you later in life but might **loosen the bond** that is supposed to be the significant part of the relationship.
- There are prospects of irreversible harms to the health of future children and generations, to concerns about opening the door to **new forms of social inequality, discrimination, and conflict**.
- Such living experiments are **done in secret**, outside of any formal institution, and apparently without any independent scrutiny or review by the scientific fraternity.
- Bioethicists fear abuse of gene editing, not just by misguided governments hoping to create a **'superior' race**.

Way Forward:

- India's current regulatory architecture for approving novel treatments is ambiguous and assigns overlapping functions to different governmental bodies. This framework needs to be **restructured to optimize trial approval time while addressing safety requirements**.
- A **two-step model** wherein the **government works with industry and research groups to accelerate clinical research is recommended**. This model consists of a national apex committee working in collaboration with existing institutional ethics committees and independent accreditation agencies.
- It is envisaged that, India will emerge as a significant contributor to the world bioinformatics market and position itself as a global hub for bioinformatics.
- Indian bioinformatics sector has numerous strengths and competitive advantages to make bioinformatics sector a sunrise industry of India.
- With the improvements in the IPR regime, increasing support from the government and continuing efforts of the private sector companies, it is very much likely that India could repeat its IT success story in bioinformatics too.
- Much research on animal models and isolated human cells should be conducted before any full-scale routine application in humans.

Conclusion:

- CRISPR technology is indeed a path-breaking technology, to alter genes in order to tackle a number of conventional and unconventional problems, especially in the health sector. However, experiments and tests to validate its use must be subjected to appropriate scrutiny by the regulators, and their use must be controlled to prevent commercial misuse.

Q) The economy that Biotechnology is bringing with it, is like soothing balm for the recession-hit world economy. Discuss with its relevance to India. (250 words)

Reference

why this question:

The Article discusses how biotech has arguably emerged as a preferred investment sector. Money is pouring in and analysts are sure the sector will maintain its blue chip status in the coming years as well.

Key demand of the question:

The answer must discuss the progress that Biotechnology is making exponentially and how its contribution to the economy is becoming significant day by day.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.



Structure of the answer

Introduction:

Introduce briefly the context of the question.

Body:

- Take cues from the article, use facts and reports to justify how Biotech has been progressively performing.
- The Indian Biotechnology sector is one of the major knowledge based sectors in India and is contributing significantly to shaping India's rapidly growing economy.
- Discuss the market size – based on a network of nearly three hundred national laboratories and about an equal number of universities. The national laboratories operate under various departments or agencies of the Government of India, predominantly the Council of Scientific and Industrial Research (CSIR), the Indian Council of Agricultural Research (ICAR), the Indian Council of Medical Research (ICMR), the Department of Science and Technology and the Department of Biotechnology, among others.
- Discuss the government initiatives to boost the sector – examples –
- The Ministry of Science and Technology, Government of India and RIKEN, Japan's largest research organisation have signed memorandums of understanding (MoU) to launch joint research programs in the fields of biology, life sciences and material sciences.
- UK Trade and Investment (UKTI) and the Association of Biotech Led Enterprises (ABLE) have signed a MoU to encourage and develop collaborative opportunities between Indian life sciences organisations and the UK.
- The Drugs Controller General of India has approved Biocon Ltd to market its biosimilar 'Trastuzumab' developed jointly with the US drug-maker Mylan, for treating breast cancer. "This is a major milestone for both partners as it is the world's first biosimilar trastuzumab to be accorded regulatory approval," said Ms Kiran Mazumdar Shaw, Chairperson and Managing Director, Biocon.
- The Government of India plans to set up National Institute of Biotic Stress Management for addressing plant protection issues will be established at Raipur, Chhattisgarh.
- Conclude with significance.

Conclusion –

Conclude with how India's biotechnology industry is expected to play a key role in sustaining future growth.

Introduction:

- Fifteen years after it rose and went limp, the biotech sector, globally, as well as in India has seen a bull run of sorts. In January this year, some 10 healthcare companies went public on the NASDAQ. Meanwhile, India has become the world's 12th biggest biotechnology economy having the second highest number of USFDA-approved plants. Biotechnology will help developing countries accomplish things that they could never do.

Body:

Indian Biotechnology Scenario:

- In India, the world's 12th biggest biotechnology economy and having the second highest number of US Food and Drugs Administration (USFDA) – approved plants, the industry is not only excited at the revival in the US but also about its domestic prospects.
- The Indian bioeconomy grew to \$4.3 billion at the end of the 2013 financial year, up from \$530 million in 2003, according to BioSpectrum, a widely-read trade publication in India.
- Though concentrated in Hyderabad and Bengaluru, there are units sprouting across the country; currently some 350 companies are in operation.
- The bio-pharmaceutical sector, which includes vaccines, medical devices and stem cells, is the main driver of India's biotechnology growth, generating close to 63 per cent of the industry's total revenue in 2013.

Biotechnology has the following relevance in India:

- **Environment:**
 - Biotechnology can be used to tackle environmental issues like deforestation and air pollution
 - Biotechnology can help in finding out the level of Particulate Matter 2.5 in the air,
 - The benefit of environmental biotechnology helps us to avoid the use of hazardous pollutants and wastes that affect the natural resources and the environment.
 - Biotech can address India's hunger problem:-



- Latest innovations in biotechnology that fortify major staples with micro nutrients like vitamin A, zinc and iron can be game changers for hunger problem in India.
- **Applications of Biotechnology in Medicine**
 - Biotechnology techniques are used in medicine for diagnosis and treating different diseases. It gives opportunities for the people to protect themselves from dangerous diseases.
 - The field of Biotechnology, genetic engineering has introduced techniques like gene therapy, recombinant DNA technology and polymerase chain reaction which use genes and DNA molecules to diagnose diseases and insert new and healthy genes in the body which replace the damaged cells
 - Genetic modification in mosquitoes can solve the problems of epidemic diseases such as dengue and malaria
- **Applications of Biotechnology in Agriculture**
 - Biotechnology has played major role in agriculture by altering genes, studying and cloning various crops in order to provide better quality products of foods ultimately improving our lives.
 - Potential advantages that biotechnology can confer across a wide range of agricultural applications are in areas such as livestock management, storage of agricultural products and sustaining current crop yields, while reducing the use of fertilizers, herbicides and pesticides.
 - Biotechnology offers a very promising alternative to synthetic foods and an improvement on conventional plant-breeding technologies. Combined with other advanced agricultural technologies, it offers an exciting and environmentally responsible way to meet consumer demand for sustainable agriculture.
- **Application of Biotechnology in Food Processing**
 - Biotechnology has a major application in the food sector.
 - It helps in improving the edibility, texture, and storage of the food; in preventing the attack of the food, mainly dairy, by the virus like bacteriophage
 - It produces antimicrobial effect to destroy the unwanted microorganisms in food that cause toxicity
 - It prevents the formation of mycotoxins and degradation of other toxins and anti-nutritional elements present naturally in food.

Government initiatives to boost the sector:

- The Ministry of Science and Technology, Government of India and RIKEN, Japan's largest research organisation have signed memorandums of understanding (MoU) to launch joint research programs in the fields of biology, life sciences and material sciences.
- UK Trade and Investment (UKTI) and the Association of Biotech Led Enterprises (ABLE) have signed a MoU to encourage and develop collaborative opportunities between Indian life sciences organisations and the UK.
- The Drugs Controller General of India has approved Biocon Ltd to market its biosimilar 'Trastuzumab' developed jointly with the US drug-maker Mylan, for treating breast cancer. "This is a major milestone for both partners as it is the world's first biosimilar trastuzumab to be accorded regulatory approval," said Ms Kiran Mazumdar Shaw, Chairperson and Managing Director, Biocon.
- The Government of India plans to set up National Institute of Biotic Stress Management for addressing plant protection issues will be established at Raipur, Chhattisgarh.

Conclusion:

- Every new drug discovery or drug approval not only draws cheers from millions of victims of debilitating diseases but also adds value to biotechnology companies. In a complex play of scientific progress and market forces, the biotechnology industry is recording growth that can rival the information technology industry boom of the 1990s. India with its young workforce and a potential market for the end-products can look out for a bright future in the biotechnology sector.

Topic: Conservation, environmental pollution and degradation, environmental impact assessment

Q) Discuss the pressure that below average Monsoon has on rural employment and the economy as a whole in India and what needs to be done by the administration to manage the same ? (250 words)

The hindu

Why this question:

The article captures the assessment from agency, Skymet about the forecast of a below average monsoon in India for this year. It assesses that there is a prospect of an El Niño, often associated with



drought conditions to be considered along with other factors that seem to weaken the El Niño link, such as a dipole weather phenomenon in the Indian Ocean.

Key demand of the question:

The answer must cover a detailed discussion on significance of the indications given and quoted by the report; discuss the scenario with causes and effects. Second half of the answer must emphasize on the role of administration in managing such situations.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Highlight the indications of the report.

Body:

Discussion should have the following dimensions :

- The highlights of the report.
- Why a weak monsoon ? – causes
- The consequences of the weak monsoon must be discussed in special context of rural economy and its association with employment – discuss effects on agriculture direct and indirect.
- Then move on to discuss what needs to be done in terms of administrative efforts – significant role of local administration; take cues from the article to capture multiple dimensions.

Conclusion:

Conclude with way forward.

Introduction:

- The **private weather forecaster Skymet** said it expects the 2019 monsoon rains to be “below normal” and about 7% short of the 89 cm the country usually gets from June to September.
- Not only is the monsoon expected to begin sluggishly but rain in July — a key month for agriculture — is expected to be nearly 9% short, the company said at a press briefing recently.

Body:

The highlights of the report:

- A forecast of a **below average monsoon in 2019**, after last year’s erratic rainfall that flooded Kerala and crippled agriculture in eastern and western States, is a cause for worry.
- In **terms of geographical risk**, Skymet expects **that eastern India, along with a major portion of Central India, is likely to be at a higher risk of being rain deficient**, especially during the first half of the season.
- The **onset month of June is going to have a very sluggish start and deficit rains are likely to spill into July**.
- The second half of the season would see better rainfall wherein August is expected to be a shade better than September.
- There is a **15% chance of a drought** (seasonal rainfall less than 90% of the average), **30% chance of normal** (seasonal rainfall that is between 96%-104% of the long period average or LPA), and **55% chance of below normal** (seasonal rainfall that is between 90%-95% of LPA).

Reasons behind a weak monsoon:

- The key culprit, according to Skymet, was the **El Niño** — the warming of the central Pacific Ocean that’s frequently associated with drying monsoon rains.
- An El Niño is declared when three straight months register a 0.5-1 degree C rise in sea surface temperatures in the Central Pacific.
- If the assessment from Skymet, is any indication, there is a prospect of an El Niño, often associated with drought conditions, taking hold.
- This must, of course, be considered along with other factors that seem to weaken the El Niño link, such as a dipole weather phenomenon in the Indian Ocean.
- According to Skymet — **the Indian Ocean Dipole**, when the western Indian ocean is warmer and has more rain clouds than the east — appeared favourable to the Indian monsoon.



Consequences of the weak monsoon

Rural Employment:

- The monsoon is the lifeblood for India's farm-dependent \$2 trillion economy, as at least half the farmlands are rain-fed.
- The country gets about 70% of annual rainfall in the June-September monsoon season, making it crucial for an estimated 263 million farmers.
- About 800 million people live in villages and depend on agriculture, which accounts for about 15% of India's gross domestic product (GDP) and a failed monsoon can have a rippling effect on the country's growth and economy.
- Whereas, a normal to above-normal and well-distributed monsoon boosts farm output and farmers' income, thereby increasing the demand for consumer and automotive products in rural markets.

Indian Economy:

- The monsoon has a direct impact on the country's agricultural GDP.
- The planting of key kharif, or summer, crops like rice, sugar cane, pulses and oilseeds begins with the arrival of monsoon rains in June.
- Summer crops account for almost half of India's food output and a delayed or poor monsoon means supply issues and **acceleration in food inflation**, a key metric which influences Reserve Bank of India's decision on interest rates.
- Lower output of pulses and oilseeds will lead to increased imports, **denting the food import bill which in turn will impact the fiscal deficit and economy**.
- A deficit monsoon could also lead to a drought-like situation, thereby affecting the rural household incomes, consumption and economic growth.
- A poor monsoon not only leads to **weak demand for fast-moving consumer goods, two-wheelers, tractors and rural housing sectors** but also **increases the imports of essential food staples and forces the government to take measures like farm loan waivers**, thereby putting pressure on finances.
- Below normal monsoon can also lead to drought-like situation, thereby affecting the rural household incomes.
- Other sectors affected by the health of the rural economy are banking, NBFCs and microfinance institutions.
- Droughts result in NPAs, as farmers are unable to repay loans.
- Whereas a normal monsoon results in a good harvest, which in turn lifts rural incomes and boosts spending on consumer goods. It also has a positive impact on hydro power projects.

Measures needed:

- While the farming sector has its own set of risks, like any other economic activity, to increase and ensure stable flow of income to farmers it is vital to manage and reduce the risks by analysing, categorising and addressing them.
- In rainfed areas, **water security** primarily depends upon rainwater harvesting and the efficient use of the available water through techniques like drip irrigation, and the appropriate choice of farming systems.
- **Groundwater augmentation and management** is an important method of ensuring adequate and timely availability of water for crops. Fortunately, the concept of 'more crop per drop' is being promoted by the government.
- The government must resolve to address the structural issues and there is a need to give farmers not just a better, but also more stable, return on their crops.
- The monsoon-dependent Indian economy needs **climate-sensitive budgeting**.
- The excessive dependence on monsoon may be mitigated by the construction of modern irrigation canals, afforestation, and diversification of Indian industries.
- Farmers, especially smallholder farmers, need advance warning of emergent weather conditions at a local level.
- Develop **climate-smart agriculture practices**.
- Build adaptive capacities to climate variability and strengthen the sustainability of farming systems.
- Preventive measures for drought that include growing of pulses and oilseeds instead of rice.
- **Mobile telecommunication systems** are increasingly cost-effective and an efficient way of delivering weather-based agro-advisories to farmers at a large scale.
- **Allied agricultural practices like Agroforestry, Apiary, Fisheries, Animal husbandry** should be promoted which can act as economic alternative in times of Monsoon failure.



Q) Discuss the significance of global coalition for clean cooling that was recently adopted, also trace India's efforts in this direction. (250 words)

Reference

Why this question:

The Global Cooling Coalition was launched recently at the first Global Conference on Synergies between the 2030 Agenda and Paris Agreement held at Copenhagen, Denmark.

Key demand of the question:

The answer must discuss the significance of global coalition of cooling along with India's efforts in this direction.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Briefly discuss the idea of cooling.

Body:

The discussion should have the following points :

- Why is the concept of cooling gaining importance day by day?
- What are effects it has in efforts to tackle global climate change scenario.
- Discuss the Global Cooling Coalition – is supported by the UN, Climate and Clean Air Coalition, the Kigali Cooling Efficiency Program and Sustainable Energy for All. The coalition includes environment ministers from Chile and Rwanda and foreign affairs from Denmark as well as heads of Danish engineering firms ENGIE and Danfoss and leaders from civil society, research and intergovernmental institutions.
- India's efforts – national cooling action plan launched by the Union environment ministry.
- Way forward.

Conclusion:

Conclude with way forward and assert the significance of such steps.

Introduction:

- The first-ever **global coalition on clean and efficient cooling** was launched at the recently held **First Global Conference on Synergies between the 2030 Agenda and Paris Agreement in Copenhagen, Denmark**.
- The Cool Coalition is a global effort led by the **United Nations Environment, the Climate and Clean Air Coalition, the Kigali Cooling Efficiency Program, and Sustainable Energy for All (SEforALL)**.

Body:

Significance of Global Coalition for clean cooling:

- As the world gets warmer, the demand for air conditioners is projected to grow and the greenhouse gas it emits will endanger the planet.
- Clean, efficient cooling appliances and equipment can save up to \$2.9 trillion in energy use by 2050, and help avoid 0.4° Celsius warming of the planet
- The global demand for cooling is growing at a rapid pace as unprecedented temperatures peaks have been increasing every year.
- Throughout the world, 2018 was the fourth hottest year, preceded by 2017, 2015 and 2016.
- Already, the world's 30 percent of the population face potentially dangerous temperatures for more than 20 days in a year. Heatwaves cause 12,000 deaths annually.
- Millions of people are at risk today from extreme heat and need equal protection from both increasing temperature and increased carbon emissions due to the increasing use of cooling units, irrespective of their economic status.
- According to an **International Energy Agency (IEA) report**, the global stock of air conditioners in buildings will grow to 5.6 billion by 2050, up from 1.6 billion today, which will amount to 10 new ACs sold every second for the next 30 years. This will require 3 times more electricity by that period from the 2016 level.
- In the upcoming next 20 years, India's cooling requirement will increase by around 8 times, with AC alone consuming more than half of the total energy required for cooling in the country by 2037-38.



Global efforts for clean cooling:

The Global Cool Coalition

- **The Global Cool Coalition** is a unified front that links action across the Kigali Amendment, Paris Agreement and Sustainable Development Goals. It is expected to inspire ambition, identify solutions and mobilise action to accelerate progress towards clean and efficient cooling.
- It will complement and build upon ongoing successful programmes to advance clean and efficient cooling, including, the Cooling for All Secretariat, the Climate and Clean Air Coalition, the Kigali Cooling Efficiency Programme, private sector action like the Global Cooling Prize, and other initiatives.

Kigali Amendments:

- The Kigali Amendment introduced in 2016, was the first modification to the Montreal Protocol (now ratified by 197 countries) to monitor substances that did not contribute to ozone depletion.
- In January 2019, the Kigali Amendment to the Montreal Protocol started phasing down these gases, known as hydrofluorocarbons (HFCs).

Montreal Protocol:

- In 1987, the Montreal Protocol on Substances that Deplete the Ozone Layer was introduced, the first international policy effort to protect the ozone.
- This treaty called for the phase out of ozone-depleting compounds like chlorofluorocarbons and hydrochlorofluorocarbons (HCFCs).
- This proved to be a major success for the restoration for the ozone layer, which is expected to return to 1980 coverage around 2050.

Indian efforts:

National Cooling Action Plan:

- India has already developed a national cooling action plan that was launched by the Union environment ministry in March this year.
- The plan acknowledges that “there is an immense potential to rationalize the rise in the requirement for active refrigerant-based cooling in the country by the adoption of passive cooling design strategies across sectors.”

International Solar Alliance:

- The ISA’s major objectives include global deployment of over 1,000GW of solar generation capacity and mobilisation of investment of over US\$ 1000 billion into solar energy by 2030.
- This will help reduce the carbon emissions from Thermal power plants.

Green India mission:

- GIM is one of the eight missions launched under the National Action Plan on Climate Change (NAPCC).
- The objective of the mission is to increase green cover to the extent of 5 million hectares (mha) and improve quality of existing green cover on another 5 mha, improve eco-system services like carbon sequestration, hydrological services and biodiversity

Conclusion:

- This Global Coalition is a positive development, as it recognizes the importance of cooling not only as carbon emission and development issue but as a larger social equity issue.
- It will complement and build upon ongoing successful programs to advance clean and efficient cooling. To survive in a sustainable manner, the world needs to start looking at adaptive comfort and not just cooling.

Q) Examine the root causes of India’s problem of e-waste and discuss the whys and wherefores due to which rules and regulations have been ineffective. (250 words)

Reference

Why this question:

The question is direct and straightforward, one has to bring out the root causes of India’s problem of e-waste and discuss the policy failures and solutions therein.

Key demand of the question:

The answer must discuss in detail the problems associated with e-wastes in India, the associated challenges and concerns in dealing with it and what needs to be done.

Directive word:

Examine – When asked to ‘Examine’, we have to look into the topic (content words) in detail, inspect it, investigate it and establish the key facts and issues related to the topic in question. While doing so we should explain why these facts and issues are important and their implications.



Structure of the answer

Introduction:

write a few introductory lines about e – wastes in India, provide for some statistics.

Body:

Answers must discuss in detail the following points :

- What is E-Waste? – Electronic waste, abbreviated as ‘e-waste’ is a term used to describe old, end-of-life electronic appliances such as computers, laptops, TV’s, radios, refrigerators etc., which have been discarded by users. E-waste comprises of numerous valuable but harmful substances that can cause an adverse effect on human health.
- E-waste –Statistics – global volume of e-waste is expected to reach 52.2 million tonnes (MT) or 6.8 kg per inhabitant by 2021. Among Indian states, Maharashtra contributes the largest e-waste of 20% but recycles only about 47,810 tonnes per annum.
- What are the harmful effects?
- Why it is difficult to manage e waste in India?
- Failures of policies – causes and consequences.
- What Should India Do?

Conclusion –

Conclude with way forward as to how should India deal with the menace of e- wastes.

Introduction:

- A recent **UN report** titled ‘**A new circular vision for electronics**’ warned that ‘**Tsunami of e-waste**’ was to hit the world soon.
- The report notes that the waste stream has already reached **48.5 million tonnes (MT) in 2018** and the figure is expected to double if nothing changes.
- In India, e-Waste accounts for **70% of the landfills. (2011 Rajya Sabha Secretariat Study)**. By 2050, India will likely stare at a pile of a new category of electronic waste, namely **solar e-waste**.
- India’s **PV (photovoltaic) waste volume is estimated to grow to 200,000 tonnes by 2030 and around 1.8 million tonnes by 2050**.

Body:

The **root causes** of India’s e-Waste problem are:

- e- Waste is technically all waste electrical and electronic equipment (WEEE) discarded without the intent of use.
- It comprises not just electronic items, but also all electrical equipment that involves anything with a plug, electric cord or battery.
- In recent years, e-waste has grown faster than earlier anticipated. By 2021, the annual total volume is expected to **surpass 52 MT**, considering the fact that the number of devices connected to the internet is going to be between **25-50 billion by 2020**. **By 2050, the volume of e-waste in the worst-case scenario, could top 120 MT annually**.
- In India, e waste accounts for **4% of global e-waste and 2.5% of global GDP** (2014 figures) – so it has a higher share of e-waste than its share of gross domestic product (GDP).
- The **informal sector** manages about **95% of the e-Waste in India**. Due to the informal and crude processing techniques, the soil, water and air are polluted to a beyond-repairable level. **Example:** Moradabad and Seelampur.
- The **hard-to-recover substances from e-waste like mercury, arsenic** make their home in landfills and keep leaching into ground water.
- **Incineration** is one of the most practiced methods of recycling leading to high carbon emissions and poisoning of air with toxic gases.
- **The poor implementation of Extended Producer Responsibility** as mandated under **e-Waste Management Rules, 2016** is another challenge.
- The **export of e-Waste from developed countries** is another growing problem despite regulations under **Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal**.

Causes for failure of rules and regulations for e-Waste:

- India has 19 PROs (producer responsibility organisations), which are hired for collection as of today but there is no level playing field.
- There is no independent mechanism to verify if EPR is being implemented. The law mandates random inspections by the Central Pollution Control Board (CPCB) and state PCBs, but there’s no record of them.



- The issues of how to address the ones using the products: how do you get people to hand back their products in a reasonable way.
- The lack of companies' initiative to build an image of a responsible actor, of someone consumers can believe in.
- Customer care representatives do not have inkling about any take back or recycling programme and even if they have set up collection centres, they are simply not enough for a geographically vast country like India.
- India being a vast country, setting up collection mechanism is a big challenge. If any of the brands try individually to reach out to all corners of the country, it will economically not be sustainable or feasible.

Measures to control the e-Waste growth:

- **Unified effort:** The report calls for systematic collaboration with major brands, small and medium-sized enterprises, academia, trade unions, civil society and associations in a deliberative process to reorient the system and reduce the waste of resources each year with a value greater than the GDP of most countries.
- **Holistic management:** To capture the global value of materials in e-waste and create global circular value chains, use new technology to create service business models, better product tracking and manufacturer or retailer take-back programmes.
- **Scaling up recycling:** The report notes that material efficiency, recycling infrastructure and scaling up the volume and quality of recycled materials to meet the needs of electronics supply chains will all be essential for future production.
- **Incentivization:** The producers should also have buy-back or return offers for old equipment, and plans to incentivise the consumer financially. The report also advocates a system of 'urban mining' by strengthening the extended producer responsibility provision.
- **Job potential:** If the electronics sector is supported with the right policy mix and managed in the right way, it could lead to the creation of millions of decent jobs worldwide.
- **Awareness & Education:** there is an acute lack of awareness among people as they simply don't know that there exist collection centres that collect items for recycling. The law will fail to serve the purpose unless these changes are made on the ground.

Conclusion:

- A strong political will is required to come out with strict regulations to manage e waste in India. Increased public awareness is the need of hour. It is now to be seen how the stakeholders who turned a blind eye to the rules so far, proceed ahead.

Q) Discuss the achievements made by Namami Gange programme. How was it different in its approach from the previous policies aimed at cleaning Ganga ? (250 words)

[Indianexpress](https://www.indianexpress.com)

Why this question:

Recently the National Mission for Clean Ganga (NMCG) was awarded the distinction of "Public Water Agency of the Year" by Global Water Intelligence at the Global Water Summit in London. Thus it becomes necessary for us to examine the achievement.

Key demand of the question:

The question is about analyzing the significance of Namami Gange programme and the achievements made by it, one has to analyse what policy changes led to the success of program over the other past programs that aimed at same goal.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

In a few introductory lines brief upon the background.

Body:

The question must discuss the following points :

- about the program – is an umbrella programme which integrates previous and currently ongoing initiatives by enhancing efficiency, extracting synergies and supplementing them with more comprehensive & better coordinated interventions. Government of India is supplementing the



efforts of the state governments in addressing the pollution of river Ganga by providing financial assistance to the states

- Salient features of Namami Gange programme.
- Method of implementation – entry level, medium term activities and long term activities that makes it different from other programs.
- How it happened to be an integrated mission for Ganga rejuvenation, a comprehensive multi-sector intervention with multi-stakeholder involvement that adopted a basin-based approach etc.
- Compare it with previous programs.

Conclusion:

Conclude with significance of such programs.

Introduction:

- **Namami Gange Programme** is an umbrella programme which integrates previous and currently ongoing initiatives by enhancing efficiency, extracting synergies and supplementing them with more comprehensive & better coordinated interventions. **National Mission for Clean Ganga (NMCG)** endeavours to deploy best available knowledge and resources across the world for Ganga rejuvenation. Clean Ganga has been a perennial attraction for many international countries that have expertise in river rejuvenation.
- NMCG was awarded the distinction of “**Public Water Agency of the Year**” by **Global Water Intelligence at the Global Water Summit in London**.

Body:

Salient features of Namami Gange programme:

- River front development.
- Conservation of Aquatic life and biodiversity
- Improvement of coverage of sewerage infrastructure in habitations on banks of Ganga.
- River Surface cleaning for collection of floating solid waste from the surface of the Ghats and River
- Afforestation
- Industrial Effluent Monitoring
- Development of Ganga Gram
- Creating Public Awareness

Achievements of Namami Gange:

- Namami Gange has a well-balanced spread of 221 projects, which include STP, ghat development, surface cleaning afforestation, sanitation, and public awareness, out of which 58 have been completed.
- There is a concerted focus on 10 towns that contribute to 64% of the total sewage discharged in Ganga.
- To address the cross-functional challenge faced by GAP, Namami Gange has synergized itself with government schemes by signing MoUs with 10 central ministries.
- More than 90 per cent villages across river Ganga have been declared open defecation free, and by October 2017, the rest of the villages would become ODF as well.
- The programme has also successfully renovated over 180 ghats and built 112 new crematoriums.
- 4,464 villages situated on the bank of Ganga have been declared as open defecation free (ODF). Moreover, Namami Gange was instrumental in constructing more than 12.7 lakhs household toilets.
- Trash skimmers have been deployed in 11 cities to collect any surface waste.
- Six public outreach programmes were organised in areas around Ganga basin:
 - Swachhata Pakhwada
 - Ganga Sankalp Divas
 - Ganga Nirikshan Yatra
 - Ganga Dusshera
 - Ganga Vriksharopan Saptah
 - Swachhta Hi Seva Pakhwada

Evaluation of Namami Gange and previous plans:

- A major advantage enjoyed by the Namami Gange programme is the fact that it's headed by the **National Mission For Clean Ganga (NMCG)**, an institutional body which has been given due financial and administrative powers as per the **River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016**.
- A **singular institutional structure** makes it easier for decision making. Namami Gange has also brought the states onboard, something the previous programmes were unable to.



Its **implementation** has been divided into:

- Entry-Level Activities (for immediate visible impact),
- Medium-Term Activities (to be implemented within 5 years of time frame) and
- Long-Term Activities (to be implemented within 10 years).

Namami Gange	VS	Previous Plans
<ul style="list-style-type: none"> • ₹ 20,000 crore • Launched 155 new sewage treatment projects • Laid stress on building crematoriums and toilets across Ganga villages and towns • Headed by National Mission for Clean Ganga (NMCG) • Involved states in planning & monitoring • Has a realistic deadline of 10 years 		<ul style="list-style-type: none"> • ₹ 1,848 crore • 35 STPs planned across 5 states • No concrete structure to build crematoriums and toilets • Headed by National Ganga River Basin Authority (NGRBA) (Now defunct) • Did not involve states holistically • Had an over ambitious deadline of 6 years

Challenges faced:

- CAG in its report claimed that the NMCG neither circulated Ganga Rejuvenation Basin Management Programme (GRBMP) to different ministries/departments for consultation and seeking their opinion, nor finalised the Ganga Rejuvenation Basin Management Programme (GRBMP) for initiating the long-term intervention on the Ganga.
- There have been issues regarding **untreated waste that flows into the river, restoring the flow of the river, sludge management in Ganga basin towns, cost overruns in execution of projects and governance glitches.**
- **Sewage treatment:**
 - As far as sewage infrastructure projects are concerned, 68 projects were sanctioned after the Namami Gange was approved by the cabinet and only six were completed till August.
 - New projects are delayed because land acquisition and other related activities were taking a lot of time.
- A river is a self-purifying system only when water flows through it. The Ganga fails this basic test except during monsoons. So it's not just about unclean Ganga. It is about the existence of Ganga.
- The water resources ministry signed MOUS with 10 ministries for better implementation of Namami Gange. However, till date no detail is available as to how these ministries are functioning for better convergence.

Conclusion:

- Ganga is an **integral part of the socio-economic-cultural-political fabric of India**. However, the longest river has faced the brunt of increasing industrialization, which has not only affected the flow but also the quality of its water.
- Namami Gange Programme aims to **restore the purity and flow of water in the Ganga River through abatement of pollutants and treatment of discharged water**. Namami Gange has **not only taken lessons from the failure of GAP, but, it has also ensured cross-state cooperation as well as public support to expedite the processes.**

Q) Critically analyse India's Domestic Climate Policy. Suggest solutions to overcome the current concerns associated with it. (250 words)

Epw

Why this question:

the article provides for a critical analysis of India's domestic climate policy and highlights how it is fragmented and brings out the deficiencies it has on clarity front.

Key demand of the question:



The answer must critically examine India's Domestic Climate Policy, the lacunae it has and suggest what needs to be done to overcome these issues.

Directive word:

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer

Introduction:

write a few introductory lines about India's current Climate Policy.

Body:

Answers must discuss in detail the following points :

- Features of India's Domestic Climate Policy.
- What are the issues associated? – disjointed institutional architecture, lack of environmental governance, Issues with the enforceability of global climate agreements etc.
- Failures of policies – causes and consequences. Take cues from the article.
- suggest what should India do? – need for a comprehensive policy document with a new vision, new policy must include stakes from incorporates inputs from policymakers, natural and social scientists, the academic community, civil society and communities from across the country, prospect for future research and deliberation. Etc.

Conclusion –

Conclude with optimism and suggest way forward.

Introduction:

- India's climate policy is located in a variety of sources, including international treaties, parliamentary legislations, government regulations and policy documents, planning and guidance documents, and judicial decisions.
- The **National Action Plan on Climate Change (NAPCC)** was initiated primarily in response to developments at the international level, the **eight missions** focus on India's domestic development needs. In **2015**, India also submitted her **Intended Nationally Determined Contributions** towards the **Paris agreement of UNFCCC**.

Body:

India's domestic policy success so far:

- India has improved its ranking in the Climate Change Performance Index 2019 by climbing three places to rank 11.
- The government's pledge to strengthen its renewable energy capacity, coupled with market factors, such as falling renewable energy prices, suggest that India may meet its NDCs target of achieving 40% electric power installed capacity from non-fossil fuel based resources well ahead of schedule.
- Similarly, India is also expected to achieve its quantified NDCs goal of reducing greenhouse gas emission intensity.
- India along with France was instrumental in setting up the International Solar Alliance which further gives a fillip to our 100GW goal of solar energy.

However, the issues with India's domestic climate policy are:

- It is outdated and relies on a disjointed institutional architecture, without having clarity on foundational values.
- The official Indian position in international climate negotiations and domestic climate policy debates is expressed in troubling binaries: economic development versus climate change mitigation, centralised command-and-control environmental governance regimes versus decentralised adaptive governance mechanisms, transitioning to renewable energy versus carbon sequestering through forests.
- India is a "dualist" system, which means that international agreements (such as the Paris Agreement and the UNFCCC) must be translated into domestic law to become enforceable within the country.
- There is no time-bound requirement for India to enact domestic legislation to give effect to the provisions of international agreements on climate change either.
- The wording of international climate agreements has, therefore, allowed the Indian government to avoid comprehensive domestic legislation and clear regulatory frameworks focused on the threats of climate change
- A guiding document embodying a vision for climate change adaptation and mitigation across sectoral legislations and policy documents is conspicuously absent.



- India's domestic climate policy is further complicated by the country's federal structure wherein the legislative domains of the central government and the state government are distinct.
- Institutional, systemic and process barriers, including financial constraints, inter-ministerial coordination, lack of technical expertise and project clearance delays, stand as major challenges in the efficient implementation of the missions.
- There is tremendous variation between the different State Action Plans on Climate Change (SAPCCs), due to differences in ascribing priority to climate change, institutional heterogeneity, developmental circumstances, and resource availability.
- Significant devolution of powers relating to environmental and climate change concerns has not taken place to the third tier of governance in most states.
- An excessive focus on quantified mitigation goals often diverts attention away from core questions of environmental and social justice involved with climate change response in India

Measures needed:

- India's domestic climate policy urgently needs a coherent vision for tackling climate change that should be clearly reflected in the framing of legislation and policy documents addressing multiple sectors.
- It must be aligned with multiple federal levels in the design of appropriate institutional frameworks to achieve climate policy objectives of mitigation and adaptation in a holistic and non-fragmented way.
- Such a new domestic climate policy must result from a collaborative and democratic exercise that actively seeks and incorporates inputs from policymakers, natural and social scientists, the academic community, civil society and communities from across the country.
- Aside from budgetary facilitation, the centre can also play a crucial role in providing relevant data to the states.
- States must have access to scientific predictions of climate impact in their territory, for which the centre can play an important role in facilitating the transfer of relevant data
- Stakeholder engagement must be based on equitable terms, with due recognition and compensation for the utilisation of the local participants' knowledge, research, time and resources.
- The role of villages, cities and states in co-creating India's climate policy must be explicitly endorsed and promoted.
- Simultaneously, the Parliament, state legislatures, and courts must carefully re-examine the existing policy framework through the lens of climate change, and revise the framework, as necessary.

Conclusion:

- Policy integration, institutional design for effective implementation, and climate justice must play a central role in this new vision for India's domestic climate policy.

Q) Discuss the provisions related to protection of Wetlands in India . Critically examine the importance of coastal livelihood programmes in the context of protection of Wetlands. (250 words)

[Reference](#)

[Vikaspedia](#)

Why this question:

The Central Marine Fisheries Research Institute (CMFRI) and the Indian Space Research Organization (ISRO) recently signed an MoU to map, validate and protect smaller wetlands in the coastal region and restore them through coastal livelihood programmes.

Key demand of the question:

In the context of the article , answer must discuss various provisions related to protection of Wetlands in India ranging from policies to programmes .

One must also examine the importance of coastal livelihood programme in the same context.

Directive word:

Critically Examine – Examine – When asked to 'Examine', we have to look into the topic (content words) in detail, inspect it, investigate it and establish the key facts and issues related to the topic in question. While doing so we should explain why these facts and issues are important and their implications. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction:

Begin with importance of protection of wetlands.

**Body:**

- One can start with Wetlands in India: Significance, Threats & Conservation.
- Discuss policy environment and associated schemes – Ramsar Convention, National Wetland Conservation Programme (NWCP), The Central Wetlands (Conservation and Management) Rules, role of Central Wetlands Regulatory Authority (CWRA), National Plan for Conservation of Aquatic Ecosystems (NPCA) etc.
- Discuss importance of coastal livelihood programmes and their significance in managing wetlands. Quote examples.

Conclusion:

Conclude by stating how wetlands jurisdiction is diffused and falls under various departments like agriculture, fisheries, irrigation, revenue, tourism, water resources and local bodies. To counter these, management of wetlands has to be an integrated approach in terms of planning, execution and monitoring. Effective tie-ups of trained academicians and professionals, including ecologists, hydrologists, economists, watershed management specialists, planners and decision makers must be linked with local expertise for overall management of wetlands.

Introduction:

- **Ramsar Convention on Wetlands define wetlands** as: “areas of marsh, fen, peat-land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters”. It is one of the most ecologically productive zones on our planet.

Body:

- **Provisions for protection of Wetlands in India:** Efforts to conserve wetlands in India began in 1987 and the main focus of governmental efforts was on biological methods of conservation rather than adopting engineering options.
- **Legal framework:** Though there is no separate legal provision for wetland conservation in India, it is indirectly influenced by number of other legal instruments. These include
 1. Wildlife (Protection) Act 1972
 2. Water (Prevention and Control of Pollution) Act 1974
 3. Environmental (Protection) Act 1986
 4. Biodiversity Act 2002
 5. Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006.

Policy framework:

- **The National Environment Policy (NEP) 2006** seeks to set up a legally enforceable regulatory mechanism for identified wetlands to prevent their degradation, enhance their conservation and wise-use by all the stakeholders.
- **The National Action Plan on Climate Change** recognises the important role of wetlands in the context of climate change.

Wetlands (Conservation and Management) Rules, 2017:

- It will replace the earlier Rules of 2010. The 2010 and 2017 Rules for wetlands both emphasise that the ecological character of wetlands ought to be maintained for their conservation. The rules are notified under the Environmental Protection Act (1986) to identify and conserve wetlands and ensure that they are not degraded.
- Central Wetlands Regulatory Authority (CWRA) has been replaced by the National Wetland Committee, which has a merely advisory role. E.g. recommending transboundary wetlands for notification, reviewing the progress of integrated management of Ramsar Convention sites etc.
- Restrictions – As per the new rules, encroachments on wetlands have been banned.
- It also prohibits solid waste dumping, discharge of untreated waste and effluents from industries and human settlements.
- A comprehensive digital inventory of all wetlands is to be prepared within a year.

National Wetland Conservation Programme (NWCP):

- Government of India operationalised National Wetland Conservation Programme (NWCP) in closed collaboration with concerned State Government during the year 1985/86. Under the programme 115 wetlands have been identified till now by the Ministry which requires urgent conservation and management initiatives.
- It aims at conservation and wise use of wetlands in the country so as to prevent their further degradation.



Ramsar Convention on Wetland:

- The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. India is a signatory to the convention and **27 water bodies** are recognized under it.

Importance of coastal livelihood programmes and their significance in managing wetlands:

- Fishing:** Over 660 million people depend on fishing and aquaculture for a living. The average human consumes 19 kg of fish every year. Most commercial fish breed and raise their young in coastal marshes and estuaries. In addition, about 40 % of fish production is now through aquaculture.
- Tourism and leisure:** International tourists spent US \$ 1.3 trillion worldwide in 2013, and an estimated half of them seek relaxation in wetland areas, especially coastal zones. The travel and tourism sectors support 266 million jobs, and account for 8.9 % of the world's employment.
- Transport:** Rivers and inland waterways play a vital role in transporting goods and people in many parts of the world. In the Amazon basin, rivers carry 12 million passengers and 50 million tons of freight each year, sustaining 41 shipping companies.
- Traditional wetland product-based livelihoods:** Medicinal plants, dyes, fruits, reeds and grasses are just a few of the wetland products that provide jobs, especially in developing countries.
- Tsunami prevention:** Mangroves absorb and disperse tidal surges associated with these events: a mangrove can reduce the destructive force of a tsunami by up to 90%.
- Flood prevention:** Peatlands absorb heavy rainfall, providing protection against floods, and release water slowly, ensuring a supply of clean water throughout the year.
- Carbon sequestration:** All types of wetlands are carbon sequestering systems (carbon sinks), from temperate freshwater wetlands to boreal peatlands. **Blue carbon** is the type of carbon that is stored by coastal wetland vegetation such as mangroves, seagrasses and salt marsh grasses.

In this context, **The Central Marine Fisheries Research Institute (CMFRI) and the Indian Space Research Organisation (ISRO)** have joined together to map, validate and protect smaller wetlands in coastal region aimed at restoring them through coastal livelihood programmes.

Smaller wetlands cover an area of more than five lakh hectares across the country, with Kerala having as many as 2592 smaller wetlands. The two scientific institutes aim to identify and demarcate wetlands, and restore the degraded wetlands through suitable livelihood options like coastal aquaculture.

Conclusion:

- Smaller wetlands across the country are highly in neglected state owing to multiple reasons.
- Climate variability induced rainfall drastically changes the physio-chemical characteristics of such wetlands which were evidently seen during the last year's devastating flood in Kerala.
- The collaborative initiative will help develop a comprehensive wetland information system which could facilitate the village level wetland advisories to the local people by scientific communities.

Q) The world's oceans are currently undergoing a dangerous transformation resulting into suffocating dead zones, in this context discuss the causes and effects of Oceanic dead zones on Marine ecosystem. (250 words)

Reference

Why this question:

The world's oceans are currently undergoing a dangerous transformation. Scientists have detected vast 'dead zones' around the world, where hypoxic water lacks the necessary oxygen for marine life to survive. Thus it is necessary for us to examine the causes and consequences.

Key demand of the question:

In the context of the article, answer must discuss what are dead zones, why is there an increasing incidence of their formation, causes and consequences. Conclude with what needs to be done to save marine ecosystem.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.



Structure of the answer:

Introduction:

Begin with what you understand by Ocean dead zones.

Body:

- A dead zone in the ocean is created by hypoxia and is also known as a hypoxic region, caused by insufficient amount of oxygen. These spots are found in oceans and in other large bodies of water all over the world, and can be caused by natural occurrences such as the shifting of the routine patterns of water and wind.
- Quote examples
- Causes – mainly by pollution from irresponsible industrial practices, marine animals are unable to live in these underwater areas because there is not enough oxygen circulating to allow them to survive.
- Discuss the causes and effects of Ocean Dead Zones.
- Suggest Solutions to Ocean Dead Zones.

Conclusion:

Conclude by stating urgent need of dealing with dead zones of oceans and essence of saving marine ecosystem.

Introduction:

- Dead zones are low-oxygen, or hypoxic, areas in the world's oceans and lakes. Because most organisms need oxygen to live, few organisms can survive in hypoxic conditions.
- That is why these areas are called dead zones. Several recently released studies have documented the accelerating changes to Earth's oceans as a result of climate change, including a reduction in the oxygen content, which is threatening vast swaths of marine life.

Body:

- Dead zones are well-known off the western coasts of North and South America, Namibia and India in the Arabian Sea. Recently a dead zone has been found in Bay of Bengal, India.

Causes for formation of dead zones:

- **Eutrophication:** An increase in chemical nutrients in the water, leading to excessive blooms of algae that deplete underwater oxygen levels. Too many nutrients are a form of pollution that lead to the death of organic food sources and destroys natural habitats.
- **Algal bloom:** Overgrowth of algae, which then sink and decompose in the water. The decomposition process consumes oxygen and depletes the supply available to healthy marine life. Excess nitrogen and other chemicals in the ocean lead to extreme imbalances underwater, with algal bloom resulting from the existence of these elements and being a major contributor to the creation of dead zones.
- **Agricultural runoff:** Nitrogen and phosphorous from chemical fertilizers lead to eutrophication.
- **Climate change:** Warm water is unable to hold as much dissolved gas. Global warming also melts ice, which releases fresh water that rests on the surface of the more dense salt water generally found in oceans. This layer can keep water at the surface and in the ocean's depths from mixing, which is the only way that the deeper parts of the ocean have their oxygen stores replenished.
- **Emissions:** Sewage, vehicular and industrial emissions add to the nutrient content of ocean. **Oil spills** in the ocean usually happen when an ocean oil rig springs a leak or when an ocean going tanker (carrying oil) wrecks.
- **Oceanographic phenomenon:** Stagnant water in enclosed water bodies, coastal upwelling, ocean and wind current patterns effect the formation of dead zones.

Consequences of dead zones:

- It forces species to migrate to more oxygen-rich areas, exposing them to new predators while disrupting the already existing ecosystem. Polar regions in recent years, for example, have suffered an invasion of species from lower latitudes seeking to escape increasingly inhospitable areas.
- Oxygen-poor waters make it more difficult for male fish to produce sperm and for those sperm to be as mobile as in normal waters. Poses long-term threats to the sustainability of sea creature populations in areas with decreased oxygen content.
- Impairing animals' ability to see and hear, impeding their ability to find food and escape from predators.
- Hundreds of millions of human beings who use fish as a primary source of food and make their livelihood from fishing will suffer.

**Way forward:**

- Better practices and accountability must be put in place to protect the ocean. A major step would be to stop letting so many chemicals find their way into the ocean.
- As humans, we need to pay attention to where we let our sewage direct itself and to what we allow to absorb into the ground.
- Treating the ocean like a large trash negatively affects us all because it creates toxicity.
- Raise awareness by explaining to others the importance of keeping the ocean clean can help to encourage positive habits.
- A spur of eco-friendly activities like proper waste disposal, addressing climate change, organic farming, recycle and reuse, wetlands and floodplains conservation are needed.
- Innovative measures like nutrient trading on lines of carbon trading can go a long way in solving the problem

Q) Whilst mangrove forests play a major role with indispensable ecological services, scientific management of the same is the need of the hour. Discuss. (250 words)

Reference**Why this question:**

The article captures as to how the scientific management of mangroves is need of the hour in our country.

Key demand of the question:

The answer must explain the importance of Mangrove ecosystem in protection of the coastlines and minimizing disasters due to cyclones and tsunami and how mangroves store more carbon dioxide than most other forests. One has to highlight the role played by the mangroves in maintaining a balance in the ecosystem services and thus the need of preserving them and conserving them.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:**Introduction:**

Introduce with what are mangroves briefly, their role in ecosystem.

Body:

- Explain what are Mangroves, their roles and functions.
- How a mangrove ecosystem is the interface between terrestrial forests and aquatic marine ecosystems.
- Brief upon the distribution of Mangroves in India.
- Why is the need for preserving ? – discuss the aspects of scientific management.
- What needs to be done – policy level? Individual level and societal level.

Conclusion:

Conclude with importance of preserving Mangrove ecosystem.

Introduction:

- Mangroves are salt tolerant trees, also called **halophytes**, which survive high salinity, tidal regimes, strong wind velocity, high temperature and muddy anaerobic soil – a combination of conditions hostile for other plants. The mangrove ecosystems constitute a symbiotic link or bridge between terrestrial and marine ecosystems. They are found in the inter-tidal zones of sheltered shore, estuaries, creeks, backwaters, lagoons, marshes and mud-flats.

Body:**Significance of Mangroves:**

- Mangrove plants have (additional) special roots such as prop roots, pneumatophores which help to impede water flow and thereby enhance the deposition of sediment in areas (where it is already occurring), stabilize the coastal shores, provide breeding ground for fishes.
- Mangroves moderate monsoonal tidal floods and reduce inundation of coastal lowlands.
- They prevent coastal soil erosion.
- They protect coastal lands from tsunami, hurricanes and floods.
- Mangroves enhance natural recycling of nutrients.
- Mangrove supports numerous flora, avifauna and wild life.



- Provide a safe and favourable environment for breeding, spawning, rearing of several fishes.
- They supply woods, fire wood, medicinal plants and edible plants to local people.
- They provide numerous employment opportunities to local communities and augment their livelihood.

Threats to Mangroves:

- A scientific study reported that 100 per cent of mangrove species, 92 per cent of mangrove associates, 60.8 per cent of algae, 23.8 per cent of invertebrates and 21.1 per cent of fish are under threat.

Natural forces due to climate change:

- **Sea-level rise:** Mangrove systems do not keep pace with changing sea-level and fall
- **Extreme high water events:** affect the position and health including through altered sediment elevation and sulphide soil toxicity
- **Storms:** increase damage to mangroves through defoliation and tree mortality and they collapse
- **Precipitation:** decreased rainfall and increased evaporation will increase salinity, decreasing net primary productivity, growth
- **Temperature:** Changing species composition, Changing phenological patterns (e.g., timing of flowering and fruiting)
- **Ocean circulation patterns:** affect mangrove propagule dispersal and the genetic structure of mangrove populations, with concomitant effects on mangrove community structure.

Anthropogenic activities:

- Mangroves are being destroyed and facing severe threats due to urbanisation, industrialisation, and discharge of domestic sewage, industrial effluents and pesticides.
- Salt pans and aquaculture also pose major threat to the mangroves.
- 40 per cent of mangrove forests in West Coast of India have been converted into farmlands and housing colonies over the last three decades.
- Some of the mangrove species like *Bruguiera cylindrica* and *Sonneratia acida* are at the verge of extinction.
- Due to shrimp farming, about 35,000 ha of mangroves have been lost in India.

Scientific management measures for conservation of Mangroves:

- The mangrove species under grave threat must be included in the **Red List of the International Union for Conservation of Nature (IUCN)**.
- Suitable sites are to be identified for planting mangrove species. **Mangrove nursery banks** should be developed for propagation purposes.
- **Environmental monitoring in the existing mangrove** areas should be taken up systematically and periodically.
- Various threats to the mangrove resources and their root causes should be identified, and earnest measures should be taken to eliminate those causes.
- The **participation of the local community** should be made compulsory for conservation and management.
- **Floristic survey of mangroves** along the coast is to be taken up to prepare biodiversity atlas for mangroves.
- Potential areas are to be identified for implementing the management action plan for mangroves, especially in cyclone prone areas.
- Coastal industries and private owners need to be persuaded to actively participate in protecting and developing mangrove biodiversity.
- The forest department officials should be trained on taxonomy, biology and ecology of mangrove species.

Way forward:

- The impact of environmental and human interference on marine flora and fauna needs to be assessed.
- The traditional rights of coastal communities to use the natural resources in their surrounding natural habitats for their livelihood should also be recognised on priority basis.

Q) Has the Coastal Regulation Zone Notification, 2018, diluted India's only protection system for the fragile ecology by opening it up to realtors and large-scale development projects ? Critically analyse. (250 words)

Reference

Why this question:

The article captures in detail the analysis of recently released Coastal Regulation Zone Notification, 2018, it discusses in what way it has diluted India's only protection system for the fragile ecology and opened it up to realtors and large-scale development projects.



Key demand of the question:

The answer must explain the significance of conserving coastal ecosystem and discuss specific impacts of the Coastal Regulation Zone Notification, 2018 on the same.

Directive word:

Critically analyze – When asked to analyse, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When ‘critically’ is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction:

Introduce with context of the question – the Coastal Regulation Zone Notification, 2018.

Body:

- Explain in brief present conditions of coastal ecology of India.
- Discuss the salient features of the notification.
- Analyse the pros and cons.
- Discuss the systematic violations the regulation brought in – use cues from the article.
- What changes need to be done – policy level? Individual level and societal level.

Conclusion:

Conclude with importance of conserving coastal zones and their ecology.

Introduction:

- Ministry of Environment and Forests (MoEF) under the **Environment Protection Act, 1986**, issued the Coastal Regulation Zone notification for **regulation of activities in the coastal area**. It has **revoked some of its stringent provisions to permit the expansion of development activities** into the **environmentally sensitive areas (ESAs)**, hitherto deemed inaccessible by law.

Body:

- The coastal land up to 500m from the High Tide Line (HTL) and a stage of 100m along banks of creeks, estuaries, backwater and rivers subject to tidal fluctuations, is called the **Coastal Regulation Zone(CRZ)**.

The Salient features of the **CRZ 2018**: Many significant relaxations of development controls along the coastline.

- **Relaxed regulations:**
 - There is a considerable **reduction of the CRZ limits and the no-development zone (NDZ) area**.
 - The classification of coastal zone areas is done according to the **density of population**.
 - For densely populated areas under **CRZ – III A**, no development zone has been reduced from 200 m to 50 m. This will help **meet affordable housing needs for rural areas and other development activities**.
- **Boost to Strategic projects:**
 - For the setting up of “**strategic projects**,” for defence and public utilities, even the most ecologically critical areas that fall under the **CRZ-I** classification have not been excluded.
 - **Example: Sagarmala project** : It consists of a series of commercial ventures envisaged at an outlay of ₹ 8.5 trillion
- **Environmental Protection:**
 - To address **pollution** in coastal areas, setting up of **treatment facilities** have been made permissible activities in **CRZ-I B** area subject to necessary safeguards.
 - CRZ limit of 20 m for islands has been maintained intact.
- **Distribution of Powers:**
 - States will also have the authority to grant clearances and **approve proposals for urban (CRZ-II) and rural (CRZ-III) areas**.
 - Only such projects which are located in **Ecologically Sensitive Areas (CRZ-I)** and **CRZ-IV** will require the necessary clearance from the Union Ministry.
- **Boost to Tourism:**
 - The notification also permits **temporary tourism facilities** such as shacks, toilet blocks, change rooms, drinking water facilities etc. in beaches. Such temporary tourism facilities are also **now permissible in NDZ of the CRZ-III areas**.
 - The new notification may “boost tourism in terms of more activities, more infrastructure and more opportunities and will certainly go a long way in creating employment opportunities in various aspects of tourism”.



The draft rules have diluted the regulations for fragile coastal economy:

- **Environmental impacts:**
 - The **lack of factoring in the effects of climate change on sea levels and well-demarcated hazard line** in the new CRZ rules can lead to huge costs.
 - The large-scale intrusion of commercial and industrial activities into the fragile coastal territories, the new CRZ policy would **upset the prevailing human–ecological balance**.
 - In coastal cities, such as **Mumbai and Chennai**, increasing urbanisation, changes in land use patterns, encroachments along the coast, construction of coastal roads, and unabated pollution have caused **irreversible damage to low-lying areas, water-bodies, and the sea**.
 - Studies have shown that the impact of these processes has led to a **decline in fish catch and landings over time**. Other problems of **algal bloom, beaching of the whales, increased plastic pollution** is on rise.
 - **Rapid urbanisation and industrialisation** has turned the coasts into convenient dumping grounds. This directly affects the **bio-diversity of the coastal zones**.
- **Social impacts:**
 - With increased commercial and industrial activities in coastal areas, there will be further degradation of marine ecosystems. This will **disrupt the livelihoods of resource-dependent populations, especially artisanal fishers living off the coasts**.
 - **Coastal erosion and the hazards posed by the rising sea level** due to climate change have already endangered the lives of populations inhabiting low-lying areas across the globe.
 - The concerns of the fishers is seen to be in conflict with those of other interest groups that seek to corner profits from unfettered use and commercialisation of coastal resources and commons.
 - The impact on the fisheries sector is huge as it employs about **8 million people and generates Rs. 48,000-Rs. 75,000 crores** for the economy.
 - This adversely affected livelihoods, especially of small-scale artisanal fishers, resulting in their **increasing alienation**, while also leading to the **widening of inequalities within society**.
 - Promoting the business agendas of other interest groups at the cost of fisher livelihoods would further impoverish a community that already has been pushed to the margins of an unequal society.
 - Land grabbing by private and government actors has been the norm. These actors forget that this space is the common property of coastal villages, towns and cities, and public beaches

Way ahead:

- The new draft CRZ notification has major recommendations that will boost tourism development in coastal areas of the country, which remains untapped due to stringent regulatory framework.
- The relaxations/amendment proposed in the CRZ Notification, 2018 shall, however, come into force only after the respective Coastal Zone Management Programme (CZMP) framed to the CRZ Notification, 2011 have been revised/updated by the States/UTs, as per the provisions of the CRZ, 2018 Notification and approved by the Ministry of Environment, Forest & Climate Change.
- The government says that the new rules will benefit coastal communities. But fears persist that although the changes are being packaged as pro-poor and pro-tourism, the concerns of the latter will override those of communities.

Conclusion:

- India's coasts are already facing grave threats due to climate change events such as intensive, frequent and unpredictable cyclones and erosion. The relaxation of the CRZ rules in order to boost economic development, albeit necessary, must be done keeping in mind the sustainability of the fragile ecosystems.

Q) As yet another Earth day dawns upon India, do you think India has moved from rhetoric to action ? Discuss the specific policy changes witnessed in this direction in the recent years. (250 words)

Indian express 22-04-2019, page 7

Why this question:

The question is on the occasion of world Earth day being celebrated on 22nd April worldwide. This day gives voice to environment concerns which are multidimensional. Thus it is important for us to assess the specific policy changes witnessed in this direction in the recent years in India.

Key demand of the question:



The answer must discuss at length specific policy changes witnessed in this direction in the recent years by the government of India ranging from generating renewable energy to adopting cleaner alternative to traditional sources of energy.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

Introduce with context of the question – world Environment day.

Body:

- The question is straightforward, one has to enlist achievements of the Government in the recent past – discuss the flagship programs in this direction.
- Discuss the factor of energy security – what schemes and policies were put in place; Solar mission, target of 175 GW by 2022. Etc.
- Discuss what needs to be done to augment the renewable energy scenario.

Conclusion:

Conclude with importance of Renewable energy.

Introduction:

- Earth Day, observed every year on April 22, is a day meant to emphasise on the need to protect the planet and preserve its environment. Several events and campaigns are being held worldwide to demonstrate support for environmental protection. Earth Day Network (EDN) is the not for profit organisation that leads Earth Day worldwide.

Body:

Significance:

- It is celebrated to remind each of us that the Earth and its ecosystems provide us with life and sustenance.
- This Day also recognizes a collective responsibility, as called for in the 1992 Rio Declaration, to promote harmony with nature and the Earth to achieve a just balance among the economic, social and environmental needs of present and future generations of humanity.
- This day provides an opportunity to raise public awareness around the world to the challenges regarding the well-being of the planet and all the life it supports.
- This year, Earth Day focuses on putting an end to plastic use and thereby reducing pollution. According to Earth Day Network, Earth Day 2018 will focus on fundamentally changing human attitude and behaviour about plastics and catalyzing a significant reduction in plastic pollution.

Policy changes for a sustainable environmental protection in India:

- **National Action Plan on Climate Change (NAPCC):**
 - It was initiated primarily in response to developments at the international level, the **eight missions** focus on India's domestic development needs.
- **Ratifying Paris Agreement**
 - The 21st Conference of Parties (COP 21) under the United Nations Framework Convention on Climate Change (UNFCCC) successfully concluded in Paris after intense negotiations by the Parties followed by the adoption of the Paris Agreement on post-2020 actions on climate change. India ratified the same and is actively working towards the goals.
- **Tackling Climate Change:**
 - To reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level. To achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030, with the help of transfer of technology and low-cost international finance, including from Green Climate Fund. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.
- **Clean Fuel**
 - India introduces BS-VI petrol and diesel. Delhi will be the first city to leapfrog from BS-IV to BS-VI. 13 major cities like Mumbai, Chennai, Bengaluru, etc. will make the shift from 1st Jan 2019. The rest of the country will make the change from April 2020 next year.
- **No Plastics:**
 - India has pledged to eliminate all single-use plastic in the country by 2022.



- **National Bio-fuel policy**
- **National offshore wind-energy policy**
- **International Solar Alliance (ISA):**
 - ISA is a group of 121 solar rich countries which are situated either on or between the tropics. Aims to deploy over 1000 GW of solar energy and mobilize more than \$1000 billion into solar power by 2030.
- **The Clean Development Mechanism projects in India**
 - Indian projects have been issued a huge number of Renewable Energy Certificates in lieu of their green deeds.
- **State Action Plans on Climate Change:**
 - The State Action Plans on Climate Change (SAPCC) aim to create institutional capacities and implement sectoral activities to address climate change. These plans are focused on adaptation with mitigation as co-benefit in sectors such as water, agriculture, tourism, forestry, transport, habitat and energy.
- **Coal Cess and the National Clean Energy Fund**
 - India is one of the few countries around the world to have a carbon tax in the form of a cess on coal. Not only has India imposed such a cess but it has also been progressively increasing it. The National Clean Energy Fund (NCEF) which is supported by the cess on coal was created for the purposes of financing and promoting clean energy initiatives, funding research in the area of clean energy and for any other related activities.
- **FAME Scheme for E-mobility:**
 - Union Government in April 2015 launched Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME) – India Scheme with an aim to boost sales of eco-friendly vehicles in the country. It is a part of the National Mission for Electric Mobility.
- **Atal Mission for Rejuvenation & Urban Transformation (AMRUT) for Smart Cities.**
- **Pradhan Mantri Ujjwala Yojana:**
 - The scheme provides LPG connections to five crore below-poverty-line beneficiaries. The connections are given in the name of women beneficiaries to reduce their dependence on fossil fuels and conventional fuel like cow dung for cooking food, thus reducing air pollution.
- **UJALA scheme:**
 - The scheme was launched in January 2015 with a target of replacing 77 crore incandescent lamps with LED bulbs. The usage of LED bulbs will not only result in reducing electricity bills but also help in environment protection.
- **Swachh Bharat Mission:**
 - Swachh Bharat Abhiyan (Clean India Movement) is a campaign that was launched by Prime Minister on October 2, 2014. The campaign seeks to clean the streets, roads and infrastructure of the country's 4041 statutory cities and towns.
- **National Adaptation Fund for Climate Change**
 - A National Adaptation Fund for Climate Change (NAFCC) has been established with a budget provision of ₹1350 crore for the year 2015-2016 and 2016-2017. It is meant to assist in meeting the cost of national- and state-level adaptation measures in areas that are particularly vulnerable to the adverse effects of climate change.

Way forward:

- **Prudent investments and policy reform** can help make India resilient to climate change.
- Promotion of climate smart agriculture.
- Any adaptation to ongoing climate change will require **climate justice**.
- This can be induced by expansion of joint research and development partnerships like the U.S.-China Clean Energy Research Center, pairing India's emerging smart cities with green cities in the West.
- India needs to **decarbonise** by reducing emissions, there is no doubt about that. But the West needs to pay its bills too.
- Cities adjacent to national parks and sanctuaries need to be converted into green smart cities with upgraded waste recycling processes.



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Q) “Greening the blue is the need of the hour”, in this context highlight the significance of Green practices one can adopt to reduce waste, conserve resources, improve air and water quality and protect ecosystems. (250 words)

Reference

Why this question:

The article discusses significance of Green practices on the eve of World Earth day. The theme for Mother Earth Day 2019 is ‘greening the blue’.

Demand of the question:

The answer must bring out importance of Implementing green practices in homes and offices that can help reduce waste, conserve resources, improve air and water quality, and protect ecosystems and biodiversity.

Structure of the answer:

Introduction

Start by explaining the need for greening.

Body

- What do you understand by Green practices?
- What are the ways and methods, who all are the stakeholders?
- Discuss the significance of political action and civic participation.
- Take hints from the article and discuss the examples of best practices.
- Conclude with what should be done?

Conclusion

Conclude with way forward.

Introduction:

- According to the **Global Risks Report 2019** released by the **World Economic Forum (WEF)**, **Environmental risks dominate the global risks landscape in terms of impact and likelihood for the third year in a row.**
- This includes **extreme weather events** and **failure of climate mitigation and adaptation.** **IPCC released a “special report”** on the actions the world needs to take to prevent global average temperatures from rising beyond 1.5°C as compared to pre-industrial times. Limiting global warming to 1.5 degrees would require rapid, far reaching and unprecedented changes in all aspects of society, the IPCC said

Body:

- Green practices means pursuing knowledge and practices that can lead to more environment friendly and ecologically responsible decisions and lifestyles, which can help protect the environment and sustain its natural resources for current and future generations.
- Being eco-friendly or environment friendly is becoming more and more important.

Ways and methods of Green practices:

To reduce waste:

- Go online to find new or gently-used second-hand products.
- Check out garage sales, thrift stores, and consignment shops for clothing and other everyday items. Your purchases have a real impact, for better or worse.
- Borrow from libraries instead of buying personal books and movies. This saves money, not to mention the ink and paper that goes into printing new books.
- Share power tools and other appliances. Get to know your neighbours while cutting down on the number of things cluttering your closet or garage.
- Keep your cell phones, computers, and other electronics as long as possible.
- Donate or recycle them responsibly when the time comes. E-waste contains mercury and other toxics and is a growing environmental problem.
- 3R's of Waste Hierarchy: The 3 R's (Reduce, Reuse, Recycle) waste hierarchy is the order of priority of actions to be taken to reduce the amount of waste generated and to improve overall waste management processes and programs.
- Ask your local government to set up an electronics recycling and hazardous waste collection event.



To conserve resources, improve air and water quality and protect ecosystems:

- **Use less Fossil Fuel Based Products:** Find out what products and consumables you use that are made using fossil fuel based products and processes and use them less or replace them in your life.
- **Use of alternative sources of power such as solar and wind energy:** These alternative sources of energy are bio friendly particular because they do not produce harmful gases that damage the ozone layer. They are also cheap to use, not easily depleted and are renewable.
- **Conserve Water:** Water needs to be conserved as lot of energy is required to pump water from rivers or lakes into your home. Conserving water reduces the amount of energy that is needed to filter it. Few ways to conserve water are – take short showers, fix leaking pipes, keep the running tap close while you brush your teeth, recycle water in your home, use water saving appliances, collect rainwater in a rain barrel to water your lawn.
- **Plant Trees to prevent soil erosion:** Trees are necessary for us to survive. They give oxygen, fruits, clean the air, provide shelter to wildlife, and prevent soil erosion. Trees and vegetation are essential in the maintenance of the ecosystem. They also act as home for most insects, birds and some symbiotic plants. This creates a habitat for wildlife therefore conserving wildlife altogether.
- **Reduce Use of Harmful Chemicals:** Hazardous chemicals like paint, oil, ammonia and other chemical solutions when disposed openly, can cause pollution in the air and water as these chemicals can seep into the groundwater. The polluted air and water can have serious consequences on human health. They should be disposed off to a toxic waste site for safe disposal.
- **Protect Wildlife:** Human activity is leading to extinction of endangered species and habitats. Protect places like beaches and forests that are habitats for animals. Join hands with local forest department to protect animal habitat.
- **Practice Conservation:** With your new awareness of how natural resources are used in your life start to practice conservation. This can be as simple as turning off the lights as you leave a room and as complex as making different choices when it comes to building your home.
- **Educate Others:** Educate others about the importance of living an environmentally friendly life. The more people share an awareness of the importance of the environment, the more we can do together to conserve it.

Conclusion:

- Eco-friendly products promote green living that helps conserve energy and also prevent air, water and noise pollution. They prove to be boons for the environment and also prevent human health from deterioration. Global cooperation supported at national and local levels can help forward the cause of nature.

Q) “Man-induced famines have become more common than the nature-induced ones.”

Comment. (250 words)

Reference

Why this question:

The article talks about the woes of helpless farmers in the arid Saurashtra region that is facing acute water crisis leading to agrarian crisis.

Key demand of the question:

The answer must discuss mainly the aspect that the famines, drought conditions and the recent agrarian crisis are more of a man made outcomes than due to the natural factors.

Directive:

Comment– here we have to express our knowledge and understanding of the issue and form an overall opinion thereupon.

Structure of the answer

Introduction:

Introduce by highlighting the alarming situation of the famines across the country.

Body:

The question is direct, one must discuss in detail the factors responsible for such famines, conditions of austerity that are an outcome of manmade factors – such as increasing population pressure, land degradation, climate change all leading to change in natural geo-hydrological cycles thus affecting the agrarian systems, natural ecosystem leading to famine conditions.

List out all possible interlinkages.



Suggest what needs to be done – at policy level, societal level and individual level to overcome and address the situation.

Conclusion –

Conclude with way forward.

Introduction:

- Famines are sustained, extreme shortages of food among discrete populations sufficient to cause high rates of mortality. Famines have been common ever since the development of agriculture made human settlements possible. Arid Saurashtra in Gujarat, South Sudan, are few such places which are witnessing man-induced famines.

Body:

The factors responsible for such famines:

Natural Causes:

- Floods, cyclone, and storms: floods and earthquakes can destroy the crops or food storage places.
- Droughts: Droughts cause extreme scarcity of water and thus results in crop failure.
- Earthquake
- insect plagues
- plant diseases

Anthropogenic causes:

- Low food system productivity, weak markets, poorly governed institutions, the lack of basic infrastructure, and continued political conflicts have exacerbated droughts into famines.
- Faulty agricultural practices like growing of water-guzzling crops in drought-prone areas.
- Crop irrigation failure due to excessive ground water usage.
- Long-term climate change (itself a confluence of natural and human effects) is a contributing factor to the occurrence of drought that also impairs the functioning of food systems.
- Desertification is on the rise due to increased deforestation.
- Lack of food due to no crop failure or no storage of food.
- Population growth and lack of adoption to renewable sources.
- No proper food distribution in certain regions because of inequities that result in a lack of purchasing power on the part of the poor
- Consumption of contaminated water and air.
- Wars and other conflicts drive the rich to migrate to safe zones, leaving the poor and the vulnerable behind, and eroding the ability of communities to cope up with the drought-induced food shortages.
- Enforced starvation as a political tool with abnormal distribution or relief movements of food.

Measures needed:

- Eliminating the recurrent threats of famines and building coping capacity largely depends on long-term efforts to reduce poverty and food insecurity.
- The food crisis of 2007-08 demonstrated that countries need stronger assessment, monitoring, and surveillance systems to minimize the risk and mitigate the effects of food crises on the vulnerable.
- The Horn of Africa famine in 2011-12 showed that countries face recurrent famine-like conditions due to low levels of resilience in their food systems, and that building resilience requires a transformation of the food system.
- Finally, the examples of Ethiopia and Bangladesh over the last two to three decades demonstrate that sustained investment in agricultural research, extension, and rural infrastructure, combined with improved social safety nets, can increase food system resilience—and that of communities against droughts and famine-like conditions.
- Sincere planning can reduce the risk and damage to life and land.
- Climatic risks should be resolved as part of mainstream development planning.

Way forward:

- **Humanitarian aid:**
 - To address the immediate crisis, begin with general food distributions, followed by targeted food aid, along with the provision of health care, clean drinking water, and sanitation.
 - This should be followed quickly with supply of modern inputs and health care to aid vulnerable groups, in order to prevent epidemics and reduce the movement of people in search of food.



- **Rebuild communities:**
 - While food or cash assistance is a good beginning, quick follow-up with communities that are starting to rebuild and relatively safe from violent conflict is essential.
 - Rebuilding typically involves invigorating local economies through safety net programs such as public works—for example, employing able-bodied individuals to construct irrigation systems, feeder roads, and other essential infrastructure.
- **Strengthen local food system resilience:**
 - As rebuilding takes hold, communities must begin to stand on their own feet; this depends on efforts to build resilient food systems.
- **Focus on long-term economic strategies:**
 - Finally, development assistance should aim to foster economic diversification and otherwise expand employment opportunities.
 - This will help ensure food security, especially when combined with investments in microcredit programs, market development, and long-term agricultural research.

Conclusion:

- Famines are due to varying combinations of inadequacy of food supplies for whatever reason and the inability of populations to acquire food because of poverty, civil disturbances, or political interference. Despite the role of natural causes, the conclusion is inescapable that modern famines, like most of those in history, are man-made. A decentralised Public Distribution System is democratic and involves rural communities at every stage of planning and implementation

Q) Critically analyse the impact of carbon forestry projects such as REDD+ or the Green India Mission that are based on the neo-liberal principles of privatisation, commoditisation, and marketisation on the rights and livelihoods of forest-dependent communities. (250 words)

[epw](#)

Why this question:

The article gives a detailed account of carbon forestry projects and provides for a critical analysis of the impact it has on local livelihoods of forest dependent communities.

Demand of the question:

The answer must evaluate in detail the impact of carbon forestry projects on local forest communities.

Directive word:

Critically analyze – When asked to analyse, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When ‘critically’ is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction

Start by explaining what you understand by carbon forestry projects.

Body

- Discuss how Carbon forestry projects such as REDD+, A/R CDM and the Green India Mission are based on the neo-liberal principles of privatization, commoditization, and marketisation.
- Explain how these market-oriented tools abstract forests from their sociocultural and ecological contexts and reduce their value for carbon forestry.
- Analyse how such projects promote plantations of fast-growing species and undermine local knowledge and institutions.
- Take cues from the article and discuss the impact it has on forest communities.
- Conclude with what needs be done?

Conclusion

Highlight the Indian scenario of carbon forestry efforts and suggest solutions to the concerns posed by it.

Introduction:

- Carbon forestry includes instruments to sequester more greenhouse gases (GHGs) and avoid emissions from land use change by afforesting, conserving, and managing land and forest ecosystems. The key tenets of



carbon forestry projects include accounting of carbon offsets or emissions avoided and commercialisation of these offsets through the markets or funds.

- The available empirical evidence on the carbon forestry projects indicates that these have an impact on the rights and livelihoods of forest-dependent communities adversely.

Body:

Working of Carbon forestry projects:

- Carbon forestry projects such as REDD+, Afforestation and Reforestation clean development mechanism and the Green India Mission are **based on the neo-liberal principles of privatisation, commoditisation, and marketisation**.
- These market-oriented tools abstract forests from their sociocultural and ecological contexts and reduce their value for carbon forestry.
- These projects promote plantations of fast-growing species and undermine local knowledge and institutions.
- The reduction of deforestation and degradation of forests in tropical countries, which contribute around one-fifth of the global emissions, is considered to be one of the most cost-efficient and economical methods of mitigating climate change

Market-oriented tools and forests:

- Due to economic considerations, REDD+ and other carbon forestry projects have gained momentum. It has been reported that more than 800 carbon forestry and land use projects, with an estimated investment of \$6 billion, are already being implemented across the globe.
- The carbon forestry schemes such as CDM and REDD+ are based on creating the excludable and private commodity of carbon credits. In this process, a strong property of “private forests” is created and the rights of investors are protected through fiat and force.
- **Quantification of carbon:** Quantification is an important step in the commoditisation of nature. It makes environmental services tradable in the market. Scholars claim that carbon cannot be estimated reliably as forests are complex living systems that are prone to sudden big changes.
- **Technocratic control undermines indigenous knowledge:** The process of implementing and realising benefits through carbon forestry projects is very complex. The technocratic processes and the high costs involved in carrying them out alienate local people, and they cannot effectively participate in these projects. Their role is reduced to the mundane tasks of raising nurseries and plantations and they become just lowly stakeholders in the projects.
- **Financial logic:** It might seem ironic that the financing of plantations and ecological restoration for “greening India” is based on the diversion of natural forests. It provides a perverse incentive to the state apparatus for forest clearance, leading to the grabbing of wealth and power. E.g.: CAMPA
- **Institutions:** The neo-liberal agenda of carbon forestry is extended by co-opting various civil society institutions under the rhetoric of “decentralisation” and “community participation.” It serves two purposes: one, it offloads some of the state responsibilities; and second, more importantly, it pacifies some of the dissonance created by the neo-liberal instruments. But in the case of CDM projects, implementation on the ground belies the stated objectives
- **Natural forests vs plantation forests:** On the one hand, there is a drive to divert natural forests for developmental purposes and furthering corporate interests, and on the other, there is a push for increased plantations under different carbon forestry and other schemes. It fails to take into account ecological biodiversity and its connection with social and cultural systems and this often produces adverse social and ecological consequences

Impacts on the forest-dependent communities:

- The carbon forestry mechanisms shift the burden of reducing GHGs from developed countries to developing countries and binds the latter to a fixed land use which constrains their development
- The forest-dependent communities and civil society groups worldwide are opposing this market-based approach to forest conservation and climate change.
- There have been concerns regarding the impact of market-based carbon forestry instruments on the rights and livelihood of forest-dependent communities and biodiversity of forest ecosystems.
- This resistance is particularly strong in the case of India where a very strong and vibrant civil society is opposing the agenda of carbon forestry.
- The overzealous effort of safeguarding private interests impinges on the rights of the poor and marginalised communities, who lack social, economic and political capital to acquire property rights over the resources.



- The indiscriminate plantation on public and common lands could adversely affect the rights of local people in a way that early plantation programmes like social forestry and JFMCs did.

Conclusion:

- It is imperative to critically review the theoretical and empirical bases of carbon forestry as a strategy to conserve forests and mitigate climate change as we could end up trading natural forests for plantation forests with serious social, livelihood and ecological implications.

Q) World's forests are in an 'emergency room'. Comment. (250 words)

The hindu

Why this question:

The article gives a detailed account of a report that states that world lost 12 million hectares (30 million acres) of tropical tree cover last year, warning the planet's health was at stake. The report also quotes that it was the fourth highest annual decline since records began in 2001, according to new data from Global Forest Watch, which uses satellite imagery and remote sensing to monitor tree cover losses from Brazil to Ghana.

Demand of the question:

The answer must evaluate in detail the highlights of the report and discuss the alarming issue of decline in the forest area of the world.

Directive word:

Comment— here we have to express our knowledge and understanding of the issue and form an overall opinion thereupon.

Structure of the answer:

Introduction

Start with few facts/ stats from the report of Global Forest Watch.

Body

- Highlights of the report – The study highlighted new deforestation hotspots, particularly in Africa, where illegal mining, small-scale forest clearing and the expansion of cocoa farms led to an increase in tree loss in countries such as Ghana and the Ivory Coast.
- Indonesia was a rare bright spot, with primary forest loss slowing for two years running, after the government imposed a moratorium on forest-clearing.
- Indonesia has the world's third largest total area of tropical forest and is also the biggest producer of palm oil. Environmentalists blame much of the forest destruction on land clearance for oil-palm plantations.
- The answer thus is straightforward, one has to discuss the causes leading to loss of forests across the world and the consequences and repercussions that it bears on the ecosystem. Discuss how degradation of forests in turn will intensify the climate change and vice-a-versa.
- Discuss what needs to be done to control this alarming situation, stress on need for Bold action to tackle this global crisis including restoring lost forests.

Conclusion

Highlight the importance and the wisdom that the report brings.

Introduction:

- As per recently published US-based World Resources Institute (WRI) report, world lost 12 million hectares (30 million acres) of tropical tree cover in 2018. It is fourth largest annual decline since global satellite data became available in 2001. According to report, with such decline world's forests entered in 'emergency room' implying that planet's health is at stake and mere band-aid response will not help.

Body:

Key Highlights:

- Study showed new deforestation hotspots in Africa, like Ghana and Ivory Coast, the increase in tree loss was due to illegal mining, small-scale forest clearing and expansion of cocoa farms.
- Most destruction was seen in Brazil (13,500 sq-km), Congo (4,800 sq-km), Indonesia (3,400 sq-km), Colombia (1,800 sq-km), Bolivia (1,500 sq-km) and Madagascar lost 2% of its entire rainforest in 2018.
- Only Indonesia showed reduction in loss of its primary forest from past 2 years. It has world's 3rd largest total area of tropical forest and is biggest producer of palm oil. Therefore, forest destruction was mainly due to land clearance for oil-palm plantations, which was reduced once government imposed a moratorium on forest-clearing.



- According to annual assessment by scientists of Global Forest Watch (which uses satellite imagery and remote sensing to monitor tree cover losses from Brazil to Ghana) almost 1/3rd of area destroyed (~36,000 square km) was pristine primary rainforest
- According to Mighty Earth, (a global environmental campaign organization), deforestation causes more climate pollution than all world's cars, trucks, ships and planes combined.

Causes for the forest decline:

- **Agriculture**
 - The conversion of forests into agricultural land is one of the major causes of deforestation.
 - Many forest cover has been converted into agricultural lands in order to satisfy the growing needs of the people.
 - It is estimated more than 5 lakh hectares of forest area is been converted into agricultural land every year.
- **Logging**
 - Commercial logging along with illegal logging contributes a lot to deforestation around the world.
 - Trees are cut down in order to obtain firewood and building materials due to overpopulation and the growing demands.
- **Mining**
 - Environmental problems such as loss of biodiversity, erosion, contamination of soil and water are mainly caused due to the mining process.
 - Due to the growing demand of minerals, the impact of mining on forests is rising day by day.
 - In some places, the trees are cut down in the surroundings of the mining region to increase the place for the storage of soil and created debris.
- **Rapid growth in the industries**
 - As urbanization and industrialization are growing at a very fast rate, trees have been cut off in order to meet the needs of the evolution. This has an adverse effect on the ecosystem.
- **Forest fires**
 - Forest fires also lead to a large loss of the forest cover. Each year, fires burn millions of hectares of forest worldwide.
 - The resulting loss has wide-reaching consequences on climate, biodiversity, and the economy.
- **Desertification of land**
 - Some of the other factors that leads to deforestation are also part natural and part anthropogenic like Desertification of land.
 - It occurs due to land abuse making it unfit for growth of trees.
 - Many industries in petrochemicals release their waste into rivers which results in soil erosion and make it unfit to grow plants and trees.
- **Urbanization**
 - As the population grows, the needs of people increases which further leads to deforestation.
 - Forests shrink to a great extent to meet the requirements like for construction of roads, development of houses, mineral exploitation and expansion of industries.
 - Increasing population directly affects forest as with the expansion of cities there is a need for more land for housing and settlements.

Measures needed: Trees play a vital role in protecting our environment in several ways so we should protect the forest:

- Afforestation is the best way to go ahead.
- Ban on cutting of trees and new trees and planting more.
- There should be an implementation of regulations of laws at organizational and governmental levels due to the extent of deforestation.
- Spread the awareness about sensitization and organize educative campaigns about the effects of deforestation.

Conclusion:

- Forests act as Carbon sink by absorbing about 30% of man-made GHG emissions (over 11 billion tons of CO₂ per year) on other hand ocean soaks another 23%. So, losing vast tracts of tropical forest not only releases carbon into atmosphere, it also reduces size of carbon sink. Therefore, it is vital to protect what we still have.



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Topic: Disaster and disaster management.

Q) India is facing an unprecedented and worsening water crisis, amidst such alarming scenario, Discuss the challenges in Water Governance faced by the country. (250 words)

epw

Why this question:

The question is straightforward and revolves around water governance and the challenges associated with it in India.

Key demand of the question:

The answer must discuss the unprecedented and worsening water crisis India is facing and the challenges that the water sector is confronted with. Emphasis should be on the issues revolving around water governance in the country.

Directive:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction:

Introduce by highlighting the alarming situation of water crisis.

Body:

- Highlight some data – reports and facts justifying acute shortage of water.
- Discuss the causative factors of such a crisis – rivers are getting more polluted, their catchments, water-holding and water-harvesting mechanisms are deteriorating, and groundwater levels are depleting at an alarming rate.
- Explain what you understand by water governance; then discuss the challenges involved in it – lack of credible “water information,” question of groundwater sustainability, water infrastructure, neglect of essentials of water storage, the local water systems, rivers, wetlands, forests, soil moisture, and groundwater aquifers and their sustained effectiveness etc.
- Discuss what needs to be done to overcome these challenges.

Conclusion –

Conclude with way forward, significance of effective water governance system.

Introduction:

- The **NITI Aayog report on Composite Water Management Index (CWMI)** said that India is facing its ‘worst’ water crisis in history. Taps in Shimla went dry in summer of 2018, posing an unprecedented water crisis in the hill town.
- According to a forecast by the Asian Development Bank, India will have a water deficit of 50% by 2030. Recent studies also ranked Chennai and Delhi at the top of the 27 most vulnerable Asian cities in terms of low per-day water availability. Mumbai and Kolkata follow close.

Body:

Current water crisis in India:

- The annual per capita availability of water continues to decline sharply from about 5,177 cubic metres in 1951 to about 1,720 cubic metres in 2019.
- The NITI Aayog in its report on Composite Water Management Index (2018) has underlined that currently 600 million people face high to extreme water stress.
- Twenty-one cities, including Delhi, Bengaluru, Chennai and Hyderabad will run out of groundwater by 2020, affecting 100 million people.
- The rate of groundwater extraction is so severe that NASA’s findings suggest that India’s water table is declining alarmingly at a rate of about 0.3 metres per year.
- At this rate of depletion, India will have only 22 per cent of the present daily per capita water available in 2050, possibly forcing the country to import water.

Causative factors for water crisis:

- A combination of population explosion, unplanned growth of the city and its expansion to some traditional catchment areas (a region from which rainfall flows into a river, lake, or reservoir) have led to a reduction in the natural flow of water, and large-scale deforestation.



- Climate change, leading to much lower precipitation during the winter months. As a result, the natural flow and recharge of water in the region has fallen sharply
- Failure of State governments to check unplanned development and exploitation of water resources. There is no attempt at the central or state levels to manage water quantity and quality
- The vegetation pattern has changed, tree cover is shrinking and unscientific dumping of debris in water streams is rampant.
- The debris blocks the natural course of water bodies.
- Increasing number of tube wells resulting in depletion of groundwater.
- Changes in farming patterns lead to consumption of more water for irrigation and also change the soil profile because of the use of fertilizers
- The states ranked lowest like Uttar Pradesh, Haryana and Jharkhand – are home to almost half of India's population along with the majority of its agricultural produce.
- There is also a **lack of interest in maintaining India's traditional water harvesting structures.**

Challenges in Water Governance in India:

- The lack of credible "water information," that is, information about water storage, groundwater, water flows and, in some cases, even rainfall and snowfall levels.
- Data is often not available at the adequate level of detail. For example, water use data for domestic and industrial sectors is available at only the aggregate level, and thus provides very little information to relevant policymakers and suppliers.
- Second, where data is available, it is often unreliable due to the use of outdated collection techniques and methodologies.
- The water institutions viz. Central Water Commission (CWC), Central Ground Water Board, Central Ground Water Authority, State Pollution Control Boards and Central Pollution Control Board show a typical top-down, bureaucratic, unaccountable, non-transparent and non-participatory mindset.
- There is neither national policy nor national or state water resource establishments which acknowledge the groundwater crisis reality.
- The big irrigation, hydropower, multipurpose and river-linking projects that are getting a push, which both directly and indirectly adversely affect groundwater recharge and sustainability.
- Grave dam safety issues, as was also evident in the case of Kerala floods in August 2018.
- Issues of monitoring of water quality and environmental flows, protecting the floodplains and sustainable biodiversity in the rivers, achieving sustainable sand mining, and credible reservoir and flood management in rivers are missing.

Measures needed to strengthen water Governance:

- Deepen our understanding of our water resources and usage and put in place interventions that make our water use efficient and sustainable.
- Augmentation of watersheds that can store more good water, for use in agriculture and to serve habitations.
- Strict pollution control enforcement.
- **Decentralisation of irrigation commands**, offering higher financial flows to well-performing States through a **National Irrigation Management Fund**.
- Groundwater extraction patterns need to be better understood through **robust data collection**.
- Pollution can be curbed by levying suitable costs.
- Poor maintenance of pipelines, consistent leakage and illegal tapping of water are some of the issues that need to be addressed on a war-footing.
- Adopting rainwater harvesting techniques is the need of the hour.
- A legal mandate will work better than just competition and cooperation; it would make governments accountable.
- These forward-looking changes would need revamped national and State institutions, and updated laws.
- Urban India needs to focus on recycling and harvesting water, having better testing and purification facilities and increase public awareness on the need to conserve water.
- Large catchment areas need to be developed around water bodies so that natural recharge of groundwater takes place. A good example is the **Seog catchment area** which has been denoted as a wildlife sanctuary and where no construction is allowed.
- Greywater recycling, a method of recycling wastewater from kitchen sinks, showers and laundry fixtures.
- Greywater recycling helps reduce household water usage by about 50%.



- This year's World Water Development Report makes it clear that nature-based solutions which are also aligned with the principles and aims of the 2030 Agenda for Sustainable Development can offer answers to our most pressing water-related challenges.

Conclusion:

- There is a need for credible environmental and cumulative impact assessments, genuine public consultation process at multiple stages of planning and project implementation, confidence-inspiring appraisal, which includes the appointment of independent experts, and most crucially, achieving some real monitoring and compliance.
- The **water governance** ought to be made **transparent, accountable and participatory** in every sub-sector, including management of rivers, groundwater, floods, and biodiversity, among others.

Q) Assessing geographic variability in heat wave vulnerability should become the basis for planning in India to tackle the brunt of Heat waves. Discuss the statement in the context of recent heat wave incidents often witnessed by the country. (250 words)

Reference

Why this question:

The question is in the context of onset of Heat waves in most parts of the country. The weather agencies have predicted that central and north-western India will bear the brunt of the sun, while heat waves have already struck several parts of the south India.

Key demands of the question:

The question expects us to first highlight that heat waves have become quite frequent. Thereafter, we need to examine the adverse socio economic and health impact of heat waves and analyze how India should deal with the problem by mainly focusing on policy that involves geographical mapping of vulnerability.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction

Introduce by highlighting the condition of heatwaves in India.

Body

The body of the answer should address the following dimensions:

- Explain the condition of heat waves currently facing the country.
- Discuss the causes and consequences.
- Highlight what should be India's response – Identification of heat spots, Review occupational health standard, regulate safety of work force amid rising temperature. Etc.
- Then move on to discussing that policy focus should mainly be upon Assessing geographic variability in heat wave vulnerability . (half of your answer should focus on this aspect)

Conclusion

Conclude with significance of right policy direction to tackle the menace.

Introduction:

- According to Indian Meteorological Department (IMD), Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions.

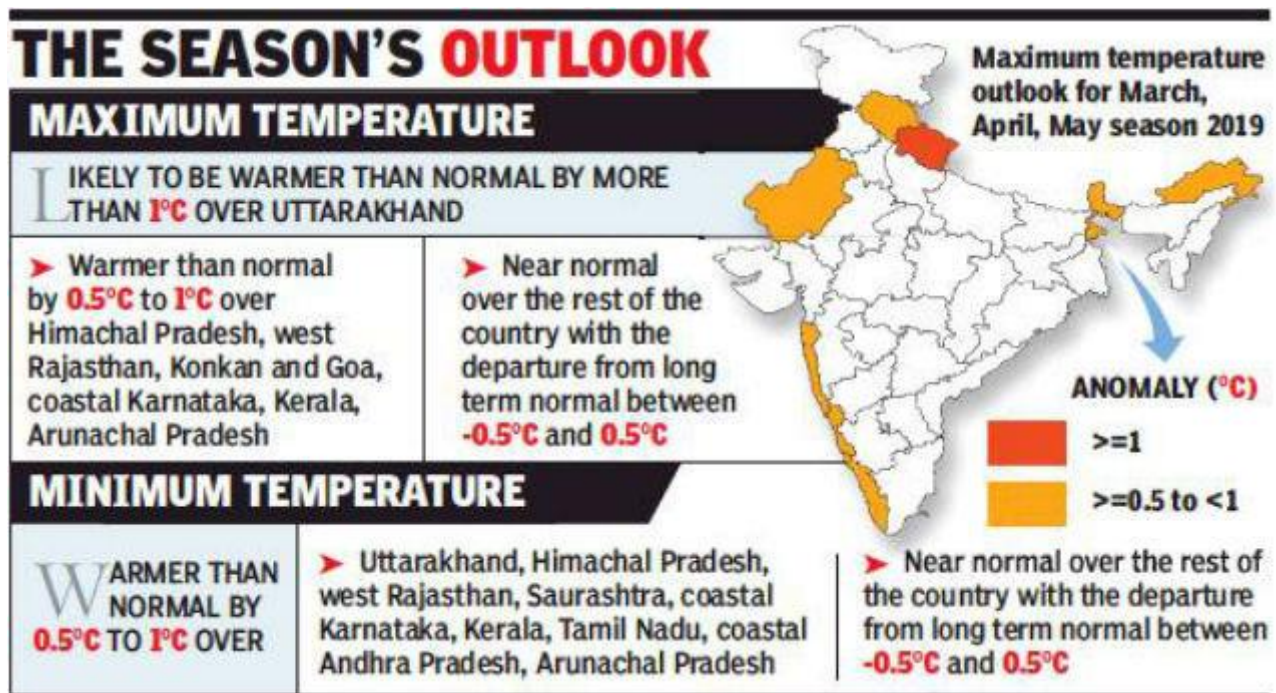
Body:

Current Situation and the Geographical spread of Heat waves in India:

- India's central and north-western parts are headed for a hotter than normal summer season, according to the IMD.
- The IMD declared that, "The April to June season's average maximum temperatures are likely to be warmer than normal by 0.5 degree Celsius over most of the meteorological subdivisions from central India and some subdivisions from north-west India."



- It said the maximum temperatures will be above normal by 0.5-1.0 degree Celsius in Haryana, Chandigarh, Delhi, west and east Uttar Pradesh, east Rajasthan, west and east Madhya Pradesh, Chhattisgarh, Jharkhand, Odisha, Gujarat, Madhya Maharashtra, Vidarbha, Marathwada, coastal Karnataka, north-interior Karnataka, Rayalaseema and Telangana.
- The heat waves have already struck many parts of the country. They started with Tamil Nadu, Rayalaseema, coastal Andhra Pradesh in early March.
- In late March, an unusual heat wave affected Kerala, taking weather forecasters by surprise. It has killed four people till date and almost 300 people have suffered from sun burns, according to media reports.



Causes for the heatwaves:

- Magnified effect of paved and concrete surfaces in urban areas and a lack of tree cover.
- Urban heat island effects can make ambient temperatures feel 3 to 4 degrees more than what they are.
- More heat waves were expected as globally temperatures had risen by an average 0.8 degrees in the past 100 years. Night-time temperatures are rising too.
- Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.
- High intensity of UV rays in medium-high heat wave zone.
- Combination of exceptional heat stress and a predominantly rural population makes India vulnerable to heat waves.

Consequences:

Social:

- Heatwaves are associated with increased rates of heat stress and heat stroke, worsening heart failure and acute kidney injury from dehydration.
- Children, the elderly and those with pre-existing morbidities are particularly vulnerable.
- Promote the spread of diseases like cholera and dengue fever across endemic areas.
- Increased poverty due to failure of crops and reduced economic activities.

Economic:

- India lost nearly 75 billion hours of labour in 2017 as a result of rising temperatures.
- This made sustained work increasingly difficult and negatively affecting workers' output.
- The agriculture sector experienced the largest increase in labour loss.
- Almost 153 billion hours of labour were lost globally in 2017 due to heat, an increase of 62 billion hours from the year 2000.
- Agriculture sector was more vulnerable compared to the industrial and service sectors because workers there were more likely to be exposed to heat.
- Since 1990, every region of the globe has become steadily more vulnerable to extreme increases of heat.



State actions towards Heat waves assessing their geographic variations:

- Key element of many states response strategy has been enhancing health risk communications on the impact of heat waves and how citizens can take simple steps to reduce their exposure and protect their health.
- **Andhra Pradesh:**
 - Andhra Pradesh has strong inter-agency coordination across multiple departments
 - Andhra Pradesh has also set up 1168 stations approximately one for every hundred square kilometers for weather forecasting and modelling.
 - It has developed a mobile app to disseminate information about heat waves and advice on precautionary steps; the app is available in English and Telugu.
- **Telangana:**
 - Telangana developed one of the first state-wide heat action plans in 2016.
 - The state is now integrating the heat action plan with its action plan on climate change.
 - The Telangana plan focuses on training district officials and health staff
- **Odisha:**
 - It has declared heat waves as a state specific disaster.
 - It is developing local thresholds and analyzing vulnerability of communities in different parts of the state.
 - Odisha's activities focus on awareness raising, capacity building and training of healthcare staff, interagency coordination, and enabling provision of water for vulnerable communities.
- Various states and municipalities have introduced early warning systems, public awareness campaigns and increased training for medical professionals.
- Ahmedabad, Nagpur and Odisha have made pioneering efforts with respect to heat-health warning systems (HHWS).
- **Ahmedabad Municipal Corporation (AMC)** has adopted a heat action plan which necessitates measures such as building heat shelters, ensuring availability of water and removing neonatal ICU from the top floor of hospitals.
- Such warning systems include providing weather forecasts in advance, issuing warnings to people, providing readiness of emergency response systems, and preparing doctors and health facilities to handle a sudden influx of patients. Warnings facilitate people in taking appropriate actions against heat-related harm.
- Access to cool environments remains the mainstay of preventing heat stress:
 - In rural areas, where electricity access is a challenge, supplementing power supply of primary health centres with solar-based systems should be undertaken. Chhattisgarh, Maharashtra and Tripura have already deployed such systems.

Way forward:

- In 2016, the National Disaster Management Agency prepared guidelines for state governments to formulate action plans for the prevention and management of heat waves, outlining four key strategies:
 - Forecasting heat waves and enabling an early warning system
 - Building capacity of healthcare professionals to deal with heat wave-related emergencies
 - Community outreach through various media
 - Inter-agency cooperation as well as engagement with other civil society organizations in the region.
- Advance implementation of **local Heat Action Plans**, plus effective inter-agency coordination is a vital response which the government can deploy in order to protect vulnerable groups.
- This will require identification of "**heat hot spots**", analysis of meteorological data and allocation of resources to crisis-prone areas.
- The **India Cooling Action Plan** must emphasize the urgency and need for better planning, zoning and building regulations to prevent Urban Heat Islands.
- **Provision of public messaging** (radio, TV), mobile phone-based text messages, automated phone calls and alerts.
- Promotion of traditional adaptation practices, such as staying indoors and wearing comfortable clothes.
- Popularisation of simple design features such as shaded windows, underground water storage tanks and insulating housing materials.



TOPIC: Linkages between development and spread of extremism; Role of external state and non-state actors in creating challenges to internal security.

Q) Do you think terror has religion ? Analyse with recent examples where terrorism has been often related to religion. (250 words)

[Indianexpress](#)

Why this question:

The article discusses how religion is often associated with terrorism.

Key demand of the question:

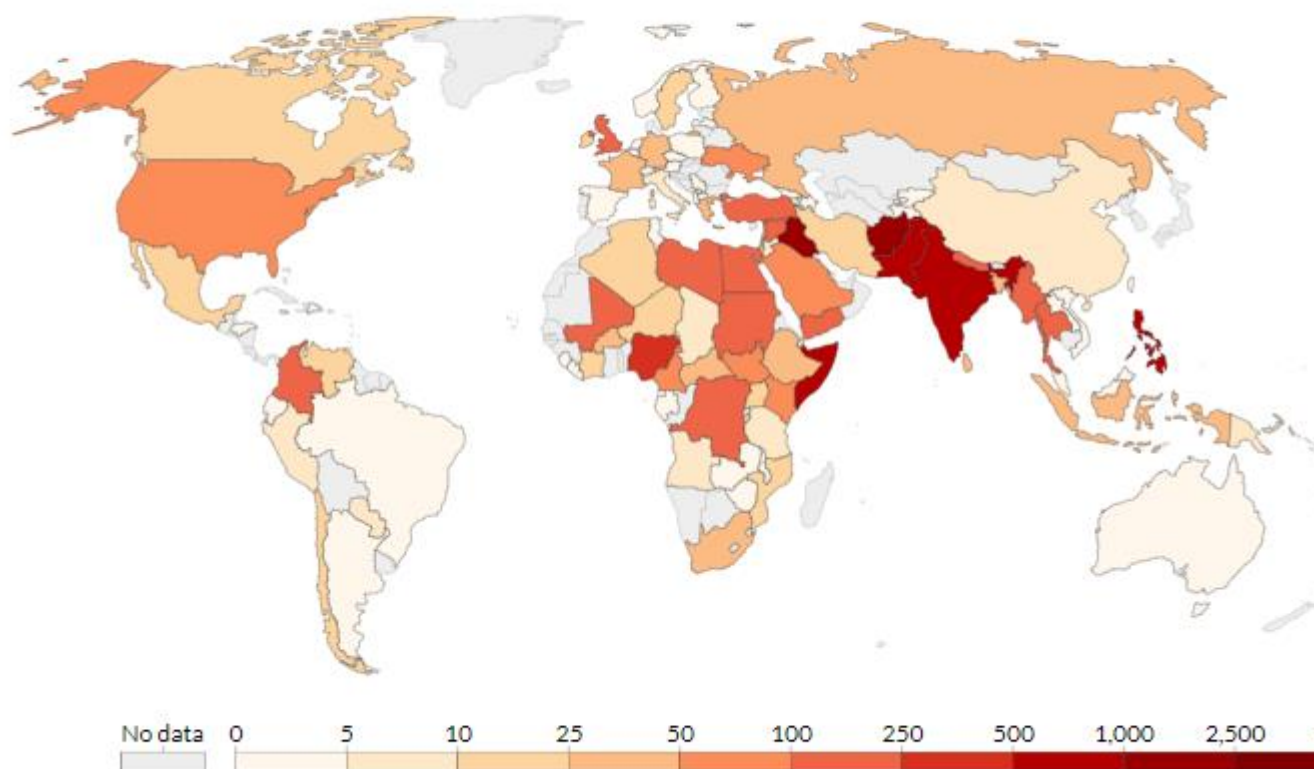
The answer must thus evaluate the theme of religious terrorism, recent incidences, cause driving them and discuss what should be done to overcome it.

Directive word:

Analyze – When asked to analyse, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary.

Number of terrorist incidents, 2017

The total number of terrorism-related incidents per year. The source defines a terrorist attack as: "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation." The perpetrators of the incidents must be sub-national actors; data does not include acts of state terrorism.



Source: Global Terrorism Database (2018)

Structure of the answer:

Introduction:

In a few lines brief about the recent incidences where terror attacks were associated with religion.

Body:

- Discuss the concept of Religious terrorism- one that is carried out based on motivations and goals that may have a predominantly religious character or influence.
- Then move on to explain how terrorism is usually understood as the use or threat of violence to further a political cause. There is no universally agreed definition of terrorism making it a difficult object to quantify.
- The visualization below shows the annual number of terrorist attacks globally and by country:
- Take cues from the article – discuss examples ranging from Pragya Thakur – Malegaon case to the recent attacks in Australia in the mosque.



- What should be the way forward to overcome?

Conclusion:

Conclude by suggesting road ahead to curb terrorism.

Introduction:

- Terrorism involves violence against public, with a political or religious desire. Terrorist acts are organized so as to attract large attention. Terrorists use acts of violence for frightening the group of peoples or pressuring the Government to do or not do something. Terrorism is now an international phenomenon. The recent incidents of terrorism seen in Christchurch mosque attacks, Sri Lanka Church attacks show terrorism is religion fuelled.

Body:

- Religious terrorism is terrorism carried out based on motivations and goals that may have a predominantly religious character or influence. Religious terrorism consists of acts that terrify, the definition of which is provided by the witnesses – the ones terrified – and not by the party committing the act; accompanied by either a religious motivation, justification, organization, or world view. Religion is sometimes used in combination with other factors, and sometimes as the primary motivation. Religious terrorism is intimately connected to current forces of geopolitics.
- Example: the terror inflicted by ISIS is chiefly motivated by the fact of setting up an Islam Caliphate across the world over a period of time. There have been incidents of radicalization of youths from the world, increased incidents of lone-wolf attacks who are self-inspired by the ISIS ideology.
- In the similar fashion, there have been incidents of attacks on mosque as seen in Christchurch. The terrorism unleashed by right wing outfits in India as seen in the Malegaon blast.
- However, we cannot completely attribute terrorism to religious factors by considering the above examples. There are multiple other causes like **socio-economical factors** leading to arms as seen in Naxalism in India, **racism** leading to violence and terrorism as seen in Church attacks in USA, **geo-political factors** as seen in Pakistan state sponsored terrorist acts in India, **political factors** to create fear in the civilians as seen in Saddam Hussein and Kim Jong Un's reign in Iraq and North Korea respectively, **ethno-national factors** as seen in the North-East Indian states.
- The terrorism is offlate taking new forms like Cyber-terrorism, Space-terrorism, Bio-terrorism and nuclear terrorism.

Conclusion:

- Thus, we can conclude that terror has no religion. All religions preach the ideals of peace and harmony, brotherhood among the people. A few anti-social elements are using religion as a veil of terrorism. However, deep down there will be many other factors leading to such cruel acts.

Topic: Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security; money-laundering and its prevention.

Q) The UK is attempting a radical redesign of the internet through the release of white paper on 'online harms', in this context discuss the significance of such regulations in the current era of technology. (250 words)

Reference

Why this question:

UK government has released a white paper on 'online harms'. These new rules are aimed at limiting harmful online content. Developing a culture of transparency, trust and accountability will be a critical element of the new regulatory framework.

Key demand of the question:

The question is about analyzing the significance of such regulations in the current era of technology.

Directive word:

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer:

Introduction:

In a few introductory lines state the background of the context of question.

**Body:**

In brief discuss –

- The highlights of the white paper of UK .
- In this white paper, the UK government called for an internet regulator with the power to issue fine, to block access to websites if necessary, and to make individual executives legally liable for harmful content spread on their platforms.
- The government will establish a new statutory duty of care to make companies take more responsibility for the safety of their users and tackle harm caused by content or activity on their services. Compliance with this duty of care will be overseen and enforced by an independent regulator.
- Companies must fulfil their new legal duties. The regulator will set out how to do this in codes of practice. If companies want to fulfil these duties in a manner not set out in the codes, they will have to explain and justify to the regulator how their alternative approach will effectively deliver the same or greater level of impact.
- The regulator will have the power to require annual transparency reports from companies in scope, outlining the prevalence of harmful content on their platforms and what measures they are taking to address this. These reports will be published online by the regulator, so that users and parents can make informed decisions about online use.
- Discuss why it came into existence, what are its significance.
- What lessons should India take from it.

Conclusion:

Conclude with significance of such tools in the rapidly growing age of technology.

Introduction:

- The internet has added a new dimension to the spaces of imagination in which we all live, and the problems of the offline world have moved there, too.
- UK government has released a white paper on 'online harms'. Online harms such as **child sexual abuse, cyber-bullying, cyber-terrorism, radicalising the youths, rising digital divide etc.**
- These new rules are aimed at limiting harmful online content. Developing a culture of transparency, trust and accountability will be a critical element of the new regulatory framework.

Body:**Highlights of the white paper of UK:**

- In this white paper, the UK government called for an **internet regulator** with the power to issue fine, to block access to websites if necessary, and to make individual executives legally liable for harmful content spread on their platforms.
- The government will establish a **new statutory duty of care** to make companies take more responsibility for the safety of their users and tackle harm caused by content or activity on their services. Compliance with this duty of care will be overseen and enforced by an independent regulator.
- Companies must fulfil their new legal duties. The regulator will set out how to do this in codes of practice. If companies want to fulfil these duties in a manner not set out in the codes, they will have to **explain and justify to the regulator** how their alternative approach will effectively deliver the same or greater level of impact.
- The **regulator will have the power to require annual transparency reports** from companies in scope, outlining the prevalence of harmful content on their platforms and what measures they are taking to address this.
- These **reports will be published online by the regulator**, so that users and parents can make informed decisions about online use.

Rationale behind the white paper:

- UK govt said that illegal and unacceptable content and activity is widespread online, and UK users are frequently concerned about what they have seen or experienced.
- The impact of harmful content and activity can be particularly damaging for children and young people, and there are growing concerns about the potential impact on their mental health and wellbeing.
- According to the white paper, in 2018 there were over 18.4 million referrals of child sexual abuse material by US tech companies to the National Center for Missing and Exploited Children (NCMEC). Of those, there were 113, 948 UK-related referrals in 2018, up from 82,109 in 2017.
- As per Online Harms White Paper, Tackling illegal and harmful content and activity online is one part of the UK's wider mission to develop rules and norms for the internet, including protecting personal data, supporting competition in digital markets and promoting responsible digital design.



Lessons for India:

- The white paper covers a range of issues that are clearly defined in law such as spreading terrorist content, child sex abuse, so-called revenge pornography, hate crimes, harassment and the sale of illegal goods together with harmful behaviour that has a less clear legal definition such as cyber-bullying, trolling and the spread of fake news and disinformation.
- India, with its increasing internet penetration is prone to all the online harms mentioned above.
- The lack of Data Protection law, Right to Privacy (a fundamental right) makes it all the more imperative to take swift action to regulate the online harms.

Conclusion:

- Developing a culture of transparency, trust and accountability will be a critical element of the new regulatory framework. India should soon follow suit with bringing in a Data Protection law which is most imperative in today's Data driven world.

Q) Social media is prone to herd behaviour, suppression of social media presumably helps prevent the spread of fake news. Critically analyse the statement in the context of steps taken by the Sri-Lankan government to ban social media post terror attack. (250 words)

[Livemint](#)

Why this question:

The article provides for a brief analysis of how some regulation to check fake news is necessary, despite the risks of regulatory capture. This is in the light of the responses of the Sri Lankan government to the terrorist attack on Easter recently that was to clamp down on social media.

Key demands of the question:

The answer must discuss evolution of evolution of separation of powers and explain how the Separation of Powers is implemented in our nation.

Directive word

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

Structure of the answer:

Introduction

Introduce by highlighting the situation in Sri – Lanka and steps taken by govt.

Body

The body of the answer should address the following dimensions:

- How and why Social media is prone to herd behaviour?
- Why the suppression of social media presumably helps prevent the spread of fake news, rumors and hate speech.
- What are the negatives associated? – economic costs, in terms of a shutdown of legitimate e-commerce. It hurts businesses and services that depend on digital connectivity etc.
- Take cues from the article and suggest solutions.

Conclusion

Conclude with way forward.

Introduction:

- One of the earliest responses of the Sri Lankan government to the terrorist attack on Easter Sunday was to clamp down on social media. Facebook, WhatsApp, Instagram and some other services were blocked. The country's minister for mass media and state minister for defence appealed to the media not to publicize the names of the attackers and give extremists a chance to exploit the situation.

Body:

Social media is prone to herd behaviour:

- It's easy to lose our sense of self when we're interacting online and can turn into sheep just doing what everyone else is doing.
- Humans are social creatures. Sometimes the things other people do overwhelm our sensibilities and we do things just because others are.



- The Herd Mentality has roots in **social pressure**. We all want to be accepted, and in times of stress, that pressure becomes more powerful.
- **People in a crowd feel less guilt, less individuality, and more support from other members of the group.** This is called “de-individualization.”
- The fear of losing your friends and followers **if your views don’t fall in line with the majoritarian view.**
- People feel empowered when they are in line with the herd’s behaviour and **the anonymity of internet acts as a protective shield.**
- users in a social system tend to bond more with ones who are similar to them than to ones who are dissimilar
- Entry barriers are very low and every user and blogger is a potential broadcaster.
- Being in crowds, and even being on the road driving, can change our thoughts and behaviours. We might say or do things we otherwise never wouldn’t.

Suppression of social media helps:

- Fake news is an industry today and finds great resonance with people. Its rise corresponds with a growing distrust in the mainstream media.
- Fake news has now even slipped into traditional media outlets and is often circulated by prominent individuals. This has contributed to the **echo chamber phenomenon**.
- “Echo chamber” is a term widely used in today’s lexicon, that describes a situation where certain ideas, beliefs or data points are reinforced through repetition of a closed system that does not allow for the free movement of alternative or competing ideas or concepts.
- It allows the authorities to lay down guidelines to impose temporary measures to maintain public tranquility.
- Shutting down internet access is a supply-side attempt to curb panic, rumours and hate speech.
- In some ways, the temporary clampdown on social media is similar to a physical curfew imposed by the Sri Lankan government.
- A curfew is a ban on the assembly of more than, say, a dozen people in one place, and blocking social media services is like banning a virtual assembly.

However, there are negatives associated with such clamp-downs:

- It surely has negative economic costs, in terms of a shutdown of legitimate e-commerce.
- It hurts businesses and services that depend on digital connectivity.
- They hurt the weaker and more vulnerable sections, since their dependence on social media for crucial updates is far greater than that of the elites and well-off sections.
- social media allows people to communicate with one another more freely, they are helping to create surprisingly influential social organizations among once-marginalized groups.
- Without social media, social, ethical, environmental and political ills would have minimal visibility. Increased visibility of issues has shifted the balance of power from the hands of a few to the masses.
- Social media activism brings an increased awareness about societal issues, questions remain as to whether this awareness is translating into real change.
- Social media platforms provide a platform to raise their voice against injustice and inequality.
- Social media have increasingly been adopted by politicians, political activists and social movements as a means to engage, organize and communicate with citizens.

Way forward:

- Government plan to achieve a temporary illusion of security at the cost of a permanent loss of freedom must be avoided.
- There must to be no invasion of the individual’s right than what is strictly necessary to achieve the state’s goal.
- Resorting to this measure represents a failure of policing in the country.
- The police should develop more effective methods of interacting with local communities and gathering intelligence to scotch the spread of inflammatory fake news.
- Thus, instead of using a blunt instrument such as a complete shutdown, the law and order machinery across the country must find less damaging ways of dealing with increasingly connected populations.
- Otherwise, the country could see an increasing number of shutdowns, which would run counter to the policy of encouraging digitisation.
- Government to preserve law and order must use less drastic ways, such as increasing security, or addressing grievances of the citizens.
- Fact-checking services have sprung up in India, including some sponsored by mainstream media. This could be seen as a “free market” response. Facebook too is apparently toying with the idea of introducing a button for “fake news” (along with “like”). This would be an inbuilt countervailing force, it believes.



- Many social media companies have also enhanced the human surveillance of their platforms and customer support to detect and deal with fake news.



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