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MONTHLY MAINSTORMING

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Shankar IAS Academy™

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G.S PAPER I

1. HISTORY

Discuss the relevance Guru Nanak's Langar concept in achieving the United Nation's sustainable goal of zero hunger by 2030.

KEY POINTS

Aim

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

Langar to reduce hunger

- Several Sikh organisations like Khalsa Aid, Langar Aid, Midland Langar Seva Society and others are now branching out to other countries where langar is used to provide nutritious meals to the undernourished.
- One such organisation is 'Zero Hunger With Langar' which is specifically working in two African countries – Malawi and Kenya – which are among the countries with the highest malnutrition rates among children and feature in the UN's target list.
- Founded in 2016, 'Zero Hunger With Langar', working under its parent body 'Guru Nanak Nishkam Sewak Jatha'.
- Malawi is among the countries with the highest levels of malnutrition in the world hence we started serving there first.
- It is targeting children in primary schools, nurseries because there children are exploited for something as basic as food. They are made to work in return for food.
- The organisation is serving highly nutritious porridge meals with maize, soya etc. rich in carbohydrates and other vitamins, minerals to them.

2. GEOGRAPHY

Recent developments in water transport holds out great promise for improving India's logistics sector and therefore needs to be pushed aggressively. Analyse

KEY POINTS

- Enabling freight to be transported through modes other than roads and railways is key to reducing costs and making Indian goods more competitive in global markets. Waterways has till now been the missing link.
- The cost of freight movement by road is Rs 2.58 per ton-kilometre, compared with Rs 1.41 per ton-km for rail and Rs 1.06 per ton-km for waterways.
- Coastal shipping and inland waterways account for barely 7 per cent of freight transport in India, compared with 24 per cent in China and 11 per cent in Germany.
- The over-reliance on roads has meant that the cost of logistics as a share of the price of final goods is around 18 per cent in India, compared with just 9-10 per cent in developed countries.
- In 2015 it launched the ambitious Sagarmala project to develop water freight transport. The project involved developing new ports, enhancing port connectivity and port linked industrialization. Augmenting inter-modal connectivity is especially important.

- Amendments passed to the Central Road Fund Act in 2017 aimed to use 2.5 per cent of the funds collected for waterways development (India currently has 14,500 km of navigable inland waterways).
- The government has also put in motion the Jal Marg Vikas project to enhance commercial navigation of vessels of size 1,500-2,000 tons on National Waterway-I between Haldia and Varanasi.

Need of the hour

- Incentivising industries adjacent to national waterways to use water transport is also an option.
- At the other end, governments could also impose heavier taxes for long-haul road transport of coal and inflammable material and 'nudge' transporters to shift to waterways for long-haul carriage.
- For a long time, the focus was on encouraging shippers to move from roads to railways. But with investments in Sagarmala taking off and other enabling policy changes getting the go-ahead, it looks like it will actually be waterways.

G.S PAPER II

3. POLITY

While governments, institutions and civil societies work for citizen's rights, inherent duties remain crucial for individuals in order to ensure the efficacy of the administrative system. Comment

KEY POINTS

- The Constitution of India, originally, did not contain the aspect of fundamental duties for citizens.
- However, during discussions on the draft Constitution and fundamental rights therein, in the constituent assembly, few members had raised their voices in favour of citizens' duties towards the nation.
- At a time when New India has set high targets for leading the 21st century, combating climate change is crucial in the country's journey towards becoming a \$5 trillion-strong economy in a time-bound manner.
- Invariably, it also brings responsibility on ourselves to act dutifully towards adopting a lifestyle that helps the nation to move ahead for achieving these targets.
- In practice, everywhere schools, homes, workplaces, or at the courts "rights" have taken up more space than "duties", when actually they are the two sides of the same coin.
- Citizens need to fulfil their duties and obey laws too. For instance, citizens have the right to get better roads, infrastructure and better traveling facilities.
- But following traffic rules is their duty. Having basic household amenities like electricity and clean tap water are citizens' rights.
- However, it is their duty to end practices that lead to the wastage of electricity and water. It is the citizen's right to get clean streets, but it is the individual's duty to stop throwing garbage on roads, and put trash into the right bins or dispose it in a proper manner.
- Unless we promote the culture of duty and responsibility, the aims and objectives enshrined in the Preamble, and under Article 51A of the Constitution, cannot be truly achieved in letter and spirit.



4. GOVERNANCE

To have an extra edge in global trading, diplomats trained specifically for bolstering trade would be beneficial for the country. Discuss

KEY POINTS

- It, unarguably, provides an opportunity for political and largely bureaucratic neutral nations such as India to bolster its position as a favoured nation for free trade.
- Citing the example of Vietnam, which has gained orders from trade diversion on tariffed goods equal to 7.9% of GDP through the first quarter of 2019. Their trade diplomacy has played a critical role in facilitating the country's rise to an Asian 'trade celebrity nation'.
- Most developed nations are actively using their international embassies as a platform for promoting and building new trade connections.
- They have designated trade attaches at various embassy locations across the globe to help build trade-related capacity. However, India's limited global presence restricts us from broadening our trade profile.
- It is imperative for India to expand its network of foreign missions to more countries and have a team of trade attaches who manage trade development agenda with regard to trade policies and negotiations, as well as productive capacities essential to compete on a global platform.

To further empower and entrust Indian foreign missions abroad, it would be ideal to develop an in-house Indian Trade Facilitation Office (ITFO) which should focus on the below-mentioned areas.

- A designated officer should be supported by a team of trade specialists responsible for harnessing trade potential.
- ITFO would also be India's Ambassador and Permanent Representative to key international trade promotion bodies such as WTO.
- ITFO to be also responsible for protecting the interest of existing Indian businesses abroad and extend necessary professional support.
- It can also play an important role in facilitating government's international spending for promoting bilateral trade. ITFO may monitor such investments and ensure proper grounding of all such efforts.
- ITFO can work on building a plethora of ground level knowledge base, i.e., country-specific trade opportunities and extend such information to Indian companies.

A trade specific venture through our foreign missions will give us an extra edge in global trading, and bridge any gaps that come in the way of boosting India's share in international trade.

5. JUDICIARY

What is meant by Fast Track Court (FTC)? Does their functioning results in expeditious adjudication of various cases in Indian Judiciary? Critically analyse

KEY POINTS

The Fast Track Courts were established to expeditiously dispose of long pending cases in the Sessions Courts and long pending cases of undertrial prisoners.



FTC not fast enough

- In consultation with High Courts, state governments were supposed to establish FTCs.
- In a case (Brij Mohan Lal versus Union of India), the Supreme Court instructed that one shouldn't disband FTCs overnight.
- In a survey of FTCs conducted by National Law University Delhi, it was observed that there is a huge variation in the kinds of cases handled by these courts across States, with certain States primarily allocating rape and sexual offence cases to them and other States allocating various other matters.
- A few States are even considering the continuation of the FTC Scheme as a permanent feature in their respective States. This, to a large extent, has created an anomaly in the administration of Justice in the States and the entire country.
- Some of the States would continue with the FTC Scheme while others have been forced to discontinue or close it because of non-availability of fund.
- On December 31, 2018, there were 699 FTCs (some earlier ones having been closed down). These were for cases against women, children, senior citizens, differently abled, those with terminal ailments, and civil property disputes more than five years old.

Significance of FTC

- Speedy disposal of cases.
- There is greater flexibility in the way cases are being heard and better compliance with Supreme Court guidelines on how trials should be conducted—putting up screens in court that ensure victims don't have to face their abusers.
- Giving a degree of comfort on account of being a dedicated court to the victims
- In these, a judge can ask a person to leave the witness box and sit on a chair, which cannot be done in a regular court packed with litigants and lawyers.
- Being placed in a fast-track court gives judges the freedom to hold regular meetings with her staff to help them to understand the nature of cases being handled.

6. GOVERNMENT POLICIES

It is worth examining if the government should only focus on squeezing the telecom sector, or it should also consider their ability to invest, which can have a multiplier effect in today's connected world. Analyse

KEY POINTS

- The telecom sector has been in a state of chaos, raising some serious questions for the government.
- Fresh trouble arose after the Supreme Court agreed with the Department of Telecommunications' definition of adjusted gross revenue and directed telcos to pay dues with interest, amounting to Rs 1.33 trillion, within three months.
- Incumbent companies, saddled with debt, have expressed their inability to pay and are looking for waivers. The total debt of telcos is at Rs 4 trillion.
- The Cellular Operators Association of India (COAI) has argued that the decision will lead to a monopoly in the sector and will affect the digitisation programme of the government.



- Meanwhile, stock prices of legacy players have suffered, their credit rating has been downgraded, and at least one of them is reported to be negotiating better terms of repayment with lenders.
- The government, on its part, has done well to set up a committee of secretaries to suggest measures to ease financial stress in the sector.
- The accumulation has not happened entirely because of the way businesses are managed. This also resulted in significant consolidation in the sector, as a number of telcos exited the business or shut it down.
- A holistic review of past decisions will allow the government to make policy corrections, which will help ease stress in the sector in a sustainable manner.

The Indian telecom sector is at a critical juncture and how the government handles the situation will not only have a bearing on the sector but will also influence the investment climate in general.

Why does government intervene through enhancement and augmentation of ethanol production capacity, to support sugar sector and sugarcane farmers? Analyse

KEY POINTS

The ministry clarified that the proposals to undertake additional ethanol production from B-heavy molasses/sugarcane juice/sugar syrup/sugar would be considered under the provisions of the EIA (Environmental Impact Assessment) notification, 2006, by an expert appraisal committee for granting environmental clearance.

What are ethanol and molasses

- Ethanol, or ethyl alcohol, is a liquid that has several uses.
- At 95% purity, it is called rectified spirit and is used as the intoxicating ingredient in alcoholic beverages.
- At 99%-plus purity, ethanol is used for blending with petrol.
- Both products are made from molasses, a byproduct of sugar manufacturing.

Why focus on more ethanol

- Mills currently have all-time-high stocks of sugar, and they have been at loggerheads with farmers over non-payment of dues.
- Mill owners insist that the reason behind their woes is excess production of sugar and fall in its price.
- Under the circumstances, ethanol is the only real saviour — both for mills and cane growers.
- The government approved an increase in the price of ethanol to be procured by public sector oil marketing companies from sugar mills for blending with petrol for the 2019-20 supply year.
- The Cabinet Committee on Economic Affairs also allowed conversion of old sugar into ethanol, which again is expected to help mills deal with the current overproduction in the sweetener and make timely payments to farmers for the cane delivered by them.
- Ethanol production has been additionally facilitated with the government mandating 10% blending of petrol with ethanol.

Commission for Agricultural Costs and Prices' (CACP) suggestion of reviewing open-ended procurement to correct market inefficiencies is worth serious consideration. Explain

KEY POINTS

- CACP, in its latest report for rabi season, has batted for direct procurement by private players, as envisaged under the Private Procurement Stockist Scheme.
- While the purpose of open-ended procurement was to provide support to farmers, given the MSP hikes, this seriously weighed down the government's finances.
- As long as the government continues with MSP as its primary tool for farm support, kindling private players' interest in procurement of grains will prove difficult since no private trader will be willing to procure grains at a price higher than the market price, which is usually the case with MSP.
- Apart from quality issues with grains, the MSP regime also hinders liquidation of stocks through export since it will trigger violations of WTO norms.
- Given how MSP benefits only a small pool of farmers from a handful of states while distorting agricultural production in favour of a few crops, the government will be meaningfully supporting farmers if it were to give per-acre support.
- Along with the quasi-universal basic income scheme, PM Kisan, and the insurance scheme, PM FasalBima Yojana, a per-acre support will mean the farmer will be able to make choices based on market requirement, rather than producing to benefit from an open-ended grain procurement policy.
- While MSP guarantees that farmers grow only certain kinds of crops, and subsidies on fertiliser and electricity mean indiscriminate use of these resources, a fixed per-acre support scheme will help cut down wastage.
- More important, it shall also address demand-side constraints. FCI can still maintain its buffer stock, but the PDS can be disbanded, as a NITI Aayog study shows that people tend to graduate to a higher quality of grains once they are allowed freedom and flexibility to choose.

In the context of present global economic slowdown, India needs explore various ways to spend its capital for better economic growth trajectory. Elucidate

KEY POINTS

- Successful implementation of the structural reforms in 1991 pushed India's potential growth rate to a high level.
- Several sectors such as automobiles and housing are facing a sharp weakening of demand. And there has been a significant fall in the savings and investment rate.
- Within household savings, the proportion of savings in financial assets has sharply declined. Apart from these, a significant growth-stifling factor is the weakness of the banking and non-bank finance sectors due to both cyclical and structural reasons.

Ways to spend capital

- The RBI has reduced the repo rate by 110 basis points since February 2019, reducing it from 6.5 per cent to 5.4 per cent.
- The central government has also undertaken a number of steps post the 2019-20 budget which include – withdrawal of enhanced surcharge on foreign portfolio investors, a public sector bank consolidation plan,



additional depreciation rates for vehicle manufacturers, additional credit support for housing finance companies and recapitalisation of public sector banks.

- This persistent downward trend of the saving and investment rates has led to a fall in India's potential growth rate to below 7 per cent.
- In the present context of a declining investment rate and declining demand, a good solution will be to enhance government expenditure, especially capital expenditure.
- On the scope for increased spending, the bonanza from the RBI will go only to meet the shortfall in revenues. A larger disinvestment may help.
- The decline in price level in recent years partly because of the new monetary policy framework has affected the nominal GDP growth rate and growth rate of tax revenues.
- Options include bringing on board state governments for increasing their capital expenditure relative to their respective gross state domestic products (GSDPs).
- The Centre may invest through central public sector enterprises (CPSEs) an additional one percentage point of GDP compared to the present levels.
- Further, through the public-private partnership (PPP) mode, the private sector may be induced to supplement the government's investment in select projects. The amended FRBM Act has a provision for increasing the fiscal deficit by 0.5 per cent of GDP under certain circumstances. The government can make use of this provision.

If panchayat allocations are merged with MGNREGA to aid asset creation, it can trigger infrastructure growth, resulting in extra income and improved conditions. Justify

KEY POINTS

- Although the government has been taking multiple steps to trigger the economy, there is a need to focus on rural India, in terms of optimising of fund allocations and revision of MGNREGA wages.
- More than two-thirds of the country resides in 6 lakh villages. The 73rd and 74th amendment to the constitution and the finance commission directly providing funds to the local self bodies have transformed rural infrastructure.

Creation of infrastructure

- The first requirement will be to ensure the development of non-negotiable structures like development of drainage following systematic planning of topography, cement concrete lanes for every habitat in village, source for drinking water, piped drinking water, pucca housing.
- Panchayat bhavan with computer and internet connectivity, appropriate school buildings, play grounds etc. This will require drawing from pool of funds from ministry of rural development, Panchayat, drinking water and sanitation. Funds from human resource department, women and child welfare for anganwadi buildings can also be used.
- Thus, the government will create smart villages and smart panchayats without generating a demand for additional funds. This would also contribute to better health outcomes.
- MGNREGA wage revision, which sets the trend of minimum wages in rural India, is long overdue. If wages are revised during kharif pre-harvest, they can increase incomes and thereby spending.
- Financial inclusion—having an account in 5km radius and ensuring social protection debit—can also trigger the economy.



- Social protection can be ensured if the government provides death and accident insurance for everyone, ensures accuracy of BPL data and easy access to financial institutions.
- Livelihood opportunities in the vicinity can be created by encouraging value addition to agriculture produce. For instance, vegetable mint can be made into menthol. Such solutions will add to the income of households.
- This will trigger a consumption economy. The road, internet and financial access itself is good stimulant.

The success of the Swachh Bharat Mission depends not only on changing the mindset, but also on changing in the way waste is disposed of by the municipalities and the state governments. Explain

KEY POINTS

- In the rural areas, the major challenge was to change the mindset of the populace so that they would start using household toilets rather than defecate in open areas.
- As majority of the households did not have toilets in their homes, the main component of Swachh Bharat Mission (Grameen) was to construct household latrines and to focus on information, education and communication (IEC) activities.
- Domestic waste in rural areas is also managed in a much better manner as it is segregated at the household level and a majority of it is used in the fields.
- In most urban areas, disposal of solid waste is primarily the responsibility of municipalities.
- However, these municipalities are not equipped with the manpower, financial resources and technology for the task. Most of them are dependent upon the state governments for resources.
- These municipalities do not have sufficient human resources in terms of engineers or sanitation staff to manage the waste. Landfill site management is very poor due to lack of technical know-how.
- Merely constructing toilets cannot solve the problem as these areas require proper sewerage network.
- The job of laying the sewerage network is again distributed between the state's public health engineering department and the municipalities.
- If we look at strategy adopted by the Swachh Bharat Mission (Urban), its main focus is on the construction of individual household toilets, community toilets, public urinals and IEC activities. The funds earmarked for solid waste management are minimal.
- Similarly, there is limited provision of funds for laying the sewerage networks. The strategy used for Swachh Bharat Mission (Grameen) will not yield results in the urban mission.

Need of the hour

- The ministry must ask the state governments to assess their capabilities in waste handling.
- Recurring funds must be provided for collection of waste and its disposal.
- A window may be given to municipalities for upgrading their capabilities to augment their revenue collection.
- Separate funds must be given for the development of landfill sites.



The government's defence procurement policies have been subjected to criticism, it is time for Ministry of Defence to lay down an appropriate policy framework to empower the armed forces to discharge their responsibilities. Analyse

KEY POINTS

- A cost-effective procurement process, along with development of indigenous capabilities, products, and technologies would give our armed forces a decisive edge in defending India's national security, territorial integrity, and sovereignty.
- Valuable lessons can be learnt from the Comptroller and Auditor General of India's (CAG's) performance audit of capital acquisition in the Indian Air Force (IAF).
- It highlights systemic issues in the acquisition process and gives recommendations to rectify deficiencies in the procurement process.
- The acquisition process begins with the formulation of user requirements, known as the Air Staff Qualitative Requirements (ASQR). The formulation of ASQR is critical to the defence acquisition process because it determines quality, price, and competition.
- CAG observed a lack of consistency in technical evaluation across procurement cases: In some cases, such as doppler weather radars and attack helicopters, technical bids were rejected when vendors failed to meet all the ASQR parameters.
- But, in the case of medium multi-role combat aircraft (MMRCA) and heavy lift helicopters, bids were technically qualified even when they did not meet critical ASQRs.
- CAG concluded that the price of the 2015 deal was less than that of the 2007 one by 2.86%. The latter included a bank guarantee from the French government to safeguard the national interest in case of default, making the vendor—the French government—liable to provide payment. However, the 2015 deal excluded a bank guarantee.
- CAG's observations should have been integrated in the defence procurement process. The unwarranted delay, and complex procedures and decision-making process seem to be cost-ineffective.
- More importantly, it could damage national interest and lead to the acquisition of technologically inferior armaments. India must get value for the public money it spends.

In recent years, there is an improvement in ease of living of very poor households through public welfare programmes and reaching them through better identification via Socio Economic Census. Justify

KEY POINTS

- It is true that inflation rates have been very low, and inflation on agricultural produce even lower during the last five years. Availability of Rs 2 per kg wheat and Rs 3 per kg rice has become a reality across the country under the National Food Security Act (NFSA).
- This has also been a period when public welfare programmes like rural housing, rural toilets, LPG connections under Ujjwala, electricity connections to households under Saubhagya, enrollment for bank account, accident and life insurance, have all happened on a larger scale.
- Swachh Bharat Mission toilets, enrolment in Ujjwala, Saubhagya, or in accident and life insurance, also draws on incomes/savings. It is bound to affect demand for goods purchased by the poor, in the short run.
- The allocation for rural development programmes has gone up considerably from Rs 50,162 crore in 2012-13 to Rs 1.18 lakh crore in 2019-20.



- Add to this the state shares, which have increased to 60:40 instead of 75:25 or 100 per cent (in the case of the Pradhan Mantri Gram Sadak Yojana) from the central government for non-Himalayan states.
- The 14th Finance Commission's grants to gram panchayats have been released on an unprecedented scale. Extra budgetary resources (EBRs) have also been mobilised for the housing programme.
- The improvement in rural road connectivity has also been a significant development of this period, leading to 97 per cent eligible and feasible habitations as per the 2001 Census getting all weather road connectivity.

The government is set to announce the appointment of the Chief of Defence Staff, which would play a far more critical role in the national security apparatus, than the three service chiefs. Comment

KEY POINTS

- Development of future technologies and means to face emerging threats in the cyber, space, missiles domain, nurturing of AI-based platforms, usage of drones for various roles and such modern conflict realities is indeed important.
- The CDS can be the vital fulcrum to undertake such prioritisation and rationalisation, and, therefore, can play a stellar role in the perspective planning and development function.
- Considering the high cost of future technology, the CDS can also contribute towards optimisation of existing structures. Such review of existing establishments and manpower should also be an assigned task for him.
- The CDS would be better placed for integrated employment of war fighting potential, and therefore logically needs to be part of the operational control chain.
- The CDS is better termed as the primary military advisor, with the service chiefs also remaining important military advisors.
- The CDS should not become another interposed level between the Raksha Mantri and the service chiefs, whose access to the minister should remain as prevalent.
- In effect, the CDS should be in charge of newer domains and organisations, and be well poised to optimise, cut costs and prioritise different service demands.
- He/She could be an effective mentor for realising our military-industrial power potential, and for modernisation and capability enhancement.
- His tri-service position makes him the most suited driver for the integrated application of warfighting resources and facilitates unitary control in integrated operations.
- The CDS also has a primary advisory role, and therefore should not be boxed into administrative efficiency roles, but must be in the operational control chain.

Though the Industrial Relations Code Bill, 2019 offers flexibility in labour laws, it also tends to provide discretion to the government in certain areas. Analyse

KEY POINTS

Importance of the Bill

- The most important aspect of the Bill is that it presents the legal framework for ushering in the concept of 'fixed-term employment' through contract workers on a pan-India basis.
- With the introduction of fixed-term employment, companies will be able to hire workers directly under a fixed-term contract, with the flexibility to tweak the length of the contract based on the seasonality of industry.
- These workers will be treated on a par with regular workers during the tenure of the contract.



- The move to include it in a central law will help in wider reach, and states are expected to follow similar applicability. The Bill now ensures a pan-India impact of this move.

Changes in the Bill

- The rigidity of labour laws about laying off labour has often been cited by industry as the main reason limiting scalability and employment generation.
- The provision of fixed-term employment, which helps in the flow of social security benefits to all workers along with making it easier for companies to hire and fire, in The Industrial Relations Code Bill.

Opposition to the Bill

- While industry has welcomed the changes, others have said that the unclear provision regarding retrenchment would lead to uncertainty, and discretionary behaviour during implementation by the central or state government.
- Also, fixed-term employment needs to be introduced with adequate safeguards, otherwise it runs the risk of encouraging conversion of permanent employment into fixed-term employment.

Can the establishment of a single body to oversee the coal industry ensure compliance with mining and environmental standards? Comment

KEY POINTS

- There is a risk that some coal mines operated by private companies, or State government entities who outsource their coal mines to private entities, may be closed without having the necessary funds to complete the mine closure activities as per the approved Mining Plans.
- Therefore, India needs more effective and efficient regulatory governance to streamline approvals while ensuring the adoption of advanced technologies for mining, environment protection, and reclamation.

Unified authority

- Therefore, the government must set up an independent, multi-disciplinary unified authority on the pattern of the Director-General of Mines Safety, which is staffed with varied scientific and technological experts required to regulate all matters related to health and safety in the mineral industry.
- Such an authority must have in-house professional expertise in the ecological, environmental, geological, mine planning, hydro-geology, biodiversity, and social aspects of coal mine closure to consider all these facets in an integrated manner before granting all key statutory approvals for coal mines.
- These steps are critical to remove the overlapping jurisdictions of multiple bodies which govern matters related to forest, environment, and mine opening/closure in India.
- While this authority must also be empowered to enforce compliance of these clearances by all coal mines in India throughout operation right up to final closure, it need not be involved in the allotment of coal blocks or in regulating the coal market.
- Any appeal against an order/decision made by this authority may lie only with the National Green Tribunal.

Official Code

- To achieve the above goals, the Parliament must enact a “Sustainable Coal Mining Code” to consolidate all statutory provisions governing opening/closing and environment/forest matters related to coal mines.

- This Code must empower the unified authority to ensure efficient and effective environmental governance of coal mines in the manner explained above.
- An empowered unified authority for coal mining can ensure effective compliance with all statutes related to mining, environment, forest, and mine opening/closure in coal mines by using remote sensing and GIS-based tools for remote surveillance in conjunction with quarterly inspections of each coal mine.

Do the viable solutions to Public Distribution System portability in the states are being ignored in the push for Aadhaar usage? Analyse

KEY POINTS

- If the food security of migrants is the motivating concern, this need is probably better met by other initiatives such as Tamil Nadu's Amma canteens or Karnataka's Indira canteens, which provide heavily subsidised meals.
- Such community kitchens have quietly become popular across the country — Jharkhand's dal-bhaatkendras, Delhi's Jan Aahaar kiosks, and others in Andhra Pradesh, Odisha, Chhattisgarh are such initiatives.
- Currently, PDS entitlements are tied to the recipient's place of residence.
- Thus, while a single-member household may be forced to forego her rations if she migrates, others would be able to claim benefits through those family members who stay back.
- A portable PDS would be a great facility for those who would like to draw their rations at the place of migration.
- In 2012, the food department in Chhattisgarh took up the challenge of designing a portable PDS and launched "CORE PDS". Step one was to rejig the supply logistics.
- The ration card holders need a smart card (like ATM cards) that could be used to draw rations at any CORE PDS outlet using a "point of sale" (POS) machine. Once the POS machine authenticates the smart card, sale can proceed, portability was achieved without Aadhaar.
- CORE PDS was being gradually scaled up until Aadhaar came along and disrupted the process, even though smart cards are more reliable than fingerprint authentication.
- The rural development ministry that pushed the use of Aadhaar in NREGA and social security pensions and portability was affected.

7. HEALTH

The National Health Stack is designed to provide the foundational components that will be required across Ayushman Bharat and other health programs in India. Discuss

KEY POINTS

National Health Stack is digital infrastructure built with the aim of making the health insurance system more transparent and robust, while factoring in the uniqueness of India's health sector, and the political realities of federalism.

Foundational components of NHS

- An electronic national health registry that would serve as a single source of health data for the nation;
- A coverage and claims platform that would serve as the building blocks for large health protection schemes, allow for the horizontal and vertical expansion of schemes like Ayushman Bharat by states, and enable a robust system of fraud detection;



- Federated personal health records (PHR) framework that would serve the twin purposes of access to their own health data by patients, and the availability of health data for medical research, which is critical for advancing the understanding of human health;
- National health analytics platform that would provide a holistic view combining information on multiple health initiatives, and feed into smart policymaking, for instance, through improved predictive analytics; and
- Horizontal components including a unique digital health ID, health data dictionaries and supply chain management for drugs, payment gateways, etc., shared across all health programmes.

But why is the NHS necessary?

- There is an urgent need for integration of the two arms of Ayushman Bharat health and wellness centres which constitute the primary care arm, and PMJAY, which is the secondary and tertiary care arm under which the target is to provide 10.74 crore families with an annual health cover of Rs 5 lakh each.
- Without integration, the goal of continuum of care cannot be met and that would mean PMJAY might end up becoming a perpetual drain on resources.
- Hence, the need for a common digital language for the operationalisation and inter-operability of various health schemes, which the NHS seeks to provide.

Is all the data going to be safe/secure?

- One of the biggest concerns following the high-profile rollout of Ayushman Bharat has been regarding data security and privacy of patients.
- More than a year after the Justice Srikrishna Committee prepared a draft data privacy law, there has been little meaningful movement on it.
- In the backdrop of the Supreme Court's privacy judgment, the data privacy law should ideally have preceded the implementation of Ayushman Bharat.

8. INTERNATIONAL RELATIONS

To ensure that the South Asia's growth remain strong and sustainable, new policies and initiatives requires awareness of various kinds of risks. Discuss

KEY POINTS

- Real GDP growth of the South Asia region has steadily increased from an average of about 3 per cent in the 1970s to 7 per cent over the last decade.
- In India as an example, important waves of reforms began in earnest in the early 1990s, focused on reducing business regulations and liberalising the trade regime, and continued post-2000 with efforts to promote macroeconomic stability, the pan-India goods and services tax in 2017.
- A newly released paper by the IMF's Asia and Pacific Department finds that South Asia is poised to play an even bigger role in the global economy going forward, in both relative and absolute terms.
- Greater economic diversification, with an expansion of the service sector, improvements in education, and a still sizable demographic dividend are among the key elements underpinning this performance.
- India in particular has benefitted from the transition from exporting tea and fabrics several decades ago towards a more sophisticated basket of goods and services today.

- Based on demographic trends, more than 150 million people in the region are expected to enter the labour market by 2030 – this demographic dividend is most enduring in India and Nepal, where the working-age population is not expected to peak until 2040.
- Supporting improvements in agricultural productivity and a sustainable expansion of manufacturing, while promoting higher-skill services, to achieve this goal.
- South Asian economies can further open up to trade and foreign direct investment (FDI), improve governance, and foster financial development to enable more efficient allocation of resources to the private sector and reduce the still significant state footprint in the economy.
- For India, there is a particularly large need for infrastructure investment, including in the areas of (renewable) energy, transport, water, and urban services – land reforms are important to facilitate this investment.
- Stronger social safety nets are especially important to supporting the most difficult structural reforms, notably to labour markets, minimising their distributional impact on the most vulnerable segments of the population, and promoting strong and inclusive growth.

The results of the recent presidential elections in Sri Lanka offers India a tremendous opportunity to strengthen its neighbourhood relations. Comment.

KEY POINTS

- The eyes of the world, and especially India, China and the US, will be watching the first moves of Sri Lankan President who made national security his campaign's central theme after the Easter terrorist attacks.
- India's had differences in the past leader because of its perceived closeness to China, but it's thought both sides have attempted to bridge the gaps.
- Now India is looking forward to deepen the relations with Srilanka, the island is heavily dependent on tourism which took a hit after the easter attacks.
- India needs to promote the tourism development on the lines of Incredible India Campaign and cultural relations via its soft power.
- China had invested millions of money in Sri Lanka, Hambantota port on a 99 year lease, which acts a greatest challenge for India, but attracts few ships.
- China has also involved in a \$1.4 billion project to build a new Colombo port city on a reclaimed land in the capital.
- To counter Chinese influence India and Japan signed a deal to build a deep-sea container port in Colombo.
- India now has a chance to cooperate with SriLanka in various ways through enhancing the trade balance, building better security infrastructure especially in maritime borders.
- Cooperation can be established to prevent the death and arrest of fisher-men.

Recent events highlight Russia's growing strategic interest in the Indian Ocean, India should be aware of the consequences and think of its own regional strategy. Analyse

KEY POINTS

Recent events

- Russia's growing strategic interest in the Indian Ocean and should compel Delhi to think of its consequences for India's own regional strategy.
- *Perekop*, a training vessel of the Russian Navy, arrived at the Hambantota port in Sri Lanka.



- Russian long-distance “Black Jack” nuclear bombers flew to South Africa. This is the first time these aircraft have been deployed to Africa.
- The Russian and the Chinese are conducting a trilateral naval exercise with South Africa in the strategic waters off the Cape of Good Hope.

India’s Strategy

- Delhi’s discourse on the Indian Ocean has been focused on the growing competition with China, whose maritime profile has been growing in the littoral.
- This, in turn, has led to the rapid expansion of India’s naval cooperation with the United States and Japan, as well as with its regional partners like Indonesia, Singapore and other countries in the east, many nations in the Gulf as well as the east coast of Africa.
- India has also been developing a partnership with France, a resident power in the littoral and a traditional security provider in the Western Indian Ocean and Africa.
- Russia’s return to the Indian Ocean is relatively recent. It must also be seen as a part of its new strategic activism in the Middle East and Africa.
- The region’s calls for a zone of peace in the Indian Ocean went nowhere as the US quickly replaced Britain as the main security provider in the littoral.
- The impact of Russia’s conflict with the US has come into public view in the case of Delhi’s purchase of missiles from Moscow and the consequent threat of Washington’s sanctions.
- China and Russia have conducted impressive naval manoeuvres in the Western Pacific, the Baltic Sea and the Mediterranean.
- The joint exercise with South Africa this week brings the unfolding Sino-Russian naval partnership closer home to India.
- Delhi needs an early and intensive dialogue with Moscow on its Indian Ocean collaboration with China.

The next step at the UN General Assembly in 2020 would be the question of resettlement, compensation for the displaced Chagos Islanders from their homeland by the UK and the USA. Examine.

KEY POINTS

- Mauritius called the UK an “illegal colonial occupier”, after it ignored a UN mandated deadline to return the Chagos Islands, a small archipelago in the Indian Ocean, to Mauritius.
- The United Nations had given UK six months to process the transfer, a move the UK and the US have bitterly resisted.
- In 2017, at the UN General Assembly, 94 countries voted in support of Mauritius’ resolution to seek an advisory opinion on the legal status of the Chagos Islands from the International Court of Justice in The Hague.
- The US and the UK were among the 15 countries that voted against the resolution. The vote came as a blow for the UK and the US because 65 countries abstained from voting, including many EU countries, on whom the duo may have been banking on for support.
- In 2019, the UN’s highest court of justice, the International Court of Justice (ICJ), ordered the UK to return the Chagos Islands to Mauritius “as rapidly as possible”.



- After the ICJ ruling, the United Kingdom Foreign Office said that the ICJ ruling was an advisory opinion, not a judgment.
- The UK is slowly finding itself more diplomatically isolated after its failures at the UN General Assembly concerning Chagos Islands.
- For now, the UK might possibly be searching for reassurance in the fact that the ICJ ruling is not binding and no immediate sanctions or adverse actions will be taken against it.

G.S PAPER-III

9. AGRICULTURE

Steps to raise oilseeds output through area expansion and improved productivity in the country must be accompanied by import curbs. Discuss

KEY POINTS

- Unrestricted imports of edible oil finished or semi-finished product have hurt domestic producers of oilseeds, the growers.
- Government efforts to raise the minimum support price for oilseeds and effect changes from time to time in customs duty on imported oils have not had the desired impact at all.
- At the same time, tinkering with customs duty from time to time has failed to provide any relief to domestic producers but has merely enriched speculative interests that often bet on changes in rates of duty.
- Crop rotation, improved agronomy, technology infusion and robust procurement have to be a critical part of the strategy.
- As tariffs have failed to perform, imports have to be curtailed to, say, 12-13 million tonnes.
- Further, the imports have to be closely monitored by mandating a system of contract registration and tracking physical arrivals.
- These steps will shake the oilseeds sector, especially the import trade, from out of its comfort zone.
- Restricting import volumes will in the short run push domestic oilseed prices higher and provide the much-needed boost to growers with multiple benefits.
- It will result in area expansion for which grain mono-cropping States such as Punjab and Haryana can be targeted.
- Higher returns will mean farmers will be encouraged to spend more on inputs and practice improved agronomy, Infusion of multiple technologies — infotech, biotech, satellite tech, drone, and so on — will boost crop prospects.
- The Agriculture Ministry will of course have to come up with a national policy for boosting domestic production, not only of cultivated oilseeds but also exploiting the potential of non-conventional sources such as rice bran as well as tree-borne oilseeds.



Streamlining the agri-credit system to facilitate higher crop loans to farmer-producer organisations against commodity stocks can be a win-win model to spur agriculture growth. Explain

KEY POINTS

- There has been a healthy off-take of ground-level credit (GLC) in agriculture and allied sectors. In the financial year (FY) 2018-19, banks disbursed Rs 12.55 trillion as GLC to agriculture, surpassing the government's target of Rs 11 trillion.
- The massive growth during 2000-01 to 2007-08 appears to be due to an innovative credit instrument, the Kisan Credit Card (KCC), and a policy intervention, the Interest Subvention Scheme, which incentivised short-term credit.
- Interestingly, the All India Financial Inclusion Survey (NAFIS) of 2015-16 by NABARD reported that 30.3 per cent of all agriculture households availed credit from institutional sources.
- The fact that almost 70 per cent of agri-households did not avail institutional credit shows that there is much scope for the banking sector to extend its reach – be it lending for production purposes (crop loans), investment or even consumption purposes.
- The interest subvention scheme created opportunities for farmers to take crop loans at subsidised interest rates from the banking sector and then divert them for non-agriculture purposes.
- Since long-term credit is basically for investments and capital formation in agriculture, this dramatic fall in the share of such credit takes a heavy toll on farm productivity and the overall growth of the agri-sector.
- For the sake of transparency, all crops loans, especially that availing interest subvention, should be routed through Kisan Credit Cards.
- The reluctance of farmers to use Kisan Credit Cards requires more research. Even then, the issuing of these cards in remote villages needs to be expedited.
- A bolder step in this direction would be to empower farmers by giving them direct income support on a per hectare basis – rather than hugely subsidising credit.

The government's recent decision to allow production of ethanol by reconverting sugar has various types of outcomes to the sugar and ethanol production. Examine

KEY POINTS

- The permission granted to ethanol manufacturers mostly sugar mills that produce it from their by-product molasses to convert sugarcane juice directly into alcohol and also use surplus sugar and food grains, such as wheat, rice and corn, for this purpose.
- The government has chosen to incentivise the use of these questionable raw materials by fixing relatively higher prices for the ethanol produced from them.
- This move would open the doors for the sugar factories to buy sugarcane and for the farmers to grow it just for producing biofuel rather than for making sugar from it.
- Considering that sugarcane, wheat and rice are water guzzlers, besides being input-intensive crops, their use for biofuel production is virtually an invitation to ecological disaster.
- The social cost of such water use may be far higher than the economic gains from ethanol doping of petrol.
- India has substantial potential to produce ethanol and other types of biofuels from non-sugarcane and non-food sources that are currently under-exploited, if not wholly untapped.



- The National Biofuel Policy of 2009, amended in 2018, lists rural and urban garbage, cellulosic and lingo-cellulosic biomass (agricultural dry matter), and crop residues like wheat and rice stubble amongst the suitable raw material for making ethanol.
- Promising results have also emerged from the ongoing research and development work on producing ethanol from a non-food and fast-growing bio-source like algae.

10. INFRASTRUCTURE

Though India has enough power capacity, flexible generation, tariffs and regulation must be addressed to remain power-surplus. Explain

KEY POINTS

- Central Electricity Authority (CEA) data revealed that the plant load factor (PLF) of thermal units in the April-September 2019 period (at 57.67 per cent) was the lowest in a decade
- Under these circumstances, the country should have been in a state of crisis This fiscal, peak demand for electricity has been more or less met. The deficit was just 0.7 per cent.
- This has been possible because India has finally overcome the capacity constraint that dogged power generation since Independence.
- In fact, the total generation capacity today at 3,64,960 MW is good enough to meet any surge in demand for the next few years even if economic growth picks up pace.
- Most thermal power plants operated at a PLF of 90 per cent or more to meet the tight demand-supply situation often at the cost of preventive maintenance which resulted in them breaking down causing disruption in power supply.

Flexible generation

- The need of the hour thus is flexible generation capacity, something India lacks in its overall energy mix. Gas-based power plants offer this flexibility and so do pumped storage hydro power plants.
- Unlike thermal or nuclear power plants they don't have to be run continuously and can be operated on demand. Economic cycles and consequent demand volatility apart, flexibility in generation has become all the more important in this era of renewable energy.
- It is high time planners impart significant flexibility to the grid to leverage clean energy effectively and optimally use the thermal assets.

Tariff rationalisation

- Today if the sector is under stress it is because demand from well paying consumer category such as industrial users has dropped, especially in the States such as Maharashtra, Tamil Nadu and Gujarat, while non-paying or low paying domestic consumers have risen.
- Consumers — industrial, commercial or retail — should pay the right price for electricity and if any government wants to offer free or cheaper power to a section of the population it should use direct benefit transfer (like LPG) to subsidise them.
- Cross-subsidisation of free or cheap power by charging the industry more will not work any more. It will leave manufacturing uncompetitive and hurt India's 'Ease of Doing Business' ranking.



Independent regulator

- To make all this possible and protect the interest of all stakeholders an independent regulator is essential
- India is in a relative better situation, and has overcome the capacity problem and is today in a position to meet every unit of demand.

11. INDIAN ECONOMY

Much neglected post office schemes in the country, requires a comprehensive revamp, can help improve the people's savings rate. Elaborate

KEY POINTS

The Global Wealth Report 2019 by Credit Suisse estimated that the median wealth accumulated by an Indian adult is at a mere \$3,042 (around Rs 2.1 lakh).

Data suggest that ordinary Indian households have an unmet need for simple savings products that offer complete capital protection with fixed returns, which can be accessed at convenient times in their neighbourhood.

Why small savings

- Post office schemes directly channel the investments of small savers into the National Small Savings Fund, which is a direct conduit for Central government borrowings.
- These schemes thus represent one of the safest avenues in the economy, without the rigmarole of deposit insurance.
- India Post automatically commands the confidence of even less literate depositors. With fixed interest payouts, investors don't need to track bond or stock markets or do due diligence on balance sheets to gauge the safety of their money.

A revamp

- Though small savings schemes were initially envisaged as vehicles for long-term investors, most of them (except for PPF and Sukanya Samridhi) are today available for less than five-year tenors. This needs to be remedied.
- It makes sense to offer more small savings schemes in the 10-, 15- and 20-year tenors. At the same time, convoluted conditions surrounding early exits need to be dismantled, as small savers have a high need for emergency liquidity.
- While it makes sense for the Centre to levy tax on interest from Post Office Savings/Time Deposits to ensure a level playing field with bank deposits, there's no reason why concessions cannot be extended to the Senior Citizens Savings Scheme or the Monthly Income Scheme, which cater to specific categories of investors.
- To expedite its digital transformation, India Post must abandon its pretensions of becoming a Payments Bank and must transform into a purely deposit-taking entity with a friendly customer interface.

There are crucial sectors in Indian economy which act as breeding ground for black money. Identifying and regulating them holistically is the need of the hour. Analyse

KEY POINTS

- On the highly complex and emotive issue of black money, the Parliamentary Standing Committee on Finance in March tabled its 73rd report on the status of unaccounted wealth.



- However, the fact that the estimates of the size of the black economy in India varied from 7 per cent to 120 per cent of GDP is a matter of surprise — and some concern.

Yellow metal

- While black money generation in gold is primarily export-driven, for diamonds it is largely import-driven.
- While gold frauds add to black money generation within India, diamond may be misused to legitimise black money by inserting it into the financial mainstream and facilitating transfer of this illicit wealth abroad.
- UN COMTRADE (International Trade Statistics Database) reveals that over the past 10 years, in quantity terms, 75 per cent to 85 per cent of India's gold jewellery export is made only to two countries, viz the UAE and the US.

Diamond trade

- UN COMTRADE data indicates that more than three-fourths of Indian rough diamond imports in caratage (quantity terms) are from Belgium and the UAE.
- Notwithstanding the major trading country status of the two countries, a closer look at this sector is required for black money estimation.

Intangible sectors

- Imports of services, such as software, consultancy and tours and travels, result in outflow of foreign exchange, which is indeed welcome for genuine transactions.
- However, these imports of services, when they are fake transactions, may also be used for laundering money.
- Globally, intangibles contribute significantly to illicit money transfers using the formal banking channels.
- The use of intangibles is preferred because it is difficult to establish whether services were actually offered or not, as unlike trade in goods, there is hardly any physical footprint of these transactions.

Identifying these sectors, dealing with them holistically and introducing fair-trade practices would make them globally competitive.

What is meant by Alternative Investment Fund? How does it help to revive the stressed real estate sector? Also discuss the impacts arising after the revival of the sector.

KEY POINTS

Alternative Investment Fund

Alternative investments include private equity or venture capital, hedge funds, managed futures, art and antiques, commodities, and derivatives contracts. Real estate is also often classified as an alternative investment.

Reviving the sector

- The Rs.25,000 crore Alternative Investment Fund (AIF) announced by Finance Minister has expanded in both size and scope.
- The fund, to be managed by SBICAP Ventures, will offer support to viable projects with a positive net worth and registered with the Real Estate Regulatory Authority.
- What makes the scheme good is that it will also apply to projects that have been declared as non-performing assets by banks and to those lined up before the insolvency court.



- Apart from real estate promoters, this will also aid lenders, mainly finance companies and banks, whose funds are locked up in these projects.
- Most of the stalled projects are solvent but stuck for liquidity and with support from the AIF, can be completed, unlocking value not just for buyers but also precious cash for the project promoters and their lenders.

Impacts after the revival

- The real estate sector is not only one of the biggest provider of jobs but also has a huge multiplier effect in the economy.
- Industries ranging from cement and steel to paints and sanitaryware stand to reap the benefits of a healthy real estate sector.
- The critical part will be identifying the genuine projects in need of support and ensuring that biases do not creep in.
- These need to be followed upon quickly and money should be released from the AIF right away so that the trickle-down effect is felt before the end of this financial year.
- Along with private money in the AIF will also come return expectations that need to be managed.
- The government, through its latest move, and the Reserve Bank of India with successive rate cuts and liquidity infusion, have set the stage. The real estate industry now has to do its part.

Even though the start-ups have emerged as a successful initiative amidst a slowdown, the funding structure in this ecosystem is more fragile than popularly believed. Comment

KEY POINTS

- Consider the “Indian Tech Start-up Ecosystem”, the latest report from the National Association of Software and Services Companies (Nasscom).
- It is heartening to know that India has the potential to create more than 100 unicorns (a start-up parlance to describe companies with a valuation of \$1 billion and above) in the next five years.
- The report, “Fintech and Startups Fuelling India’s \$5-trillion Economy”, highlights the role of start-ups in giving a growth impetus to the broader economy.
- It noted that despite the overall slowdown, there was no dearth of funding in the start-up economy.

Funding pattern

- It also brought out the difference in funding between traditional businesses and start-ups.
- Traditional businesses relied on banks for funding their capex, and that the growth plans are stuck with liquidity drying up.
- In contrast, capital (mainly by venture capital and highly valued tech firms) has continued to flow into the start-up world.
- Growth without profitability may not be a sustainable model in the long run, as the start-up universe has witnessed time and again.
- International investors backing start-ups typically target high valuations of the businesses they fund, so that they can exit profitably.
- That, in turn, is made possible by offering deep discounts, whether on a shopping site or a food-delivery platform. This explains high growth among start-ups with little focus on profitability.

- Indian start-ups run the risk of killing the spirit of entrepreneurship, while giving in to the valuation game of investors.
- Many Indian start-ups have fallen by the wayside, and a large number of founders have had to step down because of a business model targeting notional numbers rather than profitability.
- It is important for the survival of the ecosystem that more and more start-ups become profitable. This will also help attract more investment and make the start-up ecosystem a real driver of economic growth.

Alternate auction mechanisms, rather than revenue maximising ones, may be required to balance the short-term financing need of the government with the overall economic benefit. Discuss

KEY POINTS

- The auction of key public goods has emerged as yet another important tool in India for resource mobilisation.
- For example, bids in mineral auctions which require revenue from minerals to be shared with the government have ranged from 2 per cent to more than 200 per cent, with 14 winning bids of more than 100 per cent, suggesting that the winners were willing to part with more than the prescribed value of the resource.
- Hence, while mineral auctions could be considered successful in the short run due to high revenue generation, the loss of jobs and the fall in production levels in the long term may more than offset such gains.

Different approaches

- Alternate auction mechanisms, rather than revenue maximising ones, may be required to balance the short-term financing need of the government with the overall economic benefit.
- The Vickerey-Clarkes-Groves auction mechanism is one such method, where theoretically, the winning bidder has to make transfers to all other bidders to offset their losses.
- Another way might be to practice 'asset recycling', which involves commitment from the government to allocate the revenue received from the sale/lease of pre-existing assets into some welfare-generating projects with the view to offset efficiency losses to other stakeholders.
- For instance, the NHAI plans to generate more than Rs85,000 crore through asset recycling, to finance its road construction work.
- However, the efficacy of asset recycling would essentially depend upon the government's capacity to invest the proceeds into its most productive unit, with the view to maximise public value.
- The need of the hour is a strategic approach that incorporates context-specific application of mechanism design tools for designing auctions that lead to holistic gains.

Systematic engagement of women in various enterprises is the key to achieve \$5 trillion Indian economy vision. Explain

KEY POINTS

- A path-breaking 2010 McKinsey study, "Women Matter", found out that companies with a higher proportion of women in leadership positions posted about 41% higher returns on equity, and 56% better operating results.
- As per the 2018 Mastercard Index of Women Entrepreneurs (MIWE), only 11% of businesses in India are owned by women.
- Additionally, the index specifically identifies India as a country where the opportunities available to women to become business leaders or professionals, are the least.



- In the larger scheme of things, India's \$5 trillion economy vision will be possible only when women are actively brought into the fold.
- This will require the glass ceiling to be broken, and will necessitate its complete dismantling. The challenges can be addressed with a careful, conscientious and diligent review of the existing conditions.
- While some of these challenges are inter-generational and improvements will require larger societal behavioural change over time, others can be implemented in a short span.
- Gender gaps in economic participation and missed opportunities can be addressed with strategic policies and programmes, curated to address the existing inadequacies.
- There are efforts underway to better understand these factors through initiatives, NITI Aayog's Women's Index for Socio-Economic Opportunities, which will be used to develop actionable policy interventions, at the state and central levels.
- For women entrepreneurs, who are able to overcome the typical social challenges, the barrier to entry still remains high.
- Besides the government efforts, there are numerous initiatives by private sector aimed at promoting women entrepreneurship, including corporates, PSUs, financial institutions, civil societies, international organisations.
- Thus several of these initiatives and programs often remain under-subscribed, as beneficiaries can't access information timely and methodically.
- Women entrepreneurs often miss out on the right kind of mentoring support in addition to other challenges.

The abolition of tax havens would require a degree of cooperation and coordination among industrialised countries and a limit on the sovereign rights of states. Explain

KEY POINTS

- Double Taxation Avoidance Agreements (DTAAs) emerged as a preferred device to minimise cross-border double taxation of the taxpayer operating in both those countries.
- Multi-national company (MNC) taxpayers could now shop around among different DTAAs to locate the management of their company in a country to derive maximum tax benefit, delinked from the extent of value added being generated there.
- MNC tax avoidance was recognised as a heavy burden on nation states advanced and emerging alike with the appearance of the 2008-09 global economic crisis.
- Overwhelming presence of small island nations that are hardly self-sustainable and continue to be economically dependent on their erstwhile colonial connections.
- They offer tax protection to the latter's MNCs whose management is strategically anchored in the former.
- This comfortable arrangement has continued in the guise of tax sovereignty of nation states that falls under the philosophy of sovereign state entities possessing the monopoly of force within their mutually recognised territories.
- By and large, they pursue both the merits of tax sovereignty as a philosophy to be protected and tax havens as a practice to be confronted.
- Consequently, any serious attempt to combat the tax haven phenomenon would have to be conducted at a multilateral level, and would have great implications for the modern doctrine of sovereignty.



There is a remarkable shift where banks are in favour of resolving the bigger cases outside the Insolvency and Bankruptcy Code process rather than National Company Law Tribunal. Analyse

KEY POINTS

Under Urjit Patel, the RBI took a more forceful approach to resolving bad loans through the IBC process.

Its various lists directing banks to take specific companies through the process were a clear indication of its intent.

Reasons for shift

- Delays in the resolution of cases, and endless litigation have dampened enthusiasm for the process.
- As a time-bound resolution process was one of the most appealing aspects of IBC, such delays create little incentive for stakeholders to opt for this process.
- The recovery rate under IBC currently stands at 41 per cent. But, this also needs to be qualified. The higher recovery rates are driven partly by the resolution of steel companies during a period that coincided with high global steel prices.
- A slowing economy, coupled with an over-leveraged corporate sector, has reduced appetite for assets stuck in the NCLT. Not only have recovery rates been low in the cases resolved, but more than half of the cases closed so far have ended up in liquidation as there have been no buyers.

For better IBC

- The provisioning norms for bad loans should be made more stringent to ensure banks have strong incentives to take companies through this process and not postpone the decision, hoping to restructure the loan outside IBC.
- Relaxing the 330-day deadline will further dampen enthusiasm. The idea of having a time-bound process was to put pressure to ensure speedy resolution.
- Delays in either taking the company to NCLT or in the resolution process destroys enterprise value. This decision must be reviewed.
- The government should establish the supremacy of IBC to ensure that assets are not allowed to be attached once they have been admitted.
- There also needs to be clarity on the role of promoters. While barring all promoters from bidding was a harsh step, there needs to be consistency of approach. Allowing them to participate in liquidation but not in the resolution process would be inconsistent.

12. S & T

In what ways does the spyware Pegasus poses a serious threat to the government of India and data privacy of the citizens? How should the Government respond to such threats and prevent them in future?

KEY POINTS

- Pegasus spyware spy on people through their phones.
- Pegasus works by sending an exploit link, and if the target user clicks on the link, the malware or the code that allows the surveillance is installed on the user's phone.
- Once Pegasus is installed, the attacker has complete access to the target user's phone.

Threat in various ways

- Pegasus can “send back the target’s private data, including passwords, contact lists, calendar events, text messages, and live voice calls from popular mobile messaging apps”.
- The target’s phone camera and microphone can be turned on to capture all activity in the phone’s vicinity, expanding the scope of the surveillance.
- Pegasus has the ability to access password-protected devices, being totally transparent to the target, leaving no trace on the device, consuming minimal battery, memory and data so as to not arouse suspicion in more alert users, a self-destruct mechanism in case of risk of exposure, and ability to retrieve any file for deeper analysis.
- The very popularity of a messaging app makes it a target for hackers, cyber criminals, or other entities.
- Even law enforcement agencies across the world want messages to be decrypted — a demand that WhatsApp is fighting, including in India.
- WhatsApp uses the Signal app protocol for its end-to-end encryption, which seems safe so far.

Governments response

- The ministry of electronics and information technology (MeitY) along with the Supreme Court must finalise the social media intermediary guidelines.
- Implementing the Cyber security policy 2013 effectively by establishing critical infrastructure across the country.
- Centralised and coordinated response has disseminated effectively from Computer emergency response team.
- Government of India should convince the social media giants to trace the source of messages and prevent them from spreading.

Though Digital India is based on a robust digital payment infrastructure, the scheme lacks proper security measures to prevent thefts. Comment.

KEY POINTS

- The government may be hard selling Digital India based on a robust digital payment infrastructure, but the fact is, without commensurate security, it will be hard to sustain.
- CERT-In has been advising bodies on security threats, and banks have taken due care.
- Yet, data breaches of Indian users have increased over the last few years. The newest leak pertains to the information of 1.3 million bank cards that is available for sale on the dark web.
- Reports indicate 98% pertain to Indian banks—of this, 18% is of one banking entity.
- Although RBI has swung into action, asking banks to replace all cards and look into the matter, Indian banks need a more proactive approach to security given that this is the third big breach in as many years.
- In 2016, 3.2 million cards getting compromised in a similar breach had been reported.
- It would be best, from the users’ perspective, to migrate to online systems and payment options.
- A virtual card or a QR code are much more difficult to decode, but banks also need to push for end-to-end encryption for PoS terminals.
- As most thefts occur at PoS and ATM terminals, banks need to develop a system where only certain information is exposed and, that too, in encrypted form.
- More important, cyber checks need to be de rigueur every quarter, not post-crisis.



- With UPI hitting a billion transactions, and overtaking debit/credit cards, and AEPS becoming a convenient mode, government is moving towards safer modules.
- But, until a full switch happens, security needs to be top priority.

Aggressive cyber-assault could cause a nationwide outage, so a comprehensive plan must be devised and implemented to prevent such a disaster. Analyse

KEY POINTS

- Cyber-threat researchers estimate that a large number of assets on India's national power grid could be vulnerable to attacks.
- Ramping up security across the power grid should be a strategic priority since this is a tempting target for terrorists, in addition to being vulnerable in the case of hostilities with any other nation.
- Cyberattacks on nuclear installations and other power sector assets have become increasingly common.
- Known cyberattacks on Indian power sector assets include a 2017 malware attack on the Tehri Dam in Uttarakhand.
- The NPCIL infection is said to be caused by Dtrack, a Trojan virus that creates backdoors into computer networks.
- While the Indian Computer Emergency Response Team (CERT-In) claims to be aware of these vulnerabilities, and is reported to have issued advisories in many instances, it has its hands tied because it is the responsibility of the organisation owning the asset to protect it.
- It is also true that much of the equipment on the power grid is old and based on outdated chips with vulnerabilities that cannot be patched.
- The government has been trying to set up a system for cyber-protection of infrastructure with the National Critical Information Infrastructure Protection Centre (NCIIPC) as a coordinator and dedicated sectoral CERTs, such as CERT-Thermal-NTPC and CERT-Transmission-POWERGRID, which are responsible for guarding power assets.
- However, it has to iron out the bureaucratic hassles in assigning the responsibility, which can prevent a vulnerability being patched even after it is identified.
- Protecting power assets will be increasingly important, given the linking of all the regional grids to the national grid.
- While the linking makes it easier to supply power to any region on demand, it also makes the entire infrastructure more vulnerable to contagion from cyber-attacks.

Should the government machinery must be empowered to block infringing websites and applications to prevent online piracies? Comment.

KEY POINTS

- For our country, with a rich diversity and cultural heritage there are many stories to tell, but as long as there are a high percentage of revenue leakages in the monetisation chain because of piracy.
- The government has addressed this concern recently, but the time has now come to introduce administrative measures which will empower the executive and bring immediate and long-term relief to this cancer called piracy of content.



Administrative measures

- The palliative care to the piracy is via digital civics where it is important that the public at large needs to be educated about the potential financial threat of accessing content illegally.
- As per RAND reports, entertainment piracy operations have close links to terror organisations and crime syndicates.
- Cell for IPR Promotion and Management (CIPAM), an initiative of the Ministry of Commerce, has made a good start to spreading digital civics, but efforts need to be ramped up both monetarily and professionally.
- The creative industry, the telecom operators and the Chinese government introduced the “Sword Net Action”, an annual anti-piracy programme under which the music industry files 200-500 administrative complaints, of which, 80-90 per cent are resolved successfully every year.
- It is time that India uses every diplomatic platform or forum be it at the bi-lateral level via the FTAs or multi-lateral trade pacts such as BIMSTEC and RCEP to ensure greater enforcement of media and entertainment content infringement and seek content protection for the Indian creative industry.

What is meant by Space Internet? How does it help in safe, secure and reliable communication? Discuss its advantages and latest applications.

KEY POINTS

Space-based internet is the ability to use satellites in orbit around Earth to send and receive data. Although satellite internet already exists, space-based internet is much faster and has the ability to work across the globe. Safe and secure communication.

Safe and secure communication

- **Global high-speed internet:** A fully functional space-based internet system covers the entire globe in high-speed internet, including those without modern internet access.
- **Replaces fiber:** Space-based internet replaces the fibers used in modern internet connection, the same fibers that are costly to internet providers.
- **Consistent signals:** Dropped calls, Lost signals, those annoyances are gone with space internet.
- **Future proof:** Space-based internet gives us the connection needed to run and use future innovative devices without fail.
- **Better performance:** Thanks to the low earth orbit satellites used, poor performance due to high latency should be reduced.

Advantages

- Signals from satellites in space can overcome this obstacle easily.
- One big advantage of beaming signals from geostationary orbit is that the satellite can cover a very large part of the Earth. Also, because they appear to be stationary, it is easier to link to them.
- Ensures reliable and uninterrupted Internet services, now part of humanity’s basic infrastructure and an important means of delivering a wide variety of public services to the world’s peoples are universally available in every part of the globe.



Latest Applications

- Services such as autonomous car driving are expected to be revolutionised, and the Internet of Things (IoT) can be integrated into virtually every household, whether urban or rural.
- High frequency algorithmic trading.
- Playing Online games.

There is a good case for the IndiGen project to be upgraded into a “national genome mission”, which supplements the Government’s investments with the energies of the private sector in the field of biotechnology.

KEY POINTS

- Recent findings in our genomic history, and the sharply declining costs of genetic testing and analysis, allow us to use these techniques to transform the way public health.

The government launched the IndiGen project, under which the full genomes of over 1,000 individuals are sequenced, and the data handed over to the individuals on a smart card.

This helps in two ways -

1. Anonymized genomic data can be used to identify genetic disorders and health risks of the communities the individuals are a part of.
2. The individuals concerned can use their genomic data to assist in diagnoses and medical treatments.
 - While the IndiGen project is a good sign that the government has recognized the promise of precision medicine, it needs to be on an altogether larger scale if India is to be a major player in the precision medicine race.
 - The most well-known success story of using genetic testing for reducing the disease burden is that of the ultra-orthodox Jewish community.
 - Endogamy over centuries increased the prevalence of genetic diseases such as Tay Sachs, until DorYeshorim, a community organization, offered premarital genetic screening, helping people make informed decisions while choosing marriage partners and conceiving children.
 - Adapting the idea to India requires building the risk profiles of thousands of genomic populations in our country.
 - For instance, individuals should be allowed to contribute their genome information to the national platform through gatekeeper institutions that can anonymize, validate and annotate the data.
 - State governments could add genomes of populations that they think are vulnerable. The more genomes there are on the platform, the more useful it is for everyone.
 - If the Indian government creates a national genomic platform now, it would serve as inclusive health infrastructure and enable future generations to lead much healthier lives, without having to suffer debilitating financial burdens.



While ISRO's technological abilities have been consolidated, it still has a long way to go in terms of its reputation as an enabler of commercial business. Examine

KEY POINTS

ISRO's Consolidation

- The Indian Space Research Organisation's successful launch on Wednesday of Cartosat-3, along with 13 other small U.S. satellites, marks a major technological milestone for India.
- Cartosat-3 is capable of unprecedented image resolution of nearly 25 cm on the ground as against the best global military-grade satellites that can provide a 10 cm resolution.

Commercial Business

- While satellite launches make for a good spectacle, they are meaningful only in so far as they aid commerce and generate revenue and jobs.
- Indian regulations restrict access to satellite images sharper than one metre to the government.
- Other than for transponders, there is a long way to go for Indian private companies sending innovative payloads aboard ISRO launch vehicles.
- ISRO recently launched a company called New Space India Limited (NSIL), a competitor to Antrix, but like it, is another public enterprise meant to commercialise space products and satellite development deals with private entities.
- The deal for the U.S. satellites launched along with Cartosat-3 was formally inked by the NSIL. The host of interesting electronics aboard Cartosat-3 should ideally inspire ISRO to explore collaboration with the private sector in improving high-technology manufacturing.
- While ISRO's key capability still lies in developing and launching small- and medium-sized satellites, it ought to be able to market the technology aboard Cartosat-3 globally and induce the farming out of satellite development projects to ISRO or its subsidiaries.

The FASTag is the en route for the transport sector which facilitates the Government's push towards the cashless system across length and breadth of the country. Discuss

KEY POINTS

- Lanes on national highway toll plazas across India will accept toll only through FASTag fitted in a vehicle that pays toll automatically when the vehicle crosses the boom barrier of the toll plaza.
- National Highways Authority of India (NHAI) will collect toll without human intervention, and vehicles need not stop to pay toll. The objective is to remove bottlenecks and capture all toll electronically.
- The device employs Radio Frequency Identification (RFID) technology for payments directly from the prepaid or savings account linked to it.
- A FASTag is valid for five years, and can be recharged as and when required.
- A copy of the vehicle registration certificate and a photo of the vehicle are enough to get a FASTag from NHAI, said officials. Banks may seek certain additional documents.
- Vehicles entering FASTag lanes without FASTag will be charged twice the toll amount.
- Users have complained that the tag-reader is often not able to read the tag; also, the SMS alert is often coming late.



- NHAH has set up a toll-free helpline number, “1033” for tag-related complaints. The website for individual bank helplines is at ihmcl.com. Additionally, the My FASTag app has a customer-care link.

Since India's progress is slow in start-up investments, it needs Deep technology for comprehensive social development as well as data security. Explain.

KEY POINTS

- **Deep tech**, or **deep technology** start-up companies are based on substantial scientific advances and high tech engineering innovation.
- While TCS and Infosys have established themselves as the global powerhouses in the IT services space, there are no success stories from India when it comes to product innovation in deep technology.
- Start-ups are increasingly driving focus towards the business-to-business (B2B) space, there has been rapid growth in the number of deep-tech start-ups.

There are three key reasons why India desperately needs these deep-tech start-ups to grow, not only in numbers but also in terms of size and valuation.

1. Solutions based on deep tech solve real-life problems in areas like healthcare, fintech, agriculture, and water management. India also has its share of challenges when it comes to food, energy, water and national security.
2. Deep-tech companies can offer alternative job opportunities to our engineers who were sought after by multinational tech companies but are now finding it difficult to move to research labs located out of the country due to tough visa norms.
3. India has one of the highest numbers of STEM (Science, Technology, Engineering and Mathematics) graduates and local deep-tech companies offering opportunity to work on cutting edge platforms can keep the talent within our shores.

Data localisation

- Indian deep-tech companies will help secure the country's data sovereignty. Access to data is knowledge and knowledge is power.
- Indian authorities have tried to address this concern by bringing in data localisation laws that force multinational financial companies to keep data related to Indian users within the country.
- One way of addressing it is to create an environment that enables Indian deep-tech companies to flourish.

Problem of scale

- The big worry, though, is that the current approach by policymakers and investors mostly focusses on bringing more people into starting up, but there is not much support for scaling up.
- These technologies can have a big impact, but take a long time to reach market-ready maturity, and require a significant amount of capital to develop and scale.



13. DISASTER MANAGEMENT

India being one of the most flood affected nations in the world, require robust coordination between Centre and States for long term flood management. Analyse

KEY POINTS

- As per the National Emergency Response Centre (NIDM), 1,614 people were killed and 1.8 million displaced (as on September 25, 2019) in 14 states. Widespread floods have also damaged crops, houses and infrastructure.
- Floods constitute 52% of all natural disasters in India, and the costliest as well, with over 63% of all damages attributed to it.
- The temporal impact of floods is also varied. According to geo-climatic conditions and socio-economic vulnerability of states, the impact of monsoons remains diverse—UP and Bihar have borne the maximum brunt of floods this year.
- There is evidence that when both the Centre and state have the same political or coalition party in power, that state experiences lower flood fatalities when compared to non-alliance political parties in power.
- The data also suggests that the Centre is often not willing to declare a specific natural disaster as a national disaster if there is a non-alliance political party in the state.

Need of the hour

- State governments should focus on economic development by building flood-resilient infrastructure—monitoring embankments of key flood-prone rivers and improving river connectivity.
- Suitable techniques and methods should be in place to predict accurate rainfall, especially in low-lying areas, and appropriate rainfall warning systems be installed in vulnerable areas.
- Long-term flood management requires a healthy coordination between the Centre and states.

14. ENVIRONMENT

Does amending and updating the The Air (Prevention and Control of Pollution) act, 1981 will help in the battle against pollution in the country? Comment

KEY POINTS

- When something as fundamental as the health of our children is at risk, we should devise a more robust, permanent solution to the problem of pollution.
- This forms the basis of the need for amending the 1981 Air Act and making it more compatible with contemporary India.
- Recently, the Centre for Science and Environment reported that air pollution kills an average 8.5 out of every 10,000 children in India before they turn five.
- The Indian government needs to identify the tangible benefits that concrete legislation on air pollution has brought across the world.
- In recent times, the government has worked on a much hyped “mission-mode” — drafting policies and programmes to alleviate pollution. But under programmes such as the National Clean Air Programme, no true enforcement of targets and goals is guaranteed.



- There is unanimous consensus amongst many court rulings, Parliament Committee reports, media investigations, and several environmentalists that under the 1981 Air Act, the Pollution Control Boards are presently unable to fulfil their mandate as watchdogs against polluting industries.
- A new bill will plug many loopholes in the 1981 Act and would align the functions and priorities of the Pollution Boards towards reducing the adverse impact of pollution on human health in India.
- In its present form, India's Air Act does not mention or prioritise the importance of reducing the health impact of rising pollution.
- Accountability and deterrence are essential in making sure industries comply with emission standards.
- In a federal set-up, the Centre and states must work in synergy to ensure that targets set for the country and states are fulfilled.
- Pollution control boards must be empowered sufficiently to ensure that pollution does not take more lives or hinders the overall progress of India.

In the context of sea level rise, what should be the legislative framework of India to mitigate and adapt to the impending crisis?

KEY POINTS

- **Sea Level Rise (SLR)** projections going beyond 2050 are therefore not as accurate as those until mid-century.
- There is broad agreement that if high emissions of greenhouse gases (GHGs) were to continue, average global SLR could be as high as two metres by the end of this century.

Effects of sea level rise

- SLR will be substantially more than previously estimated. This means that the various effects from SLR: coastal flooding, salt water intrusion into land, destruction of coastal infrastructure, communities and ecosystems will be much more than anticipated.
- By 2050, in a scenario that limits warming to 2°C above average pre-industrial temperatures, about 150 million people worldwide will be permanently below the high tide line along the coast and, by 2100, the numbers will rise to 360 million people.

What should India's policies be?

- Preparing for SLR will entail protecting the coast through measures such as natural barriers, levees, flood barriers and even hard barriers.
- But engineering protection mechanisms are expensive and have consequences for the coastline.
- Stopping infrastructure construction along the coast and integrating anticipated SLR effects into coastal planning are essential.
- The government should not be in a situation of moral hazard where it ends up bailing out investors, insurers and others who have increased their exposure to risk.
- Planning for retreat from the most vulnerable areas well ahead of time is essential. Urban policies, especially in mid-size towns, should integrate proposals for new migrants.
- Turning border regions into fortress worlds will also not be justified, both in practical and ethical terms.
- Given that South Asia is one of the most vulnerable regions to climate change and the countries here share ecological zones, borders and coastlines.



- Investing in the rural economy, reducing unemployment, reducing poverty and improving measures for sustainability can improve people's lives and increase their resilience and openness to "others".
- The protests across the world by people of all ages show that there is fervour for transformation to deal with the climate crisis.

Will the intentions and objectives of Kyoto Protocol's emission trading mechanisms become redundant after 2020? Critically Analyse

KEY POINTS

The Clean Development Mechanism (CDM), a product of the Kyoto Protocol, is one such market instrument that can help industry as well as climate.

A number of small and medium projects in the field of energy efficiency and renewable energy, set up in India in the last two decades, owe their origin to the financing support available from CDM.

CDM is not redundant

- It is expected to generate as much as 1 billion tonnes of emissions reductions, with projects in 81 countries driving investment in a market worth \$19.8 billion.
- The CDM has created a system where emission reduction opportunities are actively sought out, and an institutional framework that stimulates secure and focused global investment in sustainable development projects.
- In addition, the UN estimates that around 44% of all projects currently in the pipeline involve some form of technology transfer, with a significant proportion of this occurring in biomass energy and wind projects, methane avoidance projects, energy efficiency projects and landfill gas projects.
- The CDM can therefore be said to have made a considerable contribution to the development and transfer of knowledge and technology in developing countries, and positively impacted on local communities through the creation of jobs and infrastructure.

It will be redundant

Its transition to new mechanisms will have adverse impacts on carbon prices and investor sentiments in future markets.

- Double counting could compromise global ambition on reducing GHG emissions.
- The argument that a full-scale transition of CDM credits may flood the market and lead to deterioration in the carbon prices.
- Assuming that all CDM units available globally till 2020 are traded immediately, they may be fully absorbed by 2024 — as demand for credits for meeting the Paris commitments increases.
- The credits lying unsold with the CDM projects could lose their economic worth. Besides, the CDM projects will have to go through the process of validation and registration again with the new mechanism.
- The demand in EU, which has been the largest market for CDM credits, has declined sharply over the last decade because of regulatory barriers.
- In fact, more than 60 per cent of the credits may be used fully even before 2022 if we take into account the demand from airline operators to meet commitments under CORSIA — an emission reduction scheme for international civil aviation effective from 2021.



Is there a need to create a separate agency with the task in each state to regularise and monitor the testing and quality of water supply? Comment

KEY POINTS

Reasons

- The report of the Ministry of Consumer Affairs, Food and Public Distribution red-flagging tap water quality in major Indian cities comes as no surprise, given that many official water distribution agencies routinely advise consumers to consume only boiled water.
- Going by the matrix of tests carried out by the Bureau of Indian Standards for the Ministry, Delhi has abysmal water quality, Chennai and Kolkata rank very low, and Mumbai is the only city with acceptable results.
- Their lack of initiative could be attributed partly to the expanding footprint of packaged drinking water, especially in populous cities, coupled with the high dependence on groundwater in fast-growing urban clusters where State provision of piped water systems does not exist.
- The Indian standard has a plethora of quality requirements, including absence of viruses, parasites and microscopic organisms, and control over levels of toxic substances.
- But in practice, municipal water fails these tests due to the lack of accountability of the official agencies, and the absence of robust data in the public domain on quality testing.
- Making it legally binding on agencies to achieve standards and empowering consumers with rights is essential, because State governments would then take an integrated view of housing, water supply, sanitation and waste management.
- A scientific approach to water management is vital, considering that 21 cities — including many of those found to have unclean tap water — could run out of groundwater as early as 2020, as per a NITI Aayog report.
- If data on water are made public on the same lines as air quality, it would ratchet up pressure on governments to act.

The importance of living root bridges can be applied to urban environments for sustainable ecosystem and future building structures. Elucidate

KEY POINTS

The jingkiengjri or living root bridges — aerial bridges built by weaving and manipulating the roots of the Indian rubber tree — have been serving as connectors for generations in Meghalaya.

Study on living root bridges

- Researchers from Germany investigated 77 bridges over three expeditions in the Khasi and Jaintia Hills of Meghalaya during 2015, 2016 and 2017.
- Taking into account structural properties, history and maintenance, morphology and ecological significance, the study, published in the journal Scientific Reports, suggests that the bridges can be considered a reference point for future botanical architecture projects in urban contexts.
- While stressing they are not planning to create new living bridges for contemporary cities right away, the researchers believe this extraordinary building technique can help facilitate “better adaptation to the impacts of climate change.



Relevance of root bridges

- The process begins with placing of young pliable aerial roots growing from *Ficus elastica* (India rubber) provide essential nutrition and protection from the weather, and also perform as aerial root guidance systems.

Potential of Living root Bridges?

- Architectural structures made of *Ficus elastica* plants is sound in urban environments. This is because of the robustness of the plant itself.
- There is no technical impediment to there being living architecture in urban areas.

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