



Air Pollutants

//

Air Pollutants

Sulphur Dioxide (SO₂)



It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.

Impact: Causes respiratory problems.

Ozone (O₃)



Secondary pollutant formed from other pollutants (NO_x and VOC) under the action of the sun.

Impact: Irritation of the eye and respiratory mucous membranes, asthma attacks.

Nitrogen Dioxide (NO₂)



Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM formation.

Impact: Chronic lung disease.

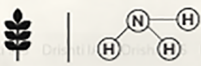
Carbon Monoxide (CO)



It is a product of the incomplete combustion of carbon-containing compounds.

Impact: Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.

Ammonia (NH₃)



Produced by the metabolism of amino acids and other compounds which contain nitrogen.

Impact: Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.

Lead (Pb)



Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.

Impact: Anemia, weakness, and kidney and brain damage.

Particulate Matter (PM)



PM10: Inhalable particles, with diameters that are generally 10 micrometers and smaller.

PM2.5: Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

Source: Emitted from construction sites, unpaved roads, fields, fires.

Impact: Irregular heartbeat, aggravated asthma, decreased lung function.

Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.

Removal of Governor

For Prelims: Constitutional Provisions Related to Removal of Governor

For Mains: Friction Points in Governor-State Relations, Removal of Governors and the Related Recommendations by Various Commissions.

Why in News?

Recently, a political party called for a **proposal to remove the Tamil Nadu [Governor](#)**.

- In recent years, **the bitterness between states and Governors has been largely about the selection of the party to form a government**, deadline for proving majority, sitting on Bills, and passing negative remarks on the state administration
- Due to this, Governor is referred to with negative terms like an **agent of the Centre, Puppet and rubber stamps**.

How can the Governor be Removed?

- Under **Article 155 and 156 of the Constitution, a Governor is appointed by the President and holds office** “during the pleasure of the President”.
 - **If this pleasure is withdrawn** before completion of the five-year term, the **Governor has to step down**.
- As the President works on the aid and advice of the Prime Minister and the council of ministers, in effect, the Governor **can be appointed and removed by the central government**.

What Happens in case of Disagreements between the States and Governor?

- **Constitutional Provisions:**
 - There are **no provisions laid down in the Constitution** for the manner in which the Governor and the state must engage publicly when there is a difference of opinion.
 - The management of differences has traditionally been **guided by respect for each other’s boundaries**.
- **Rulings by the Courts:**
 - **Surya Narain Choudhary vs Union of India (1981):** The Rajasthan High Court held that the **pleasure of the President was not justiciable** as the Governor had no security of tenure and can be removed at any time by the President withdrawing pleasure.
 - **BP Singhal vs Union of India (2010):** The Supreme Court elaborated on the **[pleasure doctrine](#)**. It upheld that **“no limitations or restrictions are placed on the ‘at pleasure’ doctrine”**, but that **“does not dispense with the need for a cause for withdrawal of the pleasure”**.
 - The Bench held that the court will presume that the **President had “compelling and valid” reasons for the removal** but if a sacked Governor comes to the court, **the Centre will have to justify its decision**.
- **Recommendations by Various Commissions:**
 - Over the years, several panels and commissions have **[recommended reforms in how Governors are appointed and how they function](#)**. However, they were **never made into law by Parliament**.

- **Sarkaria Commission (1988):**
 - It recommended that **Governors are not sacked before completing their five-year tenure, except in “rare and compelling” circumstances.**
 - The procedure of removal must allow the Governors **an opportunity to explain their conduct**, and the central government must give fair consideration to such explanation.
 - It was further recommended that Governors should be **informed of the grounds of their removal.**
- **Venkatachaliah Commission (2002):**
 - It recommended that ordinarily **Governors should be allowed to complete their five-year term.**
 - If they have to be removed before completion of their term, the central government should do so only after consultation with the Chief Minister.
- **The Punchhi Commission (2010):**
 - **It suggested the deletion of the phrase “during the pleasure of the President”** from the Constitution, because a Governor should not be removed at the will of the central government.
 - Instead, he or she should be removed **only by a resolution of the state legislature.**

Way Forward

- **Strengthening of Federalism:** In order to check misuse of the office of governor, there is a need to strengthen federal setup in India.
 - In this regard, the Inter-State council and the role of Rajya Sabha as the chamber of federalism must be strengthened.
- **Reform the Method of Appointment of Governor:** The appointment can be made from a panel prepared by the state legislature and actual appointing authority should be the Inter-state Council, not the central government.
- **Code of Conduct for Governor:** This 'Code of Conduct' should lay down certain 'norms and principles' which should guide the exercise of the governor's 'discretion' and his powers which he is entitled to use and exercise on his judgement.

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Prelims

Q. Which of the following are the discretionary powers given to the Governor of a State? (2014)

1. Sending a report to the President of India for imposing the President’s rule
2. Appointing the Ministers
3. Reserving certain bills passed by the State Legislature for consideration of the President of India
4. Making the rules to conduct the business of the State Government

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Ans: (b)

Exp:

- Article 163 of the Constitution says that the Governor shall exercise his functions with the aid and

advice of the Council of Ministers except for functions which require his discretion.

- Under Article 356 of the Indian Constitution, the Governor of a State can send a report to the President of India recommending imposition of President Rule in the State. This is a discretionary power being conferred upon Governor. **Hence, 1 is correct.**
- He appoints the Chief Minister (CM) and other ministers. They also hold office during his pleasure. The appointment of ministers in State cabinet is not at the discretion of Governor. He only formally approves the appointment. The discretion comes under CM. **Hence, 2 is not correct.**
- Governor can reserve certain bills passed by the State legislature for the consideration of the President. In one case such reservation is obligatory, that is, where the bill passed by the State legislature endangers the position of the State High Court. In addition, the Governor can also reserve the bill if it is against the provisions of the Constitution, opposed to the Directive Principles of State Policy, against the larger interest of the country, of grave national importance, etc. **Hence, 3 is correct.**
- He makes rules for the more convenient transaction of the business of a State government and for the allocation among the ministers of the said business. But this power is not under Governor's discretion. He acts on the advice of Council of Ministers. Hence, 4 is not correct. **Therefore, option (b) is the correct answer.**

Mains

Q. Whether the Supreme Court Judgment (July 2018) can settle the political tussle between the Lt. Governor and elected government of Delhi? Examine. **(2018)**

Q. Discuss the essential conditions for exercise of the legislative powers by the Governor. Discuss the legality of re-promulgation of ordinances by the Governor without placing them before the Legislature. **(2022)**

Source: IE

World Heritage Glaciers under Threat: UNESCO

For Prelims: UNESCO World Heritage, Climate Change, Global Warming.

For Mains: World Heritage Glaciers under Threat, UNESCO.

Why in News?

Recently, a study conducted by [UNESCO \(United Nations Educational, Scientific and Cultural Organization\)](#) has found that a third of the [glaciers on the UNESCO World Heritage list is under threat](#), regardless of efforts to limit temperature increases.

- A glacier is a large, **perennial accumulation of crystalline ice**, snow, rock, sediment, and water that originates on land and moves down slope under the influence of its own weight and gravity. They are sensitive indicators of changing climate.

What are the Findings?

- **Threat to Glaciers:**
 - 50 UNESCO World Heritage sites are **home to glaciers, representing almost 10% of the Earth's total glacierized area.**
 - They include the highest (next to Mt Everest), the longest (in Alaska), and the last remaining glaciers in Africa.
 - These glaciers have been retreating at an accelerated rate **since 2000 due to CO₂ emissions**, which are [warming temperatures](#).
 - They are currently losing **58 billion tons of ice every year** – equivalent to the combined annual water use of France and Spain – and are responsible for nearly 5% of observed global sea-level rise.
 - The glaciers under threat are in **Africa, Asia, Europe, Latin America, North America and Oceania.**
 - **Africa:** All World Heritage sites in Africa will very likely be **gone by 2050, including** Kilimanjaro National Park and Mount Kenya.
 - **Asia:** Glaciers in Three Parallel Rivers of **Yunnan Protected Areas (China)** – highest mass loss relative to 2000 (57.2%) and also the fastest melting glacier on the List.
 - **Europe:** Glaciers in **Pyrenees Mont Perdu (France, Spain)** – very likely to disappear by 2050.
- **Significance of Glaciers:**
 - Half of humanity depends directly or indirectly on glaciers as their water source for domestic use, agriculture, and power.
 - Glaciers are also pillars of biodiversity, feeding many ecosystems.
 - When glaciers melt rapidly, millions of people **face water scarcity and the increased risk of natural disasters** such as flooding, and millions more may be displaced by the resulting rise in sea levels.
- **Suggestions:**
 - It is still possible to save the other two-thirds, if the rise in global temperatures did not exceed **1.5 degrees Celsius compared to the pre-industrial era.**
 - In addition to drastically reduced carbon emissions there is a need for the creation of a **new international fund for glacier monitoring and preservation.**
 - Such a fund would **support comprehensive research, promote exchange networks between all stakeholders** and implement early warning and disaster risk reduction measures.
 - There is an urgent need to **cut greenhouse gas emissions and invest in nature-based solutions**, which can help mitigate [climate change](#) and allow people to better adapt to its impacts.

What are UNESCO's World Heritage Sites?

- **About:**
 - A [World Heritage Site](#) is a place that is listed by UNESCO for its **special cultural or physical significance.**
 - The list of World Heritage Sites is maintained by the international '**World Heritage Programme**', administered by the UNESCO World Heritage Committee.
 - This is embodied in an international treaty called the Convention concerning the Protection of the **World Cultural and Natural Heritage, adopted by UNESCO in 1972.**
- **Sites:**
 - There are around 1,100 UNESCO listed sites across its 167 member countries.
 - In 2021, 'Liverpool — Maritime Mercantile City' in the United Kingdom was deleted from the World Heritage List due to "the irreversible loss of attributes conveying the outstanding universal value of the property".
 - In 2007, the UNESCO panel delisted the Arabian Oryx Sanctuary in Oman after concerns over poaching and habitat degradation, and the Elbe Valley in Dresden, Germany, in 2009 after the construction of the Waldschloesschen road bridge across the Elbe River.
- **Sites in India:**
 - India is home to a total of 3691 monuments and sites. Of these 40 are designated as UNESCO World Heritage Sites.

- Including places like the Taj Mahal, [Ajanta Caves and Ellora Caves](#). **World Heritage Sites also include natural sites like the [Kaziranga National Park in Assam](#).**
 - Harappan city of [Dholavira in Gujarat](#) as **India's 40th world heritage site**.
 - [Ramappa Temple \(Telangana\)](#) was **India's 39th World Heritage Site**.
 - [Khangchendzonga National Park](#), Sikkim has been inscribed as India's first and the only "Mixed World Heritage Site".
- In 2022, the Union Ministry of Culture nominated [Sacred Ensembles of the Hoysalas temples](#) for consideration as a World Heritage site for the year 2022-2023.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. What are the aims and objectives of the McBride Commission of the UNESCO? What is India's position on these? **(2016)**

Source: [TH](#)

Collegium System

For Prelims: Collegium System, Chief Justice of India.

For Mains: Evolution of the Collegium System and its Criticism.

Why in News?

Recently, the Union minister of Law and Justice criticized the [Supreme Court Collegium system](#), saying that judges only recommend the appointment or elevation of those they know and not always the fittest person for the job.

- **Articles 124(2) and 217** of the Indian Constitution deal with the appointment of judges to the Supreme Court and High Courts .

What is a Collegium System and How Did It Evolve?

- **About:**
 - It is the system of appointment and transfer of judges that has **evolved through judgments of the SC, and not by an Act of [Parliament](#)** or by a provision of the Constitution.
- **Evolution of the System:**
 - **First Judges Case (1981):**
 - It declared that the "primacy" of the [CJI's \(Chief Justice of India\)](#) recommendation on judicial appointments and transfers can be refused for "cogent reasons."
 - The ruling gave the Executive primacy over the Judiciary in judicial appointments for the next 12 years.

- **Second Judges Case (1993):**
 - SC introduced the Collegium system, holding that “consultation” really meant “concurrence”.
 - It added that it was not the CJI’s individual opinion, but an institutional opinion formed in consultation with the two senior-most judges in the SC.
- **Third Judges Case (1998):**
 - SC on the President's reference (Article 143) expanded the Collegium to a five-member body, comprising the CJI and four of his senior-most colleagues.

Who Heads the Collegium System?

- The SC collegium is headed by the **CJI (Chief Justice of India)** and comprises four other senior most judges of the court.
- A High Court collegium is led by the **incumbent Chief Justice** and two other senior most judges of that court.
- Judges of the higher judiciary are appointed only through the collegium system and the government has a role only after names have been decided by the collegium.

What are the Procedures for Judicial Appointments?

- **For CJI:**
 - The President of India appoints the CJI and the other SC judges.
 - As far as the CJI is concerned, the outgoing CJI recommends his successor.
 - In practice, it has been strictly by seniority ever since the supersession controversy of the 1970s.
- **For SC Judges:**
 - For other judges of the SC, the proposal is initiated by the CJI.
 - The CJI consults the rest of the Collegium members, as well as the senior-most judge of the court hailing from the High Court to which the recommended person belongs.
 - The consultees must record their opinions in writing and it should form part of the file.
 - The Collegium sends the recommendation to the Law Minister, who forwards it to the Prime Minister to advise the President.
- **For Chief Justice of High Courts:**
 - The Chief Justice of the High Court is appointed as per the policy of having Chief Justices from outside the respective States.
 - The Collegium takes the call on the elevation.
 - High Court judges are recommended by a Collegium comprising the CJI and two senior-most judges.
 - The proposal, however, is initiated by the outgoing Chief Justice of the High Court concerned in consultation with two senior-most colleagues.
 - The recommendation is sent to the Chief Minister, who advises the Governor to send the proposal to the Union Law Minister.

What are the Issues Related to the Collegium System?

- **Exclusion of Executive:**
 - The complete exclusion of the [executive](#) from the judicial appointment process created a system where a few judges appoint the rest in complete secrecy.
 - Also, they are **not accountable to any administrative body that may lead to the wrong choice of the candidate** while overlooking the right candidate.
- **Chances of Favouritism and Nepotism:**
 - The collegium system **does not provide any specific criteria for testing the candidate** for the post of CJI because of which it leads to wide scope for nepotism and favouritism.
 - It gives rise to **non-transparency of the judicial system**, which is very harmful for the regulation of law and order in the country.
- **Against the Principle of Checks and Balances:**
 - The principle of check and balance **is violated in this system**. In India, three organs work

partially independently but they keep check and balance and control on the excessive powers of any organ.

- However, the collegium system gives Judiciary immense power, which leaves little room for checks and poses the risk of misuse.

▪ **Close-Door Mechanism:**

- Critics have pointed out that **this system does not involve any official secretariat**. It is seen as a closed-door affair with no public knowledge of how and when a collegium meets, and how it takes its decisions.
- Also, there are no official minutes of collegium proceedings.

▪ **Unequal Representation:**

- The other area of concern is the [composition of the higher judiciary](#), women are fairly underrepresented in the higher judiciary.

What were Attempts to reform the Appointment System?

- The attempt made to replace it by a '[National Judicial Appointments Commission](#)' (through Ninety-ninth Amendment Act, 2014) was struck down by the court in 2015 on the ground that it posed a threat to the independence of the judiciary.

Way Forward

- Filling up of vacancies is a **continuous and collaborative process involving the executive and the judiciary**, and there cannot be a time frame for it. However, it is time to think of a permanent, independent body to institutionalise the process with adequate safeguards to preserve the judiciary's independence guaranteeing judicial primacy but not judicial exclusivity.
- It should ensure independence, reflect diversity, demonstrate professional competence and integrity.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following statements: (2019)

1. The 44th Amendment to the Constitution of India introduced an Article placing the election of the Prime Minister beyond judicial review.
2. The Supreme Court of India struck down the 99th Amendment to the Constitution of India as being violative of the independence of judiciary.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: (b)

- It was the 39th amendment to the Constitution, in 1975, through which the Parliament introduced an Article removing the authority of the Supreme Court to adjudicate petitions regarding elections of the President, Vice-President, Prime Minister and Speaker of the Lok Sabha. Instead, a body constituted by Parliament would be vested with the power to resolve such election disputes. Hence, statement 1 is not correct.
- The **99th Constitutional Amendment Act** provided for the **National Judicial Appointments Commission**, which would replace the collegium system followed for the appointment of the Judges of the Supreme Court and High Court. **The Act was struck down by the Supreme Court** as it impinged upon the principles of 'independence of the judiciary' as well as 'separation of

powers'. Hence, statement 2 is correct.

- Therefore, option (b) is the correct answer.

Mains

Q. Critically examine the Supreme Court's judgement on 'National Judicial Appointments Commission Act, 2014' with reference to appointment of judges of higher judiciary in India. **(2017)**

Source: IE

The Waste-to-Energy Programme

For Prelims: Biogas, BioCNG, Bioenergy, Related Initiatives

For Mains: Biogas Energy and its Significance

Why in News?

Recently, the Central Government has issued guidelines for rolling out its **waste-to-energy programme**, paving the way for companies to produce **biogas and bioCNG, and electricity from urban, industrial and agricultural waste and residues**.

What is the Waste-to-Energy Program?

- **About:**
 - The program is part of an umbrella scheme, the **National Bioenergy Programme**.
 - The government will offer **financial assistance** to project developers, while implementing agencies, including inspection firms, will be paid **service charges** for commissioning the waste-to-energy plants.
- **Implementing Agency:**
 - **Indian Renewable Energy Development Agency (IREDA)** will be the implementing agency for the program.
 - IREDA will be paid a **service charge of 1% of Central Financial Assistance (CFA)** to process applications, besides **1% for the CFA** (minimum ₹50,000) for implementing, and monitoring the performance once the plants are commissioned.
- **Financial Assistance:**
 - The Centre will provide **financial assistance** of Rs 75 lakh per MW for new biogas plants and Rs 50 lakh per MW for existing units.
 - If the waste-to-energy plants are set up in special category states, such as the **North East, Himachal Pradesh, Sikkim, Jammu and Kashmir, Ladakh, Lakshadweep, Uttarakhand, and Andaman & Nicobar Islands**, the eligible CFA will be **20% higher than the standard CFA pattern**.

What is National Bioenergy Programme?

- **About:**
 - The Ministry of New and Renewable Energy (MNRE) has notified the National Bioenergy

Programme.

▪ **Sub-Schemes:**

◦ **Waste to Energy Programme.**

◦ **Biomass Programme:**

- Scheme to Support Manufacturing of Briquettes & Pellets and Promotion of Biomass (non-bagasse) based cogeneration in Industries to support setting up of pellets and briquettes for use in power generation and non-bagasse-based power generation projects.

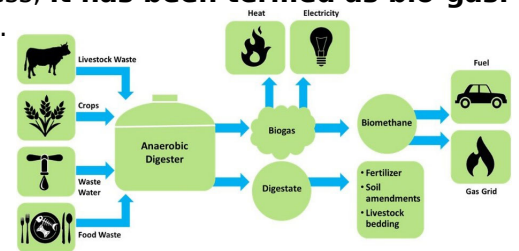
◦ **Biogas Programme:**

- To support setting up of family and medium size Biogas in rural areas.

What is Biogas & BioCNG?

▪ **Biogas:**

- It mainly comprises **hydro-carbon** which is **combustible** and can produce heat and energy when burnt.
- Biogas is produced through a **biochemical process** in which certain types of **bacteria convert the biological wastes into useful bio-gas.**
- Since the useful gas originates from a biological process, **it has been termed as bio-gas.**
 - Methane gas is the main constituent of biogas.



▪ **BioCNG:**

- **Bio-CNG is a renewable fuel obtained by purifying biogas** - in contrast to **Compressed Natural Gas (CNG)**, a non-renewable source of energy. Biogas is produced when **microbes break down organic matter** like food, crop residue, waste water, etc.
- It is similar to natural gas in terms of its composition and properties, and is a cleaner alternative to fuels such as petrol and diesel.

What are the Benefits of Bio Energy?

▪ **Pollution Free Cities:**

- The biogas solution can help make our **cities clean and pollution-free.**
- Leaching of toxic substances from landfills contaminates the groundwater.
- Decomposing organic matter releases huge amounts of methane into the environment, causing **air pollution** and **global warming** as methane is a very potent GHG.

▪ **Handling Organic Waste:**

- Installing large-scale municipal biogas systems can help cities **handle organic waste efficiently** to overcome the environmental and socio-economic challenges posed by overburdened landfills.
- Municipal waste can be **fed into these plants to create clean and green fuel**, along with **biofertilizers**, while keeping the cities clean and hygienic.

▪ **Helpful for Women:**

- Switching to biogas could be good for women because **they won't be exposed to harmful smoke and pollution.**
- The female members of a household are affected by **indoor pollution** as they spend more time inside the house.

▪ **Will Transform Energy Dependence:**

- Biogas can play a critical role in **transforming the energy dependence of rural and agricultural communities**, which majorly depends on burning wood, dung, charcoal, coal and other fossil fuels for their energy needs.
- The high dependence on non-renewable sources is the leading cause of the long-standing energy problems in the country.

What are Government's Initiatives for Promoting Biogas & Waste Management?

- **Biogas:**
 - [SATAT Scheme](#)
 - The Indian government and Niti Aayog have outlined roadmaps to hasten our transition towards green fuels and promote LNG, hydrogen and methanol.
- **Waste Management:**
 - [National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management](#)
 - [Project REPLAN](#)
 - [Solid Waste Management Rules, 2016](#)

What is IREDA?

- **Indian Renewable Energy Development Agency (IREDA)** is a **mini ratna company** under the **Ministry of New and Renewable Energy (MNRE)**.
- It was set up in 1987 as a specialized **non-banking finance agency** for the renewable energy sector.
- IREDA plays a key role in the renewable energy project financing which gives confidence to the financial institutions/banks to lend in the sector.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. As per the Solid Waste Management Rules, 2016 in India, which one of the following statements is correct? (2019)

- (a) Waste generator has to segregate waste into five categories.
- (b) The Rules are applicable to notified urban local bodies, notified towns and all industrial townships only.
- (c) The Rules provide for exact and elaborate criteria for the identification of sites for landfills and waste processing facilities.
- (d) It is mandatory on the part of waste generator that the waste generated in one district cannot be moved to another district.

Ans: (c)

Source: Mint

IIPDF Scheme

For Prelims: India Infrastructure Project Development Fund Scheme (IIPDF Scheme), Public-Private Partnership (PPP) Models, Build-Operate-Transfer (BOT), Build-Own-Operate (BOO), Build-Operate-Lease-Transfer (BOLT), Design-Build-Operate-Transfer (DBFOT), Lease-Develop-Operate (LDO), Operate-Maintain-Transfer (OMT).

For Mains: Initiatives and Development Schemes to Support Public-Private Partnerships.

Why in News?

Recently, the Department of Economic Affairs (DEA), **Ministry of Finance** notified **India Infrastructure Project Development Fund Scheme (IIPDF Scheme)**, a scheme for financial support for **project development expenses of [Public-Private Partnership \(PPP\) Projects](#)**.

What is IIPDF Scheme?

▪ About:

- The IIPDF Scheme was **set up in 2007**.
- It is a **Central Sector Scheme** with total outlay of Rs 150 crore for a period of three years from 2022-23 to 2024-25.
- It is available to the **Sponsoring Authorities** for PPP projects for **meeting the project development costs**.
 - It would be necessary for the Sponsoring Authority to create and empower a **PPP Cell to undertake PPP project development activities** and also **address larger policy and regulatory issues**.

▪ Objective:

- It is aimed to provide **financial support for quality project development activities**.

▪ Significance:

- The Sponsoring Authority will, be able to **source funding to cover a portion of the PPP transaction costs**, thereby **reducing the impact of costs related to procurement** on their budgets.

▪ Financial Outlay:

- The IIPDF will **contribute upto 75% of the project development expenses** to the Sponsoring Authority as an **interest free loan**. The **balance 25% will be co-funded** by the **Sponsoring Authority**.
- On successful completion of the bidding process, the **project development expenditure would be recovered from the successful bidder**.
 - However, in the case of failure of the bid, the loan would be converted into grant.
- In case the **Sponsoring Authority does not conclude the bidding process** for some reason, the **entire amount contributed would be refunded to the IIPDF**.

What is PPP?

▪ About:

- PPP is a partnership between a **government agency and private-sector company can be used to finance, build and operate projects**, such as public transportation networks, parks, and city centers.
 - There has been commendable progress in addressing the problems in PPP models. Still, there is a need to revisit PPP models for greater benefits.

▪ Types of PPP Models:

◦ **Build-Operate-Transfer (BOT):**

- It is a **conventional PPP model** in which the private partner is responsible to design, build, operate (during the contracted period) and transfer back the facility to the public sector.
- The private sector partner has to bring the finance for the project and take the responsibility to construct and maintain it.
- The public sector will allow private sector partners to collect revenue from the users. The national highway projects contracted out by NHAI under PPP mode is a major example for the BOT model.

◦ **Build-Own-Operate (BOO):**

- In this model ownership of the newly built facility will rest with the private party.
- On mutually agreed terms and conditions the public sector partner agrees to 'purchase' the goods and services produced by the project.

◦ **Build, Own, Operate, Transfer (BOOT):**

- In this variant of BOT, after the negotiated period of time, the project is transferred to the government or to the private operator.
- BOOT model is used for the development of highways and ports.
- **Build-Operate-Lease-Transfer (BOLT):**
 - In this approach, the government gives a concession to a private entity to build a facility (and possibly design it as well), own the facility, lease the facility to the public sector and then at the end of the lease period transfer the ownership of the facility to the government.
- **Design-Build-Operate-Transfer (DBFO):**
 - In this model, entire responsibility for the design, construction, finance, and operation of the project for the period of concession lies with the private party.
- **Lease-Develop-Operate (LDO):**
 - In this type of investment model **either the government or the public sector entity retains ownership** of the newly created infrastructure facility and receives payments in terms of a lease agreement with the private promoter.
 - It is mostly followed in the development of airport facilities.
- **Engineering, Procurement, and Construction (EPC) Model:**
 - Under this model, the cost is completely borne by the government. Government invites bids for engineering knowledge from the private players.
 - Procurement of raw material and construction costs are met by the government.
 - The private sector's participation is minimal and is limited to the provision of engineering expertise.
 - A difficulty of the model is that financial is the high financial burden for the government.
- **Hybrid Annuity Model (HAM):**
 - In India, the new HAM is a mix of BOT-Annuity and EPC models.
 - As per the design, the government will contribute 40% of the project cost in the first five years through annual payments (annuity).
 - The remaining payment will be made on the basis of the assets created and the **performance of the developer.**

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Prelims

Q. The Global Infrastructure Facility is a/an (2017)

- (a) ASEAN initiative to upgrade infrastructure in Asia and financed by credit from the Asian Development Bank.
- (b) World Bank collaboration that facilitates the preparation and structuring of complex infrastructure Public-Private Partnerships (PPPs) to enable mobilization of private sector and institutional investor capital.
- (c) Collaboration among the major banks of the world working with the OECD and focused on expanding the set of infrastructure projects that have the potential to mobilize private investment.
- (d) UNCTAD funded initiative that seeks to finance and facilitate infrastructure development in the world.

Ans: (b)

Exp:

- In 2014, World Bank launched Global Infrastructure Facility (GIF) that coordinates and integrates the efforts of Multilateral Development Banks (MDBs), private sector investors and financiers, and governments interested in infrastructure investment in Emerging Markets and Developing

Economies (EMDEs) through facilitating the preparation and structuring of complex infrastructure public private partnerships (PPPs).

- The Global Infrastructure Facility (GIF) supports governments in bringing well-structured and bankable infrastructure projects to the market. GIF's project support can cover the spectrum of design, preparation, structuring, and transaction implementation activities, drawing on the combined expertise of the GIF's technical and advisory partners and focusing on structures that can attract a wide range of private investors.
- **Therefore, option (b) is the correct answer.**

Mains

Q. Examine the development of Airports in India through joint ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard? **(2017)**

Q. Why is Public Private Partnership (PPP) required in infrastructural projects? Examine the role of PPP model in the redevelopment of Railway Stations in India. **(2022)**

Source: PIB

Ganga Utsav 2022

For Prelims: National Mission for Clean Ganga, River Ganga, National Ganga Council, Clean Ganga Fund, Ganga Action Fund.

For Mains: Ganga Utsav- The River Festivals 2022.

Why in News?

Recently, the Ministry of Jal Shakti by the collaboration of The [National Mission for Clean Ganga \(NMCG\)](#) has organized **Ganga Utsav- The River Festivals 2022**.

What is Ganga Utsav 2022?

- **About:**
 - The **NMCG** celebrates the festival **every year to strengthen the Public - River Connection**.
 - NMCG is the implementation wing of [National Ganga Council](#), set up in 2016, which replaced the National Ganga River Basin Authority (NRGBA).
 - The NMCG has been registered in **the Guinness Book of World Records on the first day of Ganga Utsav 2021** for the highest number of photos of handwritten notes that were uploaded on Facebook in an hour.
 - It highlights the significance of **Jan Bhagidari (People's Participation)** in the revival of Ganga, with a focus on encouraging stakeholder engagement and public participation towards the rejuvenation of river Ganga.
- **Ganga Utsav 2022:**
 - Dedicating the grand event to the 75 years of Indian Independence (Azadi ka Amrit Mahotsav), the aim is to **hold similar events at more than 75 locations in states to**

celebrate the rivers of India.

- The festival will include a **blend of art, culture, music, knowledge, poetry, dialogue, and stories.**
- Several awareness activities will take place in districts to **establish a connection with the locals, and promote [Namami Gange](#)** as a mass movement.

What are the Government Initiatives on River Ganga?

- **Ganga Action Plan:** It was the first river action plan to improve the water quality by the interception, diversion and treatment of domestic sewage.
 - The National River Conservation Plan is an extension to this plan, which aims at cleaning the Ganga River under the Ganga Action Plan phase-2.
- **National River Ganga Basin Authority:** It was formed in the year 2009 under Section-3 of the **[Environment Protection Act 1986](#).**
- **Clean Ganga Fund:** In 2014, it was formed for cleaning up of the Ganga, setting up of waste treatment plants and conservation of biotic diversity of the river.
- **Bhuvan-Ganga Web App:** It ensures the involvement of the public in the monitoring of pollution entering into the river Ganga.
- **Ban on Waste Disposal:** In 2017, the **[National Green Tribunal \(NGT\)](#)** banned the disposal of any waste in the Ganga.

What are the Key Points of River Ganga?

- It is the **longest river of India** flowing over 2,510 km of mountains, valleys and plains and is revered by Hindus as the most sacred river on earth.



- The Ganga basin outspreads in **India, Tibet (China), Nepal and Bangladesh** over an area of 10,86,000 Sq.km.
- In India, it covers states of **Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, West Bengal, Uttarakhand, Jharkhand, Haryana, Chhattisgarh, Himachal Pradesh and Union Territory of Delhi** draining an area of 8,61,452 Sq.km which is nearly 26% of the total geographical area of the country.
- It originates in the snowfields of the **[Gangotri Glacier in the Himalayas](#).**
- At its source, the river is called as the Bhagirathi. It descends down the valley upto **Devprayag** where after joining another hill stream Alaknanda, it is called **Ganga**.
- The **principal tributaries** joining the river from **right** are the **Yamuna and the Son**.
- The **Ramganga, the Ghaghra, the Gandak, the Kosi and the Mahananda** join the **river from left**. The Chambal and the Betwa are the two other important sub- tributaries.
- The Ganga River basin is one of the most fertile and densely populated areas of the world and

covers an area of 1,000,000 sq. km.

- The [Ganges River Dolphin](#) is an endangered animal that specifically habitats this river.
- The Ganga joins the Brahmaputra in Bangladesh and continues its run under the name Padma or Ganga.
- The Ganga widens out into the Ganges Delta in the [Sundarbans](#) swamp of Bangladesh, before it ends its journey by emptying into the Bay of Bengal.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following pairs: (2013)

National Park River flowing through the Park

1. Corbett National Park : Ganga
2. Kaziranga National Park : Manas
3. Silent Valley National Park : Kaveri

Which of the above pairs is/are correctly matched?

- (a) 1 and 2
- (b) 3 only
- (c) 1 and 3
- (d) None

Ans: (d)

Q. Which of the following are the key features of 'National Ganga River Basin Authority (NGRBA)'? (2016)

1. River basin is the unit of planning and management.
2. It spearheads the river conservation efforts at the national level.
3. One of the Chief Ministers of the States through which the Ganga flows becomes the Chairman of NGRBA on rotation basis.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (a)

Mains

Q. Discuss the Namami Gange and National Mission for Clean Ganga (NMCG) programmes and causes of mixed results from the previous schemes. What quantum leaps can help preserve the river Ganga better than incremental inputs? (2015)

New Products in Make-II Project

For Prelims: Defence Acquisition Programme, Make India Project, Drone Kill Systems

For Mains: Indian Defence Equipments, Defence Acquisition Programme, Government's Related Initiatives

Why in News?

Recently, the [Indian Army](#) has approved five **Project Sanction Orders (PSOs)** for the development of niche technology by the Indian industry under the **Make-II route** of [defence procurement](#).

What is the Make-II Project?

- **About:**
 - Make II projects are essentially **industry funded projects** involving design, development and innovative solutions by Indian vendors for **development of prototypes**.
 - **22 out of 43 projects** are now in prototype development stage, which is 66% of projects by cost, ₹18,000 crore out of ₹27,000 crore.
- **New Additions under the Project:**
 - **High Frequency Man Packed Software Defined Radios (HFSDR):**
 - These radio sets will replace the existing **High Frequency radio sets in the inventory**, which have **limited data handling capability and obsolete technology**.
 - Light weight HFSDR will provide long distance radio communication through enhanced data capability and band width coupled with enhanced security
 - **Drone Kill Systems:**
 - **Drone kill system** is a hard kill anti-drone system against low Radio Cross Section drones.
 - It is being developed to function in all types of terrains, both during day and night.
 - **Infantry Training Weapon Simulator (IWTS):**
 - It is the first triservice Make-II project with the Army as the lead service.
 - **Medium Range Precision Kill Systems (MRPKS):**
 - The MRPKS, once launched can 'Loiter' in the air for upto two hours and can acquire, designate and engage real time high value targets upto 40 km.
 - **155 mm Terminally Guided Munitions (TGM)**

What is the 'Make' Category of Capital Acquisition?

- The **'Make'** category of capital acquisition is the cornerstone of the [Make in India](#) initiative that seeks to **build indigenous capabilities through the involvement of both public and private sector**.
- **'Make-I'** refers to **government-funded projects** while **'Make-II'** covers **industry-funded programmes**.
 - **Make-I** is involved in development of **big-ticket platforms** such as light tank and communication equipment with Indian security protocols.
 - **Make-II** category involves prototype development of **military hardware or its upgrade for import substitution** for which no government funding is provided.
- Another sub-category under 'Make' is **'Make-III'** that covers **military hardware** that may **not be designed and developed indigenously**, but can be manufactured in the country for **import**

substitution, and Indian firms may manufacture these in collaboration with foreign partners.

What are the other Initiatives to Boost Domestic Production of Defence Equipment?

- [Defence Industrial Corridors](#)
- [Corporatization of the Ordnance Factory Boards](#)
- [Defence India Startup Challenge](#)
- [Draft Defence Production and Export Promotion Policy 2020](#)
- [Innovations for Defence Excellence \(iDEX\)](#)
- [Mission Raksha Gyan Shakti](#)

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. What is “Terminal High Altitude Area Defense (THAAD)”, sometimes seen in the news? (2018)

- (a) An Israeli radar system
- (b) India’s indigenous anti-missile programme
- (c) An American anti-missile system
- (d) A defence collaboration between Japan and South Korea.

Ans: (c)

Exp:

- Terminal High Altitude Area Defence (THAAD) is an American anti-missile system designed to intercept and destroy short and medium-range ballistic missiles during their “terminal” phase of flight when they are falling towards the target.
- They have the ability to intercept missile inside and outside the atmosphere.
- It is interoperable with other ballistic missile defence systems and is highly mobile and deployable worldwide.
- **Therefore, option (c) is the correct answer.**

Mains

Q. Foreign Direct Investment (FDI) in the defence sector is now set to be liberalized: What influence this is expected to have on Indian defence and economy in the short and long run? (2014)

Q. How is S-400 air defence system technically superior to any other system presently available in the world? (2021).

[Source: TH](#)

State of Food and Agriculture Report, 2022

For prelims: State of Food and Agriculture Report, 2022, Food and Agriculture Organization, Sustainable Development Goals

Why in News?

Recently, the 2022 edition of the State of Food and Agriculture report by the [Food and Agriculture Organization \(FAO\)](#) was released.

- The **flagship report is produced each year.**
- The report looked at how automation in our agrifood systems can contribute to achieving [Sustainable Development Goals](#) and offers recommendations to policy makers on how to maximize the benefits and minimize the risks.

What is Agriculture Automation?

- Agricultural automation, which includes **anything from tractors to [artificial intelligence](#)**, plays an important role in making food production more efficient and environmentally friendly.
- But it can also **deepen inequalities if it remains inaccessible** to small-scale producers and other marginalised groups.

What are the Highlights of the Report?

- The report looked at 27 case studies from all over the world, representing different technologies.
 - Only 10 of the 27 service providers are profitable and financially sustainable.
- There is an **unequal progress toward mechanization among regions**, according to available statistics on the number of tractors per 1,000 hectares of arable land.
- High-income countries in North America, Europe and Oceania were highly mechanised by the 1960s. But regions dominated by **low-and middle-income countries were less mechanised.**
- Crucially, **there are wide disparities in the spread of automation** between and within countries, with adoption being particularly limited in sub-Saharan Africa.
 - For instance, **Japan had more than 400 tractors per 1,000 hectares of arable land**, compared with just 0.4 in Ghana in 2005.
 - Agriculture reliant on human and animal power continues to dominate in sub-Saharan Africa, limiting productivity.

What are the Recommendations?

- An agricultural automation policy should ensure that **agrifood systems are sustainable and resilient.**
- **Policymakers should avoid subsidising automation** in such labour-abundant contexts.
 - Agricultural automation can lead to unemployment in places where rural labour is abundant and wages are low.
- Policymakers **should focus on creating an enabling environment for adopting automation.**
- **Social protection should be provided to the least skilled workers**, who are more likely to lose their jobs during the transition.

What is the Food and Agriculture Organization?

- **About:**
 - FAO is a specialised agency of the [United Nations](#) that leads international efforts to defeat hunger.
 - [World Food Day](#) is celebrated every year around the world on 16th October. The day is celebrated to mark the anniversary of the founding of the FAO in 1945.

- It is one of the UN food aid organisations based in Rome (Italy). Its sister bodies are the [World Food Programme](#) and the International Fund for Agricultural Development (IFAD).
- **Initiatives Taken:**
 - [Globally Important Agricultural Heritage Systems \(GIAHS\)](#).
 - Monitors the [Desert Locust](#) situation throughout the world.
 - The [Codex Alimentarius Commission or CAC](#) is the body responsible for all matters regarding the implementation of the Joint FAO/WHO Food Standards Programme.
 - The [International Treaty on Plant Genetic Resources for Food and Agriculture](#) was adopted by the Thirty-First Session of the Conference of the FAO in 2001.
- **Flagship Publications:**
 - The State of World Fisheries and Aquaculture (SOFIA).
 - The State of the World's Forests (SOFO).
 - [The State of Food Security and Nutrition in the World \(SOFI\)](#).
 - The State of Agricultural Commodity Markets (SOCO).

[Source: DTE](#)

Newly Discovered Species of Honeybee

Why in News?

Recently, a new species of endemic honeybee named *Apis karinjodian* has been discovered in the [Western Ghats](#) after a gap of more than 200 years.

- The **last honeybee described from India was *Apis indica*** in 1798 by Fabricius.
- The new find has increased the species of honeybees in the world to 11.



What are the Key Specifications about the Species?

- **About:**
 - **Common Name:** Indian black honeybee.
 - *Apis karinjodian* has **evolved from Apis cerana morphotypes** that got acclimatised to the hot and humid environment of the Western Ghats.
 - Indian black honeybees are able to **produce a thicker honey which allows for increased honey production.**
 - Till date, **only a single species, Apis cerana** was noted across the plains of central and southern India and Sri Lanka as a 'fairly uniform population' in the Indian subcontinent.
 - The research has **given a new direction to apiculture in the country by showing the presence of three species** of cavity nesting honey bees, namely *Apis indica*, *Apis cerana*, and *Apis karinjodian*.
- **Distribution:**
 - The distribution of *Apis karinjodian* ranges from the **central Western Ghats and Nilgiris to the southern Western Ghats**, covering the States of Goa, Karnataka, Kerala and parts of Tamil Nadu.
- **Protection:**
 - **IUCN Red List:** Near Threatened (NT)

What is the Status of the Apiculture in India?

- The globally apiculture market is estimated to register a **Compounded Annual Growth Rate (CAGR)** of 4.3% during the period 2020-25, with Asia-Pacific as the dominant producer.
- The **Indian apiculture market size is expected to reach a value of Rs 33,128 million by 2024**, expanding at a CAGR of nearly 12% by 2024.
- India is the sixth major natural honey exporting country.
 - During 2019-20, the recorded export of natural honey was 59,536.75 MT for Rs 633.82 crore. The **major export destinations** were the **USA, Saudi Arab, Canada, and Qatar.**

What are Related Initiatives?

- **'Sweet Revolution':**
 - It is an **ambitious initiative of the Government of India for promoting apiculture**, popularly known as 'beekeeping'.
 - To provide a **booster shot to Sweet Revolution**, the government launched the **National Beekeeping and Honey Mission in 2020** (under the Ministry of Agriculture and Farmers Welfare).
 - National Beekeeping and Honey Mission aims to establish 5 big regional and 100 small honey and other Bee Products testing laboratories.
 - Out of the total target, 3 world class state-of-the-art laboratories have been setup, whereas 25 small laboratories are in the process of being set up.
- **Assistance for Setting up of Processing Units:**
 - India is also **providing assistance to the beekeepers for setting up of Processing Units.**
 - More than 1.25 lakh metric tonnes of honey are being produced in the country, out of which more than 60 thousand metric tonnes of natural honey is exported.
- **Adopting Scientific Techniques:**
 - In order to bring qualitative upgradation of domestic honey to attract the world market, the Government of India and the State Governments are making concerted efforts and focusing on capacity building of beekeepers for production of honey by adopting scientific techniques.

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Q. Consider the following kinds of organisms: (2012)

1. Bat

2. Bee
3. Bird

Which of the above is/are pollinating agent/agents?

- (a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (d)

Exp:

- Pollination is the transfer of pollen from the male part of a plant to the female part of a plant, thus, enabling fertilisation and production of seeds, most often by an animal or by wind.
- Pollinating agents are animals such as insects, birds, bees and bats, water, wind, and even plants themselves, when self-pollination occurs within a closed flower. **Hence, 1, 2 and 3 are correct.**
- Pollination often occurs within a species. When pollination occurs between species, it can produce hybrid offsprings in nature and in plant breeding.

[Source: TH](#)

PDF Refernece URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/07-11-2022/print>