

GOVERNANCE

Context: SHREYAS Scheme, the role of scholarships and financial aid in reducing educational gaps in India

Why in News?

- Two continuing Central Sector Schemes for OBC (Other Backward Classes) and EBC have been proposed to be used in conjunction with the Scholarships for Higher Education for Young Achievers Scheme (SHREYAS) to be implemented from 2021–2026.
- These programs are the Dr. Ambedkar Central Sector Scheme of Interest Subsidy on Educational Loans for Overseas Studies for OBCs and Economically Backward Classes (EBCs), as well as the National Fellowship for OBCs

What is the SHREYAS Scheme?**About:**

- The primary goal of the programs is to empower OBC and EBC students to pursue higher education by providing fellowships, or financial aid, for high-quality university education and interest-free loans for study abroad.
- The Ministry of Social Justice and Empowerment is the nodal ministry.

Vital Elements:**National OBC Student Fellowship:****About:**

- Its goal is to give financial support to OBC students who want to go to college and earn degrees (M.Phil. and Ph.D.) in a variety of reputable research and scientific institutes and universities.
- The program provides 1000 Junior Research Fellowships for postgraduate research and studies each year. Students who have met the eligibility requirements through tests such as the UGC-NET or UGC-CSIR NET-JRF Joint Test are given these fellowships.

Important aspects:

- Funding is given by the National Backward Classes Finance and Development Corporation, a government of India undertaking that is supervised by the Ministry of Social Justice & Empowerment.
- Together with contingencies, the fellowship rates are set at Rs. 31,000 for JRF and Rs. 35,000 for SRF per month.
- Seats reserved for students with disabilities and extra seats beyond government quotas that are set aside.
- The nodal agency for carrying out the plan is the UGC.

The Dr. Ambedkar Scheme provides interest subsidies for OBCs and EBCs on educational loans for overseas studies.

- Its goal is to give interest subsidies on student loans to OBCs and EBCs who are enrolled in Masters, M.Phil. and Ph.D. programs approved overseas.
- The program, which is run by Canara Bank, is applicable to post-secondary education overseas and is connected to the current Educational Loan Programs.
- For OBC candidates, eligibility requirements include income restrictions based on the Creamy Layer criteria; for EBC candidates, the income cap is Rs. 5.00 lakh annually.
- Women candidates are eligible to receive 50% of the funding.
- During the moratorium period, the government will pay 100% of the interest; after that, the student will be responsible for repaying the loan.

What are the Other Schemes Related to Education in India?

- National Programme on Technology Enhanced Learning.
- Beti Bachao Beti Padhao

- PM SHRI Schools
- National Means cum Merit Scholarship (NMMS)
- Swachh Vidyalaya Abhiyan
- Ekalavya Model Residential Schools

Conclusion:

The Shreyas scheme stands as a beacon of hope for Indian students seeking to enhance their employability skills and transition smoothly from education to the workforce. With its well-defined objectives and collaboration between ministries and innovative implementation tracks, it promises to shape a brighter future for India's youth.

ENVIRONMENT**Context: Reducing Plastic Pollution by 2040; Degradation and Pollution of the Environment****Why in News?**

Recently, Organisation for Economic Co-operation and Development (OECD) has released the interim report titled 'Towards Eliminating Plastic Pollution by 2040: A Policy Scenario Analysis', ahead of the Intergovernmental Negotiating Committee on Plastic Pollution (INC3).

In November 2023, Nairobi, Kenya will host the INC3, which aims to reach a legally binding global agreement on plastic pollution. INC 2 took place earlier in June 2023 in Paris, France.

Note:

A preliminary or partial report that is released prior to the completion of a full or final report is referred to as an interim report. It is a document that provides preliminary research, analysis, or development on a specific topic or undertaking.

Which aspects of the report stand out the most?**Present Situation:**

- 21 million tonnes (MT) of plastics spilled into the environment worldwide in 2022.
- In the event that nothing noteworthy were to change, the amount of plastic used would rise, leading to a 50% increase in macro plastic leakage by 2040.
- This would imply that about 30 MT of plastic would seep into the environment, of which 9 MT would end up in aquatic areas.

Projections of scenarios:

- There would still be a considerable amount of plastic leakage (12 MT) by 2040 even if primary plastic use were to stabilize at 2020 levels by then.
- On the other hand, by 2040, aggressive worldwide action could virtually completely eradicate plastic leakage and mismanaged waste, as well as significantly reduce waste generation.

Effects of Growing Plastic Consumption:

- The increasing use and disposal of plastics would worsen the already serious effects of plastic pollution on human health, the environment (habitat destruction, soil contamination), and the climate (contributing to greenhouse gas emissions).
- Among the many life cycle effects that plastics produce, 3.8% of the world's total greenhouse gas emissions (or 1.9 GtCO₂e in 2022) are caused by plastics.

Cost of Action:

- Global ambition combined with early, strict, and coordinated policy action could reduce the generation of plastic waste by 25% below baseline by 2040.
- By 2040, mismanaged waste could be almost completely eliminated (from 119 to 4 MT), which would also almost completely eliminate plastic leakage (1.2 MT in 2040).
- While 74 MT less than in the baseline, plastics stocks in rivers and oceans would still increase from 152 MT in 2020 to 226 MT in 2040.

- The costs of these aggressive international initiatives to combat plastic pollution by 2040 would equal 0.5% of the world GDP.
- These costs, however, must be considered in light of significantly better environmental outcomes because they do not include the avoided costs of inaction.

Financial needs

- The collection, sorting, and treatment of waste will require large investments (above USD 1 trillion) in fast-growing nations with less developed waste management systems between 2020 and 2040.
- Because of the unequal cost distribution, international cooperation is considered essential.

Suggested actions:

- Different policy scenarios are required, highlighting the need for an all-encompassing strategy to address plastic pollution at every stage of its lifecycle.
- In order to eradicate plastic leakage by 2040, it is imperative to surmount both technical and financial obstacles.
- Innovations in recycling and expanding healthy global markets for secondary and scrap plastics are vital tactics.

The Intergovernmental Negotiation Committee (INC): What is it?**About:**

- At the 5th session of the United Nations Environment Assembly (UNEA-5.2) in February 2022, the INC was founded.
- The UN Environment Programme is governed by UNEA.
- With the goal of concluding the negotiations by the end of 2024, a historic resolution (5/14) was adopted to develop an international legally binding instrument on plastic pollution, including in the marine environment.
- Uruguay hosted the INC-1's inaugural meeting in 2022.

Need

- A major worldwide environmental problem that adversely affects the environmental, social, economic, and health aspects of sustainable development is the quickly rising levels of plastic pollution.
- The amount of plastic waste that enters aquatic ecosystems could almost triple by 2040 from 9–14 million tonnes annually in 2016 to 23–37 million tons annually if appropriate interventions are not taken.

OBJECTIVE:

- In order to support the goals of the legally binding agreement, nations will be required to create, carry out, and maintain national action plans that represent nation-driven strategies.
- They will be expected to support regional and global cooperation and advance national action plans aimed at preventing, reducing, and eliminating plastic pollution.

What Programs Are in Place to Address the Plastic Pollution Issue?**Indian**

- Plastic Waste Management (Amendment) Rules, 2022;
- Extended Producer Responsibility (EPR);
- National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management;
- India Plastics Pact;
- Project REPLAN

Global:

- European Union' Directive on Single-Use Plastics
- Closing the loop.

- The Global Tourism Plastics initiative

Conclusion:

Given the systematic nature of plastic pollution, global and coordinated action is needed across the plastic life cycle to drive real system change. The establishment of common global rules through an international legally binding instrument presents a unique opportunity to make this a reality. This report shows that implementing 15 far reaching policy interventions could take a long way in the journey towards ending plastic pollution by 2040.

PRELIM FACT**1.SATH-E****Context:**

- **The National Institute of Transforming Human Capital in Education (NITI Aayog) released a study on the Sustainable Action for Transforming Human Capital in Education (SATH-E).**
- **SATH-E, or 'Sustainable Action for Transforming Human Capital-Education,' was started in 2017 with the goal of identifying and developing three 'role model' states for the school education sector. Jharkhand, Odisha, and Madhya Pradesh were chosen after an extensive selection process.**
- The first phase of SATH-E was completed in March 2020. Significant strides were made in learning enhancement programmes (remediation), governance reforms, teacher training, recruitment, assessment and accountability, school consolidation, IT-enabled monitoring of schools, coaching of academic coordinators (BRCs/CRCs), among others.
- Based on the requests received from all the three State Governments, the second phase of the project, SATH-E 2.0, was commenced by NITI Aayog for 2 years, from October 2020.

2.Exercise MITRA SHAKTI-2023**Context:**

Recently, a Joint Military exercise “Exercise MITRA SHAKTI-2023” is being conducted from 16th to 29th November 2023 in Aundh (Pune).

- It is a joint military exercise between India and Sri Lanka army.
- This year it is the ninth edition of the exercise.
- The Indian contingent, of 120 personnel, is being represented mainly by troops from the MARATHA LIGHT INFANTRY Regiment.
- Personnel from Indian Air Force and from Sri Lanka Air Force are also participating in the exercise which makes the ninth ‘Mitra Shakti’ as the first bilateral and bi-service exercise between the two countries.
- The aim of the exercise is to jointly rehearse conduct of Sub Conventional operations under Chapter VII of United Nations Charter.
- The scope of the exercise includes synergising joint responses during counter-terrorist operations.
- In addition, Army Martial Arts Routine (AMAR), combat reflex shooting and Yoga will also form part of the exercise curriculum.
- It will also involve employment of Drones and Counter Unmanned Aerial Systems besides helicopters.
- Drills to secure helipads and undertake casualty evacuation during counter-terrorist operations will also be rehearsed jointly by both sides.
- Collective efforts will focus on achieving an enhanced level of interoperability amongst the troops and reduce the risk of life and property while keeping the interests and agenda of the UN at the forefront during peace keeping operations.
- The exercise will also foster strong bilateral relations between the two neighbouring nations.

3.Wasp-107b**Context:**

NASA's James Webb Telescope recently discovered a new exoplanet named ‘Wasp-107b’, which is the size of Jupiter.

About Wasp-107b:

- It is a newly discovered exoplanet situated 200 light-years away in the Virgo constellation.
- The mass of WASP-107b is 30.5 Earths, and it takes only six days to orbit its home star, which is slightly cooler and less massive than our sun.
- It shares Jupiter's size but possesses the mass of Neptune, making it less dense than other gas giants.
- The planet's low density allowed astronomers to look 50 times deeper into the atmosphere of the planet compared to observations achieved for more dense planets, like Jupiter.
- The exoplanet is scorching hot (with an outer atmosphere that's more than 900 degrees Fahrenheit).
- Sand Rain:
- Wasp-107b exhibits a water cycle akin to Earth's, but with one peculiar difference: instead of water droplets, the planet experiences sand rain.
- The falling grains are, in fact, silicate vapours rising from lower atmospheric levels.
- Similar to Earth's water cycle, these sand clouds precipitate back to lower planetary atmospheric levels.
- In addition to the silicate clouds, scientists have identified water vapor and sulfur dioxide in the atmosphere of WASP-107b.

4.Sickle Cell Anemia**Context:**

The United Kingdom's drug regulator recently approved the world's first gene therapy treatment for sickle cell disease and thalassemia.

About Sickle Cell Disease:

- It is an inherited blood disorder.
- It is marked by flawed hemoglobin.
- Hemoglobin is the molecule in red blood cells (RBCs) that carries oxygen to the tissues of the body.
- People with this disease have atypical hemoglobin molecules called hemoglobin S, which can distort RBCs into a sickle, or crescent, shape.
- Sickle cell disease interferes with the delivery of oxygen to the tissues.

How does it affect blood flow?

- Normally, RBCs are disc-shaped and flexible enough to move easily through the blood vessels.
- In sickle cell disease, RBCs become crescent- or "sickle"-shaped due to a genetic mutation.
- These sickled RBCs do not bend or move easily and can block blood flow to the rest of the body.

What causes it?

- The cause of Sickle cell disease is a defective gene, called a sickle cell gene.
- A person will be born with sickle cell disease only if two genes are inherited—one from the mother and one from the father.

Symptoms:

- Early stage: Extreme tiredness or fussiness from anemia, painfully swollen hands and feet, and jaundice.
- Later stage: Severe pain, anemia, organ damage, and infections.

Treatments:

- A bone marrow transplant (stem cell transplant) can cure sickle cell disease.
- However, there are treatments that can help relieve symptoms, lessen complications, and prolong life.
- Gene therapy is also being explored as another potential cure. The UK recently became the first country to approve gene therapy treatment for sickle cell disease

5.Mars solar conjunction**Context:**

Recently, NASA announced that it will stop sending commands to its fleet of robotic probes on or orbiting the red planet (Mars) due to Mars solar conjunction.

- It is a phenomenon which occurs when the Sun will be in between Earth and Mars.
- During this time the Sun expels hot, ionised gas from its corona.

- It could corrupt radio signals sent from Earth to Mars.
- Also this could cause unexpected behaviour from the spacecraft on Mars
- It happens once every two years.
- This year it is occurring between November 11 and November 25.

6.Argoland

Context:

Geologists recently discovered Argoland, a landmass that detached from modern-day western Australia 155 million years ago.

About Argoland:

- It was a lost continent that once broke off from northwestern Australia 155 million years ago.
- The elusive, 3,106-mile stretch was once an integral part of the supercontinent Gondwana.
- It disintegrated as tectonic forces stretched the landmass out and drove it away from the rest of the continent before scattering it across Southeast Asia.
- It had initially drifted northwest, where several Southeast Asian islands currently exist today.
- But unlike India, which broke off the ancient supercontinent Gondwana 120 million years ago and still forms an intact landmass today, Argoland splintered into fragments.
- These fragments reaching their destinations simultaneously formed an archipelago rather than a unified landmass.
- Argoland, now dispersed as an archipelago separated by ocean basins, contributed to the formation of several Southeast Asian islands.

Key Facts about Gondwana:

- Gondwana used to be a supercontinent, from around 550 million years ago to approximately 180 million years ago, alongside Laurasia.
- The continent eventually split into the landmasses we recognize today: Africa, South America, Australia, Antarctica, the Indian subcontinent, and the Arabian Peninsula.

ANSWER WRITING

Q. The Delhi government intends to use "cloud seeding" to create rain in the midst of pollution. Describe how cloud seeding works. Talk about the uses and difficulties of cloud seeding as well.

Introduction

The government of Delhi declared that it would start using "artificial rain" or cloud seeding to remove air pollution in the nation's capital. It's a novel way to deal with the capital's Air Quality Index (AQI) issues. A method of modifying the weather to increase precipitation is called "cloud seeding," which involves releasing materials into the atmosphere to help saturate the clouds.

Mechanism:

- The procedure begins with the identification of suitable clouds using aircraft or generators based on the ground through weather analysis. Seeding agents are then released into the selected clouds. More rainfall results from the seeding particles' assistance in the formation of larger water droplets.
- In order to start cloud seeding, "seed" (solid carbon dioxide or salts like potassium, sodium, or silver iodide) is injected into the clouds. In order to provide more nuclei around which more cloud droplets can form, these salts are dispersed.

Techniques for cloud seeding:

- **Hygroscopic cloud seeding:** This technique uses explosives or flares to scatter salts into the lower layers of clouds. After the dispersal, the salts enlarge. Table salt is typically used in this technique. Research from nations like South Africa and Mexico has shown that hygroscopic cloud seeding works.
- **Static cloud seeding:** In 2010, infrared light was directed at Berlin's atmosphere by University of Geneva researchers. The results of the experiment demonstrated that infrared can assist

atmospheric sulphur dioxide and nitrogen dioxide in forming seeds-like particles that result in rainfall.

- **Utilizing salts:** Known as the most popular technique, chemicals like dry ice, potassium iodide, and silver iodide are dispersed via aircraft or by dispersion devices that are situated on the ground

Cloud seeding applications include:

- **Agriculture:** It contributes to precipitation, which can alleviate drought conditions in affected areas. For instance, the Karnataka government introduced "Project Varshadhari" in 2017, which involved spraying chemicals from an aircraft to create rainfall.
- **Power generation:** Over the past 40 years, Tasmania, Australia, has demonstrated that the cloud seeding technique increases hydroelectricity production.
- **Control of water pollution:** Cloud seeding is a technique that can reduce the effect of treated wastewater discharges from industries while preserving minimum river flows
- **Fog dispersal and cyclone modification:** The US initiated "Project Sky Water" in 1962 with the goals of reducing fog, suppressing hail, and altering cyclones.
- **Combat air pollution:** Toxic air pollutants can be lowered by using the cloud seeding technique through rain

Difficulties in cloud seeding:

- **Side effects:** Plants, animals, humans, and even the environment may be harmed by the chemicals used in cloud seeding.
- **Unusual weather patterns:** This could result in modifications to climate patterns. For example, areas that normally get rain could encounter dry spells because of man-made chemical additions to the atmosphere intended to encourage precipitation.
- **High cost:** Cloud seeding entails the expensive and logistically complex process of distributing chemicals into the sky using aircraft or flare shots.
- **Pollution:** When cloud seeding begins, salt, dry ice, or silver iodide are among the seeding agents that fall as rain. It is thought to be toxic residual silver that has been found close to cloud-seeding operations.

Conclusion:

Several nations, including Mexico, the US, China, Indonesia, and Malaysia, have used cloud seeding to create rain, enhance air quality, and irrigate crops during dry spells. Cloud seeding has only been attempted to address drought-like conditions in India so far; it has not been used to reduce pollution. Only when the local atmosphere's moisture content satisfies the necessary requirements and the meteorological conditions are favourable then cloud seeding be carried out to achieve the desired results.

MCQ

1. Consider the following statements regarding Argoland, recently seen in the news:
 1. Like India, it was once an integral part of the supercontinent Gondwana.
 2. It contributed to the formation of several Southeast Asian islands.
 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
2. With reference to Sickle Cell Disease, consider the following:
 1. It is hereditary in nature.
 2. It restricts the formation of White Blood Cells.
 3. There is currently no cure for the Sickle Cell Disease.
 How many of the above statements are correct?
 - a) **Only one**
 - b) Only two
 - c) All three
 - d) None
3. 'Wasp-107b', seen in the news recently, is a:
 - a) asteroid found in the Kuiper Belt

- b) supernova in the Milky Way
 c) **exoplanet in the Virgo constellation**
 d) moon of Jupiter
4. Exercise MITRA SHAKTI, recently seen in the news, is conducted between India and:
 a) Russia
 b) Nepal
 c) Bhutan
 d) **Sri Lanka**
5. Consider the following statements about Mars solar conjunction
 1. It is a phenomenon which occurs when the Sun will be in between Earth and Mars.
 2. It happens once every two years.
 Choose the incorrect statements:
 a) 1 only
 b) 2 only
 c) Both 1 and 2
 d) **Neither 1 nor 2**
6. With reference to Janjatiya Gaurav Divas, consider the following statements:
 1. In 2021, the Indian government officially proclaimed 15th November as Janjatiya Gaurav Divas, commemorating the valor of tribal freedom fighters.
 2. The date is the birth anniversary of Rani Gaidhinliu who is revered as Bhagwan by tribal communities across the country.
 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
7. Consider the following statements regarding the National Organ and Tissue Transplant Organisation (NOTTO):
 1. NOTTO is set up under the Directorate General of Health Services, Ministry of Health and Family Welfare, located in New Delhi.
 2. NOTTO's National Network division oversees all activities related to organ and tissue donation and transplantation, serving as the central hub for procurement, distribution, and registry nationwide.

- Which of the statements given above is/are not correct?
 a) 1 only
 b) 2 only
 c) Both 1 and 2
 d) **Neither 1 nor 2**
8. Consider the following pollutants:
 1. Carbon monoxide (CO)
 2. Carbon dioxide (CO₂)
 3. Arsenic
 4. Nickel
 How many of the above pollutants is/are currently being assessed by India's National Ambient Air Quality Standards (NAQS) notified by Central Pollution Control Board (CPCB)?
 a) Only one
 b) Only two
 c) **Only three**
 d) All four
9. Consider the following statements:
 1. With respect to the money bills, the Legislative Assembly of the State holds the supreme power.
 2. The Legislative council is less powerful in making laws than the State Legislative assembly.
 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
10. Regarding river 'Yamuna', consider the following statements:
 1. It originates from the Yamunotri glacier near Bandarpoonch peaks in the Mussoorie range.
 2. Chambal is one of the important tributaries of Yamuna.
 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