

ENVIRONMENT

❖ **MGNREGS to Fund Work to Reverse Desertification of Land Across States**

❖ **CONTEXT:** With limited funds to deal with the extensive task of restoring degraded land and reversing desertification in the country, the government is planning to bring convergence between the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

- According to the Desertification and Land Degradation Atlas published by the Environment Ministry in 2021, at least 30% of India's total geographical area is under the category of "degraded land".
- Jharkhand, Rajasthan, Delhi, Gujarat and Goa have more than 50% of land area undergoing desertification or degradation, while States with less than 10% land degradation are Kerala, Assam, Mizoram, Haryana, Bihar, Uttar Pradesh, Punjab and Arunachal Pradesh.

❖ **How will the convergence of the two schemes help in tackling soil degradation?**

- The activities such as ridge area treatment, drainage line treatment, soil and moisture conservation, rainwater harvesting, nursery raising, afforestation, horticulture and pasture development will be done under the proposed plan.
- These activities would be undertaken using MGNREGS funds, which go towards both material and wage components.
- The government will scale up the land area to be restored by making use of the MGNREGS fund, which for the financial year 2022-23 has a budget of ₹73,000 crores.
- A convergence with the MGNREGS can help take up treatment of about 30% more land than feasible with the current scheme size since, as of now, there is a Central allocation of ₹8,134 crores only for developing 4.95 million hectares.

❖ **Government commitments related to combat desertification?**

- In 2019, the government raised its target of restoration of degraded land from 21 million hectares to 26 million hectares by 2030 following a commitment made during the UN Convention to Combat Desertification(COP14).
- However, even after three years, the government is nowhere near this target.
- Though the Ministry has been making efforts to contribute towards meeting the international commitment, the constraints posed on the economy by the pandemic restricted the target to 4.95 million hectares by 2025-26.
- Therefore, there is a compelling reason to explore alternative opportunities to fulfill the commitment.

❖ **What is desertification?**

- As per UNCCD, 'Desertification is the **degradation of land in arid, semi-arid and dry sub-humid areas**. It is caused primarily by human activities and climatic variations.'

❖ **Various Causes of Desertification:**

- **Overgrazing:** Overgrazing makes it difficult for the plants to grow back, which hurts the biome and makes it lose its former green glory which results in the formation of desert biomes.
- **Green Revolution:** Practices that were the core of green revolution, such as chemical fertilizers, mechanized tillage, excessive irrigation and intense monoculture have altered the structure of the soil, leading to its salinization and subsequent degradation.
- **Overdrafting of groundwater:** Over drafting is the process in which groundwater is extracted in excess of the equilibrium yield of the aquifer that is pumping or the excessive pulling up of groundwater from underground aquifers causing desertification.
- **Urbanization and Other Types of Land Development:** Clearing of forests and green cover for urbanization and developmental activities aggravates the effect of natural elements of erosion on the soil. For eg: The degradation of Aravalli hills, due to the clearing of natural vegetation for real estate.
- **Climate Change:** Climate change plays a huge role in desertification. As the days get warmer and periods of drought become more frequent, desertification becomes more and more imminent.
- **Stripping the Land of Resources:** Mining of resources from the land usually strips the soil of nutrients, which in turn kills the plant life, and eventually leads to the process of becoming a desert biome as time goes on.
- **Natural Disasters:** There are some cases where the land gets damaged because of natural disasters, including drought. In those cases, there isn't a lot that people can do except help rehabilitate the land after it has already been damaged by nature.

- **Soil Pollution:** Soil pollution is a significant cause of desertification. When soil becomes polluted due to various human activities, the respective area of land may suffer from desertification in the long run. The higher the level of pollution more will be the degradation of soil over time.
- **Overpopulation and excessive consumption:** As the world population is continuously growing, the demand for food and material goods is also increasing at an alarming rate leading to exhaustion above the carrying capacity of the land.
- ❖ **International Efforts to combat desertification:**
- **United Nations Convention to Combat Desertification (UNCCD):**
 - It is the sole legally binding international agreement linking environment and development to sustainable land management which was established in 1994.
 - India is a signatory to the UNCCD and is committed to achieve a land degradation neutral status by 2030.
 - The Ministry of Environment, Forest, and Climate Change (MoEFCC) is the Nodal Ministry to oversee the implementation of the Convention in the country.
- **The Bonn Challenge:** It aims to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.
- **Land Degradation Neutrality(LDN) fund:** The LDN Fund is a first-of-its-kind investment vehicle leveraging public money to raise private capital for sustainable land management and landscape restoration activities worldwide that contribute to the achievement of land degradation neutrality.
- ❖ **Steps taken by the Indian Govt to Prevent Land Degradation:**
- **Desert Development Program:**
 - It was launched in 1977-78 to minimize the adverse effect of drought and control desertification through rejuvenation of natural resources of the identified desert areas.
 - It was launched to achieve ecological balance, promote overall economic development and improve the socio-economic conditions of such areas.
- **Integrated Watershed Management Program:**
 - It was launched in 2009-10 and implemented by the Department of Land Resources of the Ministry of Rural Development to restore ecological balance by conserving natural resources such as water, soil, and vegetative cover.
 - After 2015, this scheme became a part of the umbrella scheme Pradhan Mantri Krishi Sinchai Yojana under NITI Aayog.
- **National Afforestation Program:**
 - It was launched in 2000-01 under the Ministry of Environment, Forest and Climate Change (MoEFCC) for the ecological restoration of degraded forests areas and to develop the forest resources with the participation of people, with a focus on improvement in livelihoods of the forest communities.
- **National Mission for Green India:**
 - It was launched in 2014 with the objective of protecting biological resources against the adverse effect of climate change and recognizing the vital impact of forests on ecological sustainability, biodiversity conservation, and livelihood security.
 - It aims to protect, restore and enhance India's diminishing forest cover within 10 years.
- **Drought Prone Area Program (DPAP):**
 - It was the earliest area development program launched by the Government of India in 1973-74 with the basic objective of minimizing the adverse effects of drought on the production of crops, livestock, and productivity of land which ultimately leads to drought-proof areas.
- **Sustainable Land and Ecosystem Management Program:**
 - It is a joint initiative of the Government of India and the Global Environment Facility (GEF).
 - It aims to contribute to poverty alleviation in India by effective use of natural resources, by improving the productivity of land and ecosystem, and by protecting from extreme weather events, such as climate change.
 - One of its objectives is to control land degradation by restoration of degraded lands and biomass cover and make sustainable use of natural resources.

PRELIMS

1. **Focused operations of the Railway Protection Force**
- ❖ **Context:** In furtherance of the pledge of "Sewa Hi Sankalp" by RPF, a pan India month long drive under the code name SAMSAR (SAMAJIK SAROKAR) incorporating the elements of several focused operations were conducted

- Operation SEWA: With a view to provide safe and comfortable journey, RPF personnel assist the elderly citizens, women, physically disabled and provide amenities like wheelchairs, stretchers, medical help, ambulances, Infant food etc. under operation “SEWA”.
- Operation Dignity: RPF has played an important role in rescuing persons lost or having run away from their homes or disoriented due to certain reason or distressed and in need of care and protection.
 - They are vulnerable for getting exploited or trafficked and are under the risk of serious bodily harm, if not secured in time.
 - The force personnel worked to provide timely intervention under code name “Operation Dignity”.
- Operation Nanhe Fariste: RPF personnel under the code name “Operation Nanhe Fariste” undertake the cause of identifying and rescuing children lost/runaway/separated from their family due to various reasons and in need of care & protection.
- Mission Jeevan Raksha: RPF personnel go beyond the call of duty risking their own lives to save other lives. They help in preventing incidents such as:
 - When passengers trying to board/de-board a moving train, they can slip and fall with the risk of coming under the wheels of running train.
 - The individuals with suicidal tendency come in front of running train with intention to end their lives.
 - RPF personnel lookout for such cases and intervene in the nick of time to save precious lives under mission “Jeevan Raksha”.
- Operation Matrishakti: RPF personnel, especially lady RPF personnel, go out of the way to help pregnant women passengers, experiencing labor pain during their train journey under “Operation Matrishakti”.

2. **Laboratory for Conservation of Endangered Species (LACONES)**

- In 2007, the Indian government set up a spanking new Laboratory for Conservation of Endangered Species (LACONES) on the outskirts of Hyderabad.
- The laboratory had the mandate of resurrecting extinct animals, including cheetahs.
- LaCONES is a Council of Scientific and Industrial Research conceptualised by Lalji Singh.
- It is India's only research facility engaged in conservation and preservation of wildlife and its resources.
- It is a dedicated Laboratory of CSIR's Centre for Cellular and Molecular Biology (CCMB)
- India's 1st genetic bank for wildlife conservation National wildlife genetic resource bank established by the government in lacones
- It is the only laboratory in India that has developed methods for collection and cryopreservation of semen and oocytes from wildlife and successfully reproducing endangered blackbuck, spotted deer and Nicobar pigeons.
- While setting up the laboratory, Lalji Singh and S. Shivaji had cited success in artificial insemination in some animals.
- However, the laboratory's effort to secure germplasm from Iranian cheetahs, considered the closest genetic match to Indian cheetahs, for their breeding programme, did not succeed.

3. **YUVA 2.0**

Context: Recently, the Ministry of Education, Department of Higher Education, has launched YUVA 2.0 - Prime Minister's Scheme for Mentoring Young Authors.

- It is an Author Mentorship programme to train young and budding authors (below 30 years of age) in order to promote reading, writing and book culture in the country, and project India and Indian writings globally.
- The launch of YUVA 2.0 (Young, Upcoming and Versatile Authors) is in tune with the Prime Minister's vision to encourage the youth to understand and appreciate India's democracy.
- YUVA 2.0 is a part of India@75 Project to bring to the fore the perspectives of the young generation of writers on the THEME : ‘Democracy (institutions, events, people, constitutional values – past, present, future)’ in an innovative and creative manner.
- This scheme will help to develop a stream of writers who can write on a spectrum of subjects to promote Indian heritage, culture and knowledge system.
- The National Book Trust, India, under the Ministry of Education as the Implementing Agency will ensure phase-wise execution of the Scheme under well-defined stages of mentorship.

- The books prepared under this scheme will be published by National Book Trust, India, and will also be translated into other Indian languages.
- 4. Swachh Survekshan Ranking 2022**
- ❖ **President Droupadi Murmu has recently presented awards as part of Azadi@75 Swachh Survekshan 2022.**

Ranking cleanliness

The tables list the top six urban local bodies (ULBs) and the best performing States according to Swachh Survekshan, 2022. Indore retained the tag of India's cleanest city for the sixth consecutive time, while Madhya Pradesh is ranked first among States

Ranking of urban local bodies (with more than 1 lakh population)

City	State	Rank
Indore	Madhya Pradesh	1
Surat	Gujarat	2
Navi Mumbai	Maharashtra	3
Visakhapatnam	Andhra Pradesh	4
Vijayawada	Andhra Pradesh	5
Bhopal	Madhya Pradesh	6

Source: Swachh Survekshan 2022

Best performing States (>100 ULBs)

Rank	State
1	Madhya Pradesh
2	Chhattisgarh
3	Maharashtra

(< 100 ULBs)

1	Tripura
2	Jharkhand
3	Uttarakhand



- Swachh Survekshan is a Competitive Monitoring Framework for accelerating Hygiene outcomes in Urban India.
- The mission started in 2014 by vision of a Swachh Bharat within the timeframe of five years.
- A framework is to bring competition amongst cities and States to improve their performance in cleanliness.
- It helps India to achieve the goal of sustainable sanitation and waste management.
- The 'Prerak DAUUR Samman' is a new award category, given based on performance of cities.
- This Samman will be given to cities for five levels of achievement in Swachhata :
 - ✓ Divya (Platinum)
 - ✓ Anupam (Gold)
 - ✓ Ujjwal (Silver)
 - ✓ Udit (Bronze)
 - ✓ Aarohi (Aspiring)
- The annual cleanliness survey is conducted by the Ministry of Housing & Urban Affairs (MoHUA).

5. Nobel Prize in Chemistry

- ❖ **Context:** The Nobel Prize in Chemistry 2022 has gone to Carolyn R Bertozzi, Morten Meldal and K Barry Sharpless, the latter winning the second Nobel of his career.
- The three have been awarded for their work in 'click chemistry', in which molecules snap together fast and firmly, without the need for a long, complicated process and too many unwanted byproducts.
- Their work has applications in the field of medical science, including the treatment of cancer.

❖ What is click chemistry?

- Chemists often try to recreate complex chemical molecules found in nature, and this has applications, among other things, in the field of medicine – how to target and block pathogens in cells.
- However, this process can be complicated and time-consuming.
- Instead of trying to wrangle reluctant carbon atoms into reacting with each other, Barry Sharpless encouraged his colleagues to start with smaller molecules that already had a complete carbon frame.
- If chemists choose simple reactions – where there is a strong intrinsic drive for the molecules to bond together – they avoid many of the side reactions, with a minimal loss of material.
- Sharpless called this robust method for building molecules click chemistry, saying that even if click chemistry cannot provide exact copies of natural molecules, it will be possible to find molecules that fulfil the same functions.

6. OPEC+

- ❖ **Context:** The grouping of the world's largest oil-producing countries, the Organisation of the Petroleum Exporting Countries (OPEC) and its allies, together known as OPEC+, decided to cut oil production by 2 million barrels per day (bpd).
- Established in 1960 by founding members Iran, Iraq, Kuwait, Saudi Arabia and Venezuela, OPEC has since expanded and now has 13 member states.

- With the addition of another 11 allied major oil-producing countries that include Russia, the grouping is known as OPEC+.
- The objective of the organisation is to coordinate and unify the petroleum policies of its Member Countries and ensure the stabilisation of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry
- Previously controlled by western-dominated multinational oil companies known as the “Seven Sisters,” OPEC sought to give the oil-producing nations greater influence over the global petroleum market.
- They account for roughly 40 per cent of the world’s crude oil and 80 per cent of the globe’s oil reserves, according to estimates from 2018.
- They usually meet every month to determine how much oil the member states will produce.

ANSWER WRITING

Q. Even though Ayurveda is currently gaining popularity, there are still certain impediments. Discuss.

Introduction

Ayurveda, India’s traditional medicine, has been in practice for close to 3,000 years and has been serving the healthcare needs of millions of Indians. Currently, it is greatly emphasised by the present government through various programmes and schemes like National Ayush Mission, Aahaar Kranti Mission, New Portals on Ayush Sector, ACCR Portal and Ayush Sanjivani App, etc.

Challenges faced by Ayurveda in the Modern World

- **Outdated Ideas:** On benefits of physical exercise, Ayurveda states “A sense of ease, improved fitness, easy digestion, ideal body-weight, and handsomeness of bodily features are the benefits that would accrue from regular exercise.” However, such continued validity cannot be claimed for the physiological and pathological conjectures the same text contains.
- **Ineffective Treatment in Emergency Cases:** The inadequacies of Ayurveda in treating acute infections and other emergencies including surgery, and lack of meaningful research in therapeutics continue to limit the universal acceptance of Ayurveda. Ayurveda therapeutics are complex and there are too many dos and don’ts.
- **Lack of Homogeneity:** The medical practices in Ayurveda are not uniform. It is because the medicinal plants used in it vary with geography and climate and local agriculture practices. Unlike Ayurveda, in modern medicine, the diseases are classified and treated as per prior set uniform criteria.
- **Misleading Propaganda by Ayurvedic Pharmas:** The Ayurvedic pharmacopeia industry claimed that its manufacturing practices were consistent with the classic Ayurveda texts. For better market appeal of ayurvedic medicines, the pharmaceutical companies publicized many medicinal claims about their ayurvedic products without sufficient scientific basis. This led to further obsession for drugs in the community and ailments requiring lifestyle correction were instead treated with poly-pharmacy.

Way Forward

- **Reverse Pharmacology:** It is defined as the science of integrating documented clinical experiences and experiential observations into leads, through transdisciplinary exploratory studies, to develop these into drugs.
- **New Millennium Indian Technology Leadership Initiative (NMITLI):** It seeks to build, capture and retain for India a leadership position by synergising the best competencies of publicly funded R&D institutions, academia and private industry.
- **Emulating Kerala Model:** Kerala has been promoting Ayurveda as a way of improving immunity in the general population. It promotes Ayurvedic formulations and recommends Ayurveda practices to all demographics of its population.

MCQs

1. Consider the following about United Nations Convention to Combat Desertification (UNCCD):
 1. It is a legally binding international agreement concerning sustainable land management.
 2. It encourages the participation of local people in combating desertification and land degradation.
 3. It is concerned with the management of only desert ecosystems.
 Which of the statements given above is/are correct?
 a) 1 only b) 1 and 2 only c) 2 and 3 only d) All of the above
2. With reference to desertification/land degradation in India, consider the following statements:
 1. Gujarat has a higher area under desertification/land degradation than Maharashtra.
 2. Haryana has more than 40% area under desertification/land degradation due to faulty agricultural practices.
 3. The most significant process of desertification/land degradation in the country is vegetation degradation.
 4. India aims to achieve land degradation neutrality by 2030.

Which of the statements given above are correct?

- a) 1 and 3 only **b) 4 only** c) 2 and 4 only d) 2, 3 and 4 only
3. Which one of the following statement/s with regard to the National Rural Employment Guarantee Act, 2005 is/are not correct?
1. It ensures 175 days of employment to needy persons in rural areas.
 2. It gives higher wages to women workers.
 3. People are generally given both skilled and unskilled jobs.
 4. This is implemented only in rural areas of India.
- Choose the correct answer using the codes given below
- a) 1 and 2 only b) 1 and 4 only c) 2 and 4 only **d) 1,2 and 3 only**
4. The main emphasis of OPEC (Organisation of the Petroleum Exporting Countries) is on which of the following?
- a) The production of petroleum
 - b) Control over prices of petroleum
 - c) Both (a) and (b)**
 - d) None of the above
5. The Nobel Prize for Physics in 2022 was awarded for research in 'Bell Inequalities'. This term is primarily related to which of the following?
- a) Quantum physics**
 - b) Astronomical distances
 - c) Semiconductor and chips
 - d) Photoelectricity
6. Consider the following pairs
1. Operation SEWA - Rescuing lost persons
 2. Operation Dignity - Elderly citizen
 3. Operation Matrishakti - Pregnant women
 4. Operation Nanhe Fariste- Children
- How many above pairs are correctly matched?
- a) Only one pair
 - b) Only two pairs**
 - c) Only three pairs
 - d) All the four pairs
7. Which of the following city top the rank in swachha sarvekshan 2022
- a) Indore**
 - b) Bhopal
 - c) Vijayawada
 - d) Surat
8. Recently YUVA 2.0 scheme has been launched by which ministry?
- a) Ministry of Home affairs
 - b) Ministry of Sports and Youth Affairs
 - c) Ministry of Finance
 - d) Ministry of Education**
9. With reference to Laboratory for Conservation of Endangered Species (LaCONES) consider the following
1. It is the only laboratory in India that has developed methods for collection and cryopreservation of semen and oocytes from wildlife
 2. It successfully reproducing endangered blackbuck, spotted deer and Nicobar pigeons.
- Choose the correct statement using the codes given below
- a) 1 only b) 2 only **c) Both 1 and 2** d) Neither 1 nor 2
10. Consider the following statements regarding Click Chemistry:
1. It is a functional field of chemistry where molecules snap together quickly and efficiently like a click.
 2. A reaction should be able to occur in the presence of oxygen and in water for it to be called that of click chemistry.
- Which of the above statement/s is/are correct?
- a) 1 only b) 2 only **c) Both 1 and 2** d) Neither 1 nor 2