

SOCIAL JUSTICE

Aligning higher education with the United Nations SDGs

Context: United Nations Sustainable Development Goals (SDGs) are a set of 17 goals with 169 targets that all 193 UN member states have agreed to try to achieve by 2030.

Details

SDG and their progress:

- The SDGs are a matter of urgency, and activities by all countries, both developed and developing, to eradicate poverty and other socioeconomic and environmental concerns should be aligned with initiatives that improve living and education standards, reduce inequality, and harness economic growth.

SUSTAINABLE DEVELOPMENT GOALS



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- Despite the fact that these goals have been in place for eight years, the SDGs Report 2023 highlighted slow progress and depicted a bleak image due to the long-term repercussions of COVID19, the implications of the climate crisis, the Russia-Ukraine conflict, and a weak global economy. The lack of progress toward the goals is global, but it is especially obvious in the Least Developed Countries (LDCs).

Case of India:

- Despite managing the global economic crises and conquering the hurdles given by the epidemic, India has experienced a setback in accomplishing these goals. The NEP 2020 and the SDGs Nonetheless, recent acts and policies show that India is committed to achieving the SDGs.
- The fourth Sustainable Development Goal (SDG 4) is about access to quality education. It is a prerequisite for achieving other objectives. With a long history of egalitarian and inclusive education, India has escalated efforts to ensure SDG achievement through different reforms. To a large measure, the National Education Policy (NEP) 2020 should be credited.

The significance of higher education:

- The NEP 2020 has been designed to align with the majority of the SDGs. Though NEP 2020 asks for changes at all levels of education, higher education should be prioritized since it promotes social mobility, empowers people via creativity and critical thinking, and provides them with job skills.
- People with a higher education degree are more employable and earn 54% more than those with only a senior secondary education, according to data from the Organization for Economic Cooperation and Development (OECD).

Key role of SDG 4:

- An inclusive and quality education better protects people against poverty (SDG1), prevents them from hunger (SDG2), supports them for good health and wellbeing (SDG3), promotes gender

equality (SDG5), provides them decent work, which in turn drives economic growth (SDG 8), and reduces inequalities (SDG10).

- Universities should strengthen the research-teaching nexus in university education. Multidisciplinary and interdisciplinary systems of education produce multitalented people who can pursue research, and find innovative solutions to global challenges such as affordable and clean energy (SDG7), sustainable cities and communities (SDG11), climate change and global warming (SDG13), as well as studying their impact on an economy and the earth.
- Sustainable development is possible only if we radically change the way we produce and consume (SDG12). Innovative solutions and startups (SDG 9) must be developed in collaboration with private companies.
- Introducing Value- Based Education (VBE) will help citizens become responsible towards self, society, and the planet and help our nation achieve “Life on Land” (SDG15).

Suggestions

- NEP 2020 requires Indian higher education to commit to aligning its day-to-day operations with the SDGs. Ranking institutions based on SDG accomplishment is a great step, but it is still insufficient to reach the SDG deadline.
- Universities should emerge revitalized and ready to contribute to their communities' education, innovation, culture, and civic life. Community health, energy conservation, efficient resource allocation, waste reduction, development of local skills, and sharing of services, infrastructure, and facilities with other universities or external partners should create a university culture.

Conclusion:

- Higher education cannot function in isolation; rather, it must be directly connected with socioeconomic growth, with each activity and transaction having meaningful and multiple consequences on the SDGs. Every citizen must believe that colleges directly contribute to their well-being and nation-building.

INTERNATIONAL RELATIONSHIP

Arc of India's tie with Israel

Context: Recently, Hamas, the militant group ruling the Gaza Strip, mounted one of the most audacious attacks on Israel and many have called it the worst inside the Jewish state's territory since its creation in 1948.

Indian Prime Minister Narendra Modi expressed shock and called “terrorist attacks” and conveyed “solidarity with Israel”.

The establishment of India-Israel relations after independence

- India's political attitude toward Israel was firmly established shortly after independence in 1947, when Jawaharlal Nehru and Mahatma Gandhi swore to assist the Palestinian cause because they rejected the concept of two nations based on religion.
- While they both sympathized with Jews, they also believed that any State founded on religious exclusivity could not be sustained on moral and political grounds.
- The overall agreement in the Arab world, the Non-Aligned Movement, and the United Nations also influenced India's approach on Palestine.
- When the partition of Palestine plan was presented to a vote at the UN, India, along with the Arab countries, voted against it. India voted once more against Israel's membership to the UN.
- New Delhi, on the other hand, recognized Israel on September 17, 1950, following the lead of two Muslim-majority countries, Turkey and Iran. Israel was granted permission to open a consulate in Mumbai in 1953, but no diplomatic presence was authorized in New Delhi.
- India recognized the PLO as the sole and legitimate representative of the Palestinian people on January 10, 1975, and granted it an independent office in New Delhi.
- India was one of the last non-Muslim countries to recognize Israel, but it was the first non-Arab country to recognize the PLO.

During the reigns of Indira and Rajiv Gandhi

- During the tenure of Indra Gandhi, India elevated the PLO office to the status of an embassy, with full diplomatic immunity and privileges.
- When the NAM summit met in India in March 1983, it issued a strong statement of solidarity for Palestine. After a state visit to Libya, Prime Minister Indira Gandhi paid a visit to Arafat's headquarters in Tunis in April 1984.

- Then-Prime Minister Rajiv Gandhi supported India's policy toward Palestine, and throughout the commencement of the Palestinian intifada (uprising) in December 1987 in Gaza and the West Bank as a result of Israel's 'iron fist' tactics, India maintained its unwavering support.

Changing dynamic of India-Israel relation

- However, by this time, there were critics of New Delhi's Palestine policy and its outright support to the Arab world within India.
- The Arab countries' neutral position during the 1962 India-China war and their support to Pakistan during the 1965 and 1971. On the other hand, Israel helped India with arms and ammunition in the 1962 and 1965 wars.
- Things changed in West Asia when Iraq invaded Kuwait in August 1990. The PLO lost its political leverage on account of its support to Saddam Hussain. Around that time, the Soviet Union disintegrated, and this prompted India to make drastic changes in its policy towards West Asia.
- It established full diplomatic relations with Israel in January 1992, days after the Chinese established diplomatic relations with Tel Aviv.

India's Military ties with Israel

- The establishing of full diplomatic ties with Israel came in especially handy during the Kargil conflict in 1999.
- The Indian Air Force desperately needed precision target bombs as Pakistani intruders were hiding in caves and bunkers atop mountains in Kargil.
- The IAF reached out to their Israeli counterparts, who wasted no time. They are understood to have dug into their emergency stockpiles and shipped the weapons to India, which proved to be decisive in the hour of need.
- After this, the Vajpayee government sent Foreign minister Jaswant Singh for the first bilateral visit in 2000. Home minister L K Advani visited Israel in the summer of 2000, followed by more high-profile visits.
- During PM Modi's visit to Israel in 2017 — the first Prime Ministerial visit and he skipped the customary stop at Palestine, which was the norm with previous ministerial visits.
- And later the Prime Minister visited Saudi Arabia, Iran, Qatar, UAE — all regional rivals of Israel — between 2014 and 2017, before the trip to Israel. New Delhi hosted Palestinian President Mahmoud Abbas in May 2017. In all public pronouncements, South Block officials-maintained India's position on its support towards the Palestinian cause.
- Modi later visited Palestine in February 2018, but didn't visit Israel — achieving a complete dehyphenation of the ties.

Over the last decade,

- Security, defense, and connectivity ties have grown over the previous decade, not only with Israel, but also with West Asian countries such as Saudi Arabia, Egypt, Qatar, and Iran.
- The Indian strategic approach of engaging with all parties in the complicated West Asian region arose from necessity: the region's 90 lakh-strong Indian diaspora and proximity to West Asia and Europe. Importantly, more than half of India's energy imports come from West Asia.

Conclusion:

- The weekend's tragic surprise strikes have left India in a diplomatic bind. This is because the current antagonism puts the Abraham Accords and attempts toward reconciliation between Saudi Arabia and Israel, which held the possibility of restructuring age-old fault lines in the Middle East, to the test. India hoped to reap the benefits of the region's newfound calm.

PRELIM FACTS

1. Sarakka Central Tribal University Approved for Telangana

Context: The Union Cabinet has approved the Sarakka Central Tribal University in Telangana, which is named after Sammakka-Sarakka, a respected tribal figure in the state.

About

- Sammakka-Sarakka (also known as Medaram Jatara) is the second-largest fair in India, after the Kumbh Mela, and is held for four days by Telangana's second-largest tribal community, the Koya tribe.
- It is a tribal event commemorating a mother and daughter, Sammakka and Saramma, who fought alongside the reigning kings against an unfair legislation.

- Medaram is a secluded location within the Eturnagaram Wildlife Sanctuary, which is part of Dandakaranya, the region's largest surviving forest belt.
- It is observed once every two years on the full moon day in the month of "Magha" (February).
- The Koya tribe is Telangana's largest adivasi group and is a Scheduled Tribe.
- The Telugu-speaking states of Telangana and Andhra Pradesh are home to the community.
- Koyas popularly call themselves as Dorala Sattam (Lords group) and Putta Dora (original lords). Koyas call themselves "Koitur" in their dialect, like Gonds.

2. Enzyme Mimetic to Degrade Pollutants in Waste-Water

Context: Recently, Scientists at Indian Institute of Science (IISc) Materials Research Centre developed a sunlight-driven enzyme mimetic for wastewater treatment.

About:

- The study introduced a platinum-containing nanozyme called NanoPtA.
- NanoPtA forms tape-like structures when in contact with wastewater and emits light to degrade pollutants.
- It can degrade common effluents in ten minutes under sunlight and remains stable for up to 75 days.
- Nanozyme may find applications in healthcare, particularly for neurological diseases.
- Natural enzymes face limitations like sensitivity, complex production, and storage issues.
- Nanozymes can overcome these challenges and mimic natural enzymes.

3. Using Gravity to Solve Power's Problem

Context: With the support of Energy Vault, which is in talks with Indian enterprises such as NTPC, Tata Power, and ReNew Power, gravity-based energy storage is emerging as a solution to renewable energy intermittency and interruption.

About

- Energy Vault provides the EVx platform, which stores and releases energy using 25-tonne blocks using gravity and mechanical elevators.
- It also emphasizes short-term storage, environmentally friendly materials, and green hydrogen energy storage.
- India's quest for renewable energy necessitates the use of energy storage, as the country's renewable energy expansion poses issues for grid administrators.
- The majority of energy storage worldwide is provided by pumped hydro, however different options are being investigated.
- For energy storage, the Indian government is studying hydrogen and hybrid generation options.
- Efforts are being made to find potential pumped hydro locations, such as opencast mines.

4. 15-Minute Cities and the Conspiracy Theories

Context: Conspiracy theories have recently surfaced online, wrongly portraying 15-Minute Cities as a dismal plot to restrict people's movement, and conspiracy theorists have linked 15-Minute Cities to authoritarian goals and international organizations such as the World Economic Forum.

About

- The term "15-minute cities" was coined by Carlos Moreno in 2016 to reimagine urban planning for convenient access to essential services.
- The concept of 15-minute cities aims to ensure that essential services are within a short walk or bike ride from one's home.
- Low-traffic neighborhoods (LTNs) are often linked to 15-minute cities and are seen by conspiracy theorists as part of a broader "war on drivers."

5. FISCHER-TROPSCH PROCESS

Context: The Fischer-Tropsch process discovery made by Washington State University researchers has important implications for boosting fuel production efficiency.

About

- The Fischer-Tropsch process is a catalytic chemical reaction that converts carbon-based feedstocks such as coal, natural gas, or biomass into liquid hydrocarbons that can then be processed into a variety of fuels and chemicals.
- For than a century, this process has been of great economic relevance, and it continues to be a subject of research and development due to its potential in satisfying energy and chemical production needs while lowering greenhouse gas emissions.

History and Background:

- **Origins:** The Fischer-Tropsch process is named after its inventors, Franz Fischer and Hans Tropsch, who developed it in the 1920s in Germany.
- **World War II:** During World War II, the process played a crucial role in Germany's synthetic fuel production when access to conventional oil was limited.

Basic Chemistry:

- **Feedstocks:** Fischer-Tropsch reactions can use a variety of feedstocks, including coal, natural gas, and biomass, as sources of carbon.
- **Reaction Steps:** The process involves a series of chemical reactions that convert carbon monoxide (CO) and hydrogen (H₂) into longer-chain hydrocarbons, such as paraffins and olefins.

Catalysts:

- **Catalysts:** Catalysts play a critical role in Fischer-Tropsch reactions. Common catalysts include iron, cobalt, and ruthenium-based materials.
- **Catalytic Mechanisms:** Understanding the catalytic mechanisms is essential for optimizing the process. The exact mechanisms can vary depending on the catalyst used.

Product Yields and Selectivity:

- **Product Spectrum:** Fischer-Tropsch reactions produce a range of hydrocarbon products, from light gases (e.g., methane) to heavier liquids (e.g., waxes).
- **Selectivity:** The choice of catalyst and process conditions can influence the selectivity towards specific products. Researchers aim to maximize the yield of desired liquid fuels.

Applications:

- **Fuel Production:** Historically, the Fischer-Tropsch process has been used for the production of synthetic fuels, such as gasoline, diesel, and aviation fuels.
- **Chemical Industry:** It is also utilized to produce a variety of chemical feedstocks and specialty chemicals.
- **Environmental Considerations:** Fischer-Tropsch can be part of strategies to reduce carbon emissions by converting coal or natural gas into cleaner-burning fuels.

6. WATERMEAL

Context: Watermeal, the tiniest flowering plant on Earth, has been studied by scientists at Thailand's Mahidol University as a source of nutrition and oxygen for astronauts.

Details

- Watermeal, the tiniest flowering plant on the planet, is being studied by experts at Thailand's Mahidol University as a potential source of nutrition and oxygen for astronauts.
- This study was carried out in conjunction with the European Space Agency's (ESA) ESTEC technical center in the Netherlands.

About

- Watermeal, a member of the genus Wolffia, is known as the smallest blooming plant on the planet.
- It is a type of aquatic plant that can be found floating on the surface of still bodies of water including ponds, lakes, and slow-moving streams.
- Despite its small size, watermeal plays an important function in aquatic ecosystems and has received attention for potential applications outside of its natural habitat.

7. NATIONAL WATERWAYS-44

Context:

The dredging work at National Waterway 44 (Ichamati River) in West Bengal was recently inaugurated by the Minister of State for Ports, Shipping, and Waterways.

Details

- Dredging is under place from Tentulia to Kalanchi, a distance of 23.38 kilometers. The goal is to reach a navigational depth of 1.5 meters, which is required for safe river passage.
- This dredging project's major goal is to enhance navigational depth, which is critical for increasing tidal effect in the Ichamati River.
- Prior to dredging, efforts were conducted to clear the river of numerous impediments such as water hyacinth, weeds, waste debris (including plastic and non-plastic materials), and natural and artificial (dumped materials).

- This project is part of the Indian government's larger efforts to promote and improve inland water transport, which is seen as an efficient and environmentally beneficial means of transportation.
- It is expected to have a positive impact on regional trade and transportation in the area.

About National Waterways-44 (Ichamati River)

- The Ichamati River flows through both India and Bangladesh, forming a natural boundary between the two nations for much of its length.
- The river is split into three sections. The Mathabhanga River, a distributary of the Padma River (a major river in Bangladesh), is the source of the river's lengthier section. This portion of the Ichamati River runs for around 208 kilometers.
- The Ichamati River's main channel finally meets the Kalindi River. This confluence occurs in Hasnabad in West Bengal's North 24 Parganas district and Debhata in Bangladesh's Satkhira district.
- In the North 24 Parganas district near Bangaon, the Ichamati River and its tributaries have formed a major oxbow lake complex. Oxbow lakes arise when the flow of a river changes over time, leaving behind curved or horseshoe-shaped water formations.

8. ATMOSPHERIC PERTURBATIONS AROUND THE ECLIPSE PATH

Context: NASA has announced plans for a 'sounding rocket mission' to launch three rockets during this year's solar eclipse on October 14.

Details

- NASA's APEP (Atmospheric Perturbations around the Eclipse Path) program is intended to launch three rockets on October 14, 2023, during the solar eclipse.
- Aroh Barjatya, an engineering physics professor of Indian descent at Embry-Riddle Aeronautical University, is leading the project, which will investigate the influence of a rapid decrease in sunlight on the Earth's atmosphere.
- The APEP project investigates how a solar eclipse's abrupt decrease in sunlight affects the Earth's atmosphere, specifically the ionosphere.
- The ionosphere is a portion of the Earth's upper atmosphere that is important in many ways, including satellite communications.

Eclipse of the Ring of Fire

- A "Ring of Fire" eclipse, also known as an annular solar eclipse, is a spectacular celestial occurrence that occurs when the Moon partially obscures the Sun, resulting in a bright ring-like appearance of sunlight around the Moon's edges.
- This occurs when the Moon is at a somewhat distant position in its elliptical orbit around Earth, appearing smaller than the Sun's disk.
- As a result, the Sun is not completely veiled during the eclipse, and a brilliant ring of sunlight encircles the Moon.

ANSWER WRITING

Q. What are the most serious threats to India's biodiversity? How might the concept of biodiversity hotspots aid in the conservation of the country's rich and diversified flora and fauna? (250 words)

Introduction

- Biodiversity is defined as the variety and variability of life forms at all levels of biological organization, including genes, species, and ecosystems. Biodiversity is critical for ecological balance, ecosystem services, supporting livelihoods, and improving human well-being. India is one of the world's megadiverse countries, accounting for around 8% of global biodiversity.

Biodiversity in India is facing several threats, such as:

- Habitat loss and fragmentation due to deforestation, urbanization, mining, agriculture, infrastructure development, etc., which reduce the area and quality of natural habitats and create barriers for wildlife movement and gene flow.
- Overexploitation and unsustainable use of biological resources, such as hunting, poaching, logging, fishing, grazing, etc., which deplete the population and genetic diversity of species and affect their survival and reproduction.
- Invasive alien species, such as lantana, parthenium, water hyacinth, etc., which compete with native species for resources, alter the habitat structure and function, and introduce diseases and parasites.

- Pollution and climate change, which degrade the environmental quality and affect the physiological and behavioural responses of species to changing temperature, precipitation, sea level, etc.

Biodiversity hotspots can help in conserving the rich and diverse flora and fauna:

Endemism and species richness:

- Biodiversity hotspots are distinguished by a high density of species, including many endemic species found nowhere else on the planet. These places frequently host a broad assortment of plants, animals, and microbes, making them important genetic diversity repositories. We safeguard these rare and important species by protecting hotspots.

Conservation of Habitat:

- Biodiversity hotspots include habitats such as forests, grasslands, wetlands, and coastal areas. These environments supply vital resources and ecosystem services that are required for the survival of several plant and animal species. Conserving hotspots ensures that entire habitats are preserved, reducing habitat loss and fragmentation, which can lead to species decline or extinction.

Protection of Endangered Species:

- Biodiversity hotspots frequently house a large number of endangered and severely endangered species. We can target individual species at risk of extinction by focusing conservation efforts on these hotspots. Protective measures such as habitat restoration, anti-poaching campaigns, and captive breeding programs can help protect these endangered species.

Resilience of Ecosystems:

- Hotspots are crucial not only for individual species, but also for ecosystem health and resilience. The interconnection of species inside hotspots creates intricate ecological connections and contributes to the stability of ecosystems. We assist maintain the ecological balance and functioning of these systems by protecting hotspots, which benefits both flora and animals.

Conclusion

- Thus, by recognizing and protecting these biodiversity hotspots, India can conserve its rich and diverse flora and fauna and contribute to global biodiversity conservation.

MCQs

1. Consider the following statements regarding Fischer – Tropsch (FT) process, recently seen in the news:
 1. It is the process of converting synthesis gas (H₂ and CO) into hydrocarbons.
 2. It is frequently a catalytic reaction that occurs at high temperatures and pressures.
 Which of the above statements is/are correct?
 - (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2**
 - (d) Neither 1 nor 2
2. Consider the following statements in relation to the Payments Infrastructure Development Fund (PIDF) Scheme:
 1. It is managed by the Reserve Bank of India (RBI) to aid in the development of the country's payment acceptance infrastructure.
 2. It lends money to banks and non-bank financial businesses (NBFCs) to help them install point-of-sale (PoS) terminals.
 Which of the above statements is/are correct?
 - (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2**
 - (d) Neither 1 nor 2
3. Consider the following statements in relation to the National Means-Cum-Merit Scheme (NMMSS):
 1. It is a government-sponsored scholarship program for deserving pupils.
 2. The scheme is open to all students in public and private schools.
 3. To choose students for the scholarship, each state and union territory administers its own test.
 How many of the above statements are correct?
 - (a) Only one
 - (b) Only two**

- (c) All three
(d) None
4. Epithemiswayanadensis, which has recently made headlines, is a:
(a) dragonfly
(b) frog
(c) spider
(d) snake
5. Consider the following statements about protein binders:
1. They are utilized as ingredients in the production of food goods.
2. They have an impact on the biological and nutritional value of milk proteins.
Which of the above statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
6. With reference to the Asia-Pacific Institute for Broadcasting Development (AIBD), consider the following statements:
1. It was founded under the aegis of the World Economic Forum.
2. This organization was founded by India.
Which of the above statements 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 Watermeal:
1. It is a rootless free-floating aquatic plant.
2. It thrives in both temperate and tropical climates.
Which of the above statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
8. Mytella strigata, which has recently made headlines, is a:
(a) Indicator species
(b) Flagship species
(c) Invasive species
(d) Keystone species
9. Consider the following statements in relation to the Atmospheric Perturbations around the Eclipse Path (APEP) mission:
1. The European Space Agency will launch it.
2. Its goal is to investigate the effects of a solar eclipse on the upper atmosphere.
3. It will place rockets in areas where the Moon passes directly in front of the Sun.
How many of the above statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None
10. Card-on-File Tokenisation is an initiative of?
(a) Reserve Bank of India (RBI)
(b) World Bank (WB)
(c) International Monetary Fund (IMF)
(d) National Bank for Agriculture and Rural Development (NABARD)