



**UPSC
Mentorship**
A Unit of Mentorship India

DAILY CURRENT AFFAIRS

30 September 2024



SOURCES



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Geography

What India Can Do to Reduce Food Waste

Why in News?

The International Day of Awareness of Food Loss and Waste emphasizes urgent action in India to reduce food wastage and enhance food security and nutrition.

Global Food Waste Context

- The FAO reports 30% of global food production is lost or wasted. Reducing half of this could eliminate hunger and cut greenhouse gas emissions by 8-10%.

India's Food Loss Statistics

- The NABCONS 2022 survey estimates India's food losses at ₹1.53 trillion, including 12.5 MMT of cereals and 49.9 MMT from poor cold chain infrastructure.

Quality vs. Quantity Losses

- ICRIER-ADMI researchers highlight significant post-harvest losses in crops, with soybeans at 15.34% and losses occurring mainly during harvesting and storage due to low mechanization.

Role of Mechanisation

- Mechanization, like combine harvesters, reduces paddy losses to 2.84%. However, limited access to tractors and machinery hinders small farmers' technology investments.

Improving Infrastructure

- Inadequate drying and storage cause food losses; promoting solar dryers can enhance preservation.
- India's plan to increase grain storage by 70 MMT in five years aims to reduce post-harvest losses significantly.

Recommendations for Action:

- **Promote Mechanisation and Group Leasing:** Farmer Producer Organisations (FPOs) and Custom Hiring Centres (CHCs) can facilitate access to machinery through group leasing, making it more affordable for small farmers.
- **Enhance Storage Solutions:** Development of modern storage facilities and use of airtight bags should be considered to minimize losses and pilferage, revisiting outdated policies i.e. Jute Packaging Material Act.
- **Invest in Technology and R&D:** Green technologies, such as solar drying methods, can help extend the shelf-life

of agricultural products.

- **Policy Support and Awareness:** Small farmers have access to new technologies through supportive policies, public funding, and educational programs.

Conclusion:

- Reducing food loss is essential for food security and environmental protection. India can minimize wastage through mechanization, improved infrastructure, and effective policy support.

Question: Discuss the strategies India can adopt to minimize food wastage and enhance food security.

Source: [The Indian Express](#)



Social Justice

Why Has the Supreme Court Clarified POCSO Provisions?

Why in News?

The Supreme Court clarified that viewing, downloading, and storing child sexual material is punishable under the POCSO Act, expanding liability.

Context of the Case

- A coalition of NGOs appealed to the Supreme Court after the Madras High Court quashed criminal charges against a young man accused of viewing and storing child sexual abuse material.
- The NCRB reported an accused downloaded child exploitation videos, leading to prosecution under the IT Act and POCSO Act.

Key Legal Provisions

- Section 67B of the IT Act criminalizes child pornography, with penalties up to 10 years imprisonment.
- Section 15(1) of the POCSO Act punishes those who store child sexual abuse material for commercial purposes.
- In 2019, amendments extended this provision to include broader offenses related to online content depicting child sexual exploitation.

Madras High Court Ruling

- The POCSO Act did not punish mere possession of child sexual exploitation material; only transmission or creation was liable.
- NGOs challenged the ruling in the Supreme Court.

Supreme Court's Clarification :

- High Court ruling erroneous and clarified that the 2019 amendments to Section 15 of POCSO criminalize three distinct acts:
 1. **Failure to delete, destroy, or report**
 2. **Transmission, display, or distribution of such material.**
 3. **Possession or storage for commercial purposes.**
- The Court highlighted that viewing, downloading, and even possessing such material without direct control over its storage still constitutes a crime, invoking

the concept of “constructive possession.”

What is Constructive Possession?

- It refers to situations where an individual controls or has the power to control illegal material, even if they do not physically possess it.

POCSO ?

- The **Protection of Children from Sexual Offences Act, 2012** has been drafted to strengthen the legal provisions for protection of children from sexual abuse and exploitation
- before passing of this act , sexual offences were covered under different sections of IPC and did not provide for all kinds of sexual offences for children
- There was no distinction between adult and a child

Suggestions and Terminology Change

- The Court suggested changing the term “child pornography” to “child sexual exploitative and abuse material (CSEAM)” to emphasize the exploitative nature of the content.
- This underscores the special purpose of POCSO in addressing aggravated sexual offenses involving children.

Conclusion

The Supreme Court expanded liability for child sexual exploitation material, closing legal gaps and strengthening POCSO's protection against online abuse.

Question: How does the concept of "constructive possession" strengthen the legal framework for tackling child sexual abuse material under POCSO?

Source: [The Hindu](#)



Indian Society

92% of Workers Cleaning Urban Sewers and Septic Tanks Are from SC, ST, and OBC Groups

Why in News?

Government data shows 91.9% of sewer workers are from marginalized communities. NAMASTE program aims to end hazardous manual cleaning, addressing social justice concerns.

Demographic Breakdown:

- 68.9% of the profiled workers belong to Scheduled Castes (SC).
- 14.7% are Other Backward Classes (OBC).
- 8.3% are Scheduled Tribes (ST).
- 8% are from the general category.

Hazardous Cleaning Deaths:

- Between 2019 and 2023, 377 workers died while cleaning sewers and septic tanks, according to government data.

NAMASTE Programme:

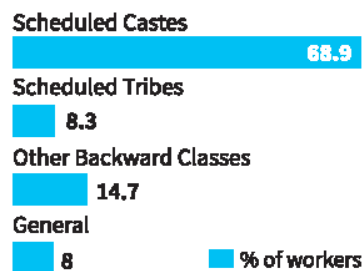
- **Objective:**
 - To mechanize sewer cleaning work and prevent hazardous deaths.
 - Provides training, safety equipment, and capital subsidies to convert sanitation workers into "sanipreneurs" (sanitation entrepreneurs).
- **Scope:**
 - The programme profiles all sewer and septic tank workers, including drivers, machine operators, and cleaners.
 - A central database will be created to track the workers and provide support.

Current Progress:

- **Profiling Data:**
 - Over 3,000 urban local bodies (ULBs) across 29 States and UTs have been involved.
 - 283 ULBs reported zero sanitation workers, while 2,364 ULBs had fewer than 10 workers
 - The profiling exercise is still incomplete in several States like Andhra Pradesh, Bihar, and Gujarat.

Skewed shares

The caste-wise share (in %) of the workers engaged in cleaning of sewers and septic tanks across the country



Source: Government data tabled in Parliament

- **State-Level Initiatives:**

- States like Kerala and Karnataka, are conducting awareness campaigns

Challenges and Concerns:

- **High Mortality Rate:** Despite government efforts, deaths from hazardous cleaning persist.
- **Marginalized Community Representation:** The vast majority of sanitation workers come from SC, ST, and OBC communities, indicating deep-rooted socio-economic inequities.

Conclusion:

- NAMASTE's mechanization of sewer cleaning improves safety, but high mortality and marginalized involvement stress the need for stronger social justice policies.

Question: Discuss the socio-economic implications of hazardous sanitation work and how the NAMASTE programme aims to address these issues.

Source: [The Hindu](https://www.thehindu.com)



Economy

What Has Make in India Achieved?

Why in News?

Ten years after launching Make in India, objectives for manufacturing growth and job creation remain unmet, leading to concerns over deindustrialization and declining employment.

Make in India Objectives (2014):

- Increase manufacturing's GDP share from 14%-15% to 25%.
- Create 100 million additional industrial jobs by 2025.
- The policy was a continuation of the New Manufacturing Policy 2012, which was not fully implemented.

Manufacturing Growth Stagnation:

- The manufacturing sector's real GVA growth slowed from 8.1% (2001-12) to 5.5% (2012-23).
- GDP has remained stagnant at 15%-17% over the past three decades.
- Manufacturing employment declined from 12.6% in 2011-12 to 11.4% in 2022-23, with a significant drop in the unorganised sector.

Premature Deindustrialisation:

- Reversal of structural transformation, with more workers shifting back to agriculture (from 42.5% in 2018-19 to 45.8% in 2022-23).
- This indicates premature deindustrialisation, where deindustrialisation occurs before reaching industrial maturity as seen in advanced economies.

Decline in Industrial Investments:

- Fixed investment growth collapsed, with the **Gross Fixed Capital Formation (GFCF)** growth rate stagnating.
- Despite India's improved rank in the World Bank's **Ease of Doing Business (EDB)** index (from 142 in 2014-15 to 63 in 2019-20), domestic investments did not grow.
- Imports Increased from China, have

filled domestic demand, further weakening industrial growth.

Criticism of Ease of Doing Business (EDB):

- As being politically motivated and lacking empirical foundations.
- The government's focus on improving the EDB ranking may have detracted from addressing more pressing industrial policy needs.

Need for Re-imagined Industrial Policy

- **Aligning Trade and Industrial Policies:** India needs to realign trade policies for domestic value addition, focusing on investment-led growth and technology, instead of relying on short-term subsidies.
- **Investment in R&D and Technology:** Investment in domestic R&D is vital for indigenizing technology. Policy banks are needed to offer long-term credit, supporting technological advancement and risk mitigation.

Conclusion:

Make in India's outcomes have been disappointing, requiring a reimagined policy focusing on long-term investments, R&D, and domestic value addition to reverse deindustrialization and ensure sustainable growth.

Question: Evaluate the challenges faced by the Make in India initiative in achieving its objectives and suggest ways to address premature deindustrialisation in India.

Source: [The Hindu](#)



Science & Technology

How Mars' Atmosphere Went Missing: New Study Offers Clues

Why in News?

A September 2024 study in *Science Advances* reveals how geological reactions led to Mars' thinning carbon dioxide-rich atmosphere 3.5 billion years ago.

Mars' Lost Atmosphere:

- **Historical Context:** Mars, now a cold and barren desert, once had flowing water, implying the presence of a thick atmosphere that prevented the water from freezing.
- **Atmosphere Loss:** Around 3.5 billion years ago, the water dried up, and the atmosphere thinned significantly, which remains a central question for researchers studying the planet's history.

Geological Reactions: Water reacted with the rock olivine on Mars, setting off a slow chain of reactions that converted carbon dioxide into methane.

Smectite Clay: This methane was trapped in smectite, a type of clay that acted as a highly effective carbon trap. The smectite drew carbon dioxide from the atmosphere and stored it for billions of years.

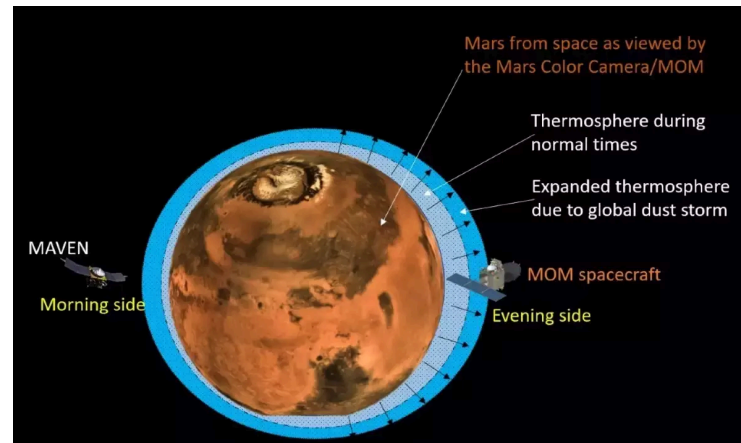
Earth-Based Research: Earlier research of smectite on Earth, which was found to absorb atmospheric CO₂ over millions of years.

Mars vs. Earth:

- **Tectonic Differences:** On Earth, smectite forms due to tectonic activity, but Mars does not have such tectonic movements. Instead, the reaction between water and olivine led the formation of smectite.
- **Chemical Process:** In the presence of water, oxygen from the water combined with iron in the olivine, freeing hydrogen to bond with carbon dioxide and form methane. Over time, this methane became trapped in smectite.

Implications for Future Mars Missions:

- **Methane as a Resource:** Methane trapped on Mars could serve as a future energy source for human colonization efforts, providing a critical resource for long-term space missions and potential settlement on the planet.
- **Potential Uses:** This methane could be



harvested and used as fuel in future Martian missions.

Conclusion:

- The study reveals how Mars' atmosphere thinned and suggests methane could be a vital energy resource for sustainable human missions, leveraging water, olivine, and smectite interactions.

Question: How could the presence of methane trapped in Mars' surface clay influence the future of human missions and colonization on the Red Planet?

Source: [The Indian Express](#)

Higgs Factory: Why CERN Wants to Build a Giant Particle Smasher

Why in News?

CERN's Future Circular Collider (FCC) is a proposed 90 km particle accelerator, costing \$17 billion, aiming to deepen Higgs boson research amidst funding debates.

Higgs Factory and its Objectives

- **Purpose:** The FCC aims to be a "Higgs factory," producing Higgs boson particles for detailed research.
- **Larger than LHC:** The FCC would be three times the size of the Large Hadron Collider (LHC), currently the world's largest particle collider.
- **Scientific Goals:** Exploring fundamental questions about the universe's origin, dark matter, and why particles have mass.

Why Higgs Boson Matters

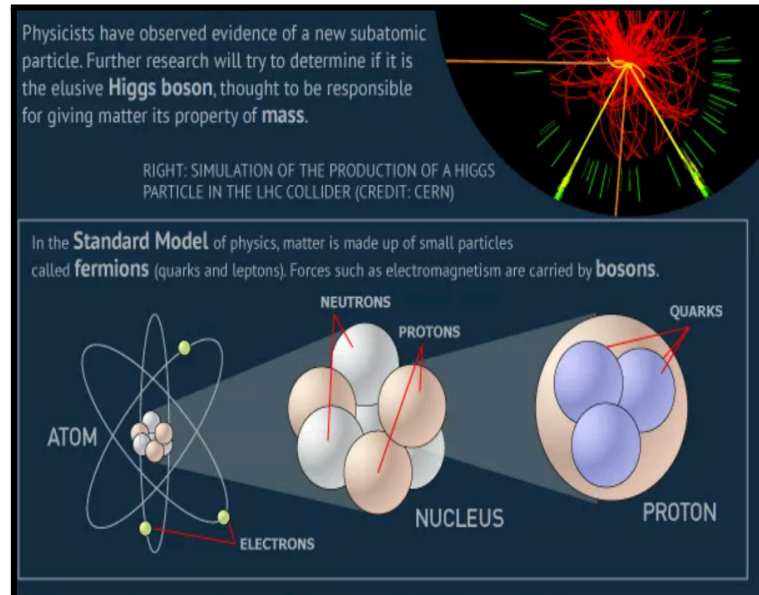
- **Higgs Boson Discovery (2012):** Detected by CERN's LHC, the Higgs boson explains how particles gain mass, essential for understanding the universe's formation.
- **Further Research:** Higgs further could unlock new knowledge about dark matter and the matter-anti-matter imbalance.

Debates Around FCC:

- **High Cost:** \$17 billion in a world of limited resources, critics argue it should be spent on urgent issues like climate change, emerging viruses, or malaria research.
- **Energy Consumption:** CERN faced scrutiny over its energy usage, especially during the energy crisis linked to the Russia-Ukraine war.
- **Long-term Benefits:** Fundamental research at CERN can lead to breakthroughs like the World Wide Web, justifying costs.

Global Interest:

- **Competition:** China and the US are also interested in building large particle colliders. China proposed a 100 km collider in 2018.
- **International Collaboration:** Project involves collaborations across Europe and global scientific communities.



Conclusion:

- The FCC offers potential discoveries, but debates persist on its high cost versus urgent scientific needs.

Question: Discuss the role of fundamental research in advancing scientific knowledge and how it balances against funding urgent global issues like climate change and public health.

Source: [The Indian Express](#)



Indian Army's Wishlist: Long-Range Rockets and Advanced Ammunition

Why in News?

In a bid to enhance its artillery capabilities, the Indian Army is focusing on long-range rockets and advanced ammunition, drawing lessons from recent global conflicts.

Focus on Extended Range Rockets

- The Indian Army is shifting its strategy based on lessons from the ongoing Ukraine war and Israel's operations in Gaza, with an emphasis on extended range rockets that have proven effective in combat scenarios.
- The aim is to enhance the Pinaka Multi-Barrel Rocket Launch (MRLS) system's range significantly, potentially up to four times its current capacity, with the Defence Research and Development Organisation (DRDO) leading these advancements.

Current Developments

- The Army has already procured Pralay tactical ballistic missiles (400 km range) and Nirbhay sub-sonic cruise missiles (1000 km range), which are set to provide long-range strike options.
- Development trials for both missiles are nearing completion, with expectations for the Nirbhay to begin trials next year.

Enhanced Pinaka System

- The Pinaka system is designed to fire various types of ammunition, enhancing its battlefield effectiveness. Trials are ongoing for guided extended range Pinaka rockets, which, if successful, could double the system's current range to 75 km and beyond.
- New High Explosive Pre-Fragmented rockets are expected to increase the Pinaka's range by 15-20%, with contracts anticipated to be signed within the fiscal year.

Response to Global Artillery Trends:

- Observing the heavy artillery usage in Ukraine, where daily shell expenditures have surged, the Indian Army is adjusting its strategies to avoid reliance on limited production sources.
- There is a significant ramp-up in global artillery production and emphasized the need for India to diversify its vendor base for 155mm ammunition, moving away from a single production agency to a broader, more resilient supply chain.

Future Roadmap

- The Indian Army is working towards converting all its artillery guns to the 155mm standard, with initiatives to include private sector participation in ammunition production.
- The Army currently operates four Pinaka regiments, with plans for six more, alongside Russian-origin systems like Grad and Smerch, which have ranges up to 90 km.

Conclusion

- The Indian Army's push for long-range rockets and advanced ammunition underscores its strategic adaptation to modern warfare dynamics. By leveraging indigenous technology and diversifying its supply chains, India aims to strengthen its artillery capabilities in a rapidly evolving global security landscape.

Question: How might the advancements in India's artillery capabilities affect regional security dynamics in South Asia?

Source: [The Hindu](#)



Health

Pigs May Be Transmission Route of Rat Hepatitis E to Humans

Why in News?

Research indicates pigs could transmit a rat-derived hepatitis E virus strain to humans, raising concerns about pork industry involvement.

Rat Hepatitis E (Rocahepevirus ratti)

- The Rocahepevirus ratti strain, commonly referred to as rat HEV, primarily infects rats.
- The first human case of rat HEV was reported in Hong Kong in 2018 in an immunocompromised individual. Since then, 20 human cases have been identified, including in people with normal immune function.
- Many infected individuals had no direct contact with rats, raising questions about the virus's transmission route.

Potential Transmission via Pigs

- Act as a vehicle for transmitting rat HEV to humans, possibly through consumption of raw pork, which is already a suspected transmission route for other HEV strains.
- A study found that a strain of rat HEV isolated from humans could infect pigs and spread among animals housed in farm-like conditions.
- Rats are common in pig barns, suggesting a pathway for the virus from rats to pigs and, potentially, to humans.

Research Findings

- The study involved the use of LCK-3110, a strain linked to human disease, and showed that it could replicate in multiple types of human and mammalian cell cultures, as well as in pigs.
- Pigs injected with the LCK-3110 strain of rat HEV or another HEV strain showed

higher viral levels than those in control groups.

- The virus was also detected in the feces of co-housed pigs that did not receive the inoculation, indicating the virus spread through the fecal-oral route.

Global Impact of Hepatitis E

- Hepatitis E is a leading cause of acute viral liver infections worldwide, particularly in regions with poor sanitation.
- The potential role of pigs as transmission vehicles for rat HEV could have significant public health implications, particularly in areas where pork is consumed.

Conclusion

- The discovery that pigs may transmit rat HEV to humans highlights a new dimension of zoonotic disease transmission.
- Preventative measures in the pork production industry and further research into viral transmission pathways are essential to mitigate the risk of future outbreaks.

Question: Discuss the role of zoonotic transmission in the spread of hepatitis E and the potential public health risks associated with the virus's transmission via pigs.

Source: [The Hindu](#)





THE ABCDE OF VIRAL HEPATITIS

HEPATITIS



How it spreads

Feces

Contaminated food or water

Prevention

- Vaccine
- Practice good hygiene

Treatment

No specific medication available

Treated through supportive care (rest, adequate nutrition, and fluids) to help relieve symptoms



Through contact with the blood or bodily fluids of an infected person

- Vaccine
- Practice safe sex
- Blood screening

Combination antiviral therapies (with Tenofovir or Tenofovir derivatives plus lamivudine)



Blood-to-blood contact

- Practice safe sex
- Avoid sharing needles, toothbrushes, razors or nail scissors

Combination therapies with direct acting antivirals (DAAs)



Contact with infected blood (only occurs in people already infected with hepatitis B)

- Hepatitis B vaccine
- Avoid sharing needles, toothbrushes, razors or nail scissors

Interferon



Feces

Contaminated food or water

- Practice Good Hygiene
- Avoid drinking water that has come from a potentially unsafe source
- Cook food well

No specific medication available

Supportive Care



Environment

Surviving in India's Salt Desert

Why in News?

The Rann of Kutch, home to the resilient Indian wild ass, faces ecological threats from human activities like salt farming and agriculture, challenging conservation efforts.

Evolution of the Rann of Kutch

- The Rann of Kutch evolved about 150–200 million years ago when the Arabian Sea periodically inundated the region.
- Geological upheavals raised a landmass that cut off the Kutch basin from the sea.
- The Little Rann of Kutch covers 5,000 sq. km, mostly in Surendranagar district, and is known for its white salt flats, which transform into shallow wetlands during the monsoon.

The Indian Wild Ass (Khur)

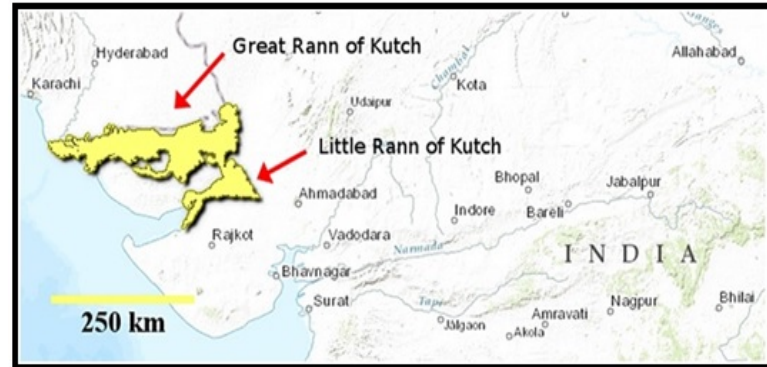
- The Indian wild ass (*Equus hemionus khur*) is the only remaining species of its kind, with about 6,000 living in the Little Rann.
- Khur has adapted to the extreme environment, surviving on dry, xerophytic vegetation.
- The species has outlasted local predators like cheetahs which disappeared from the region in the 1850s.

Conservation Challenges

- Khur populations nearly faced extinction due to diseases like African Horse Sickness and Surra, which reduced the population to a few hundred in the 1960s.
- Despite low genetic diversity due to a bottleneck caused by diseases, conservation efforts have led to a population recovery.

Human-Wildlife Conflicts

- The Rann's salt marshes contribute 30% of India's salt production
- Human activities like cattle grazing and irrigation, disrupt the ecosystem.
- Khur herds are increasingly seen in areas outside the sanctuary, leading to conflicts with farmers as the animals are blamed for crop damage.



Response Measures

- Efforts to protect the khur population include conservation initiatives and studies on genetic diversity.
- A clearer separation between the sanctuary and human-dominated areas could help mitigate conflicts and protect the ecosystem.

Conclusion

- The Rann of Kutch's ecosystem, including wild asses, faces threats from humans; conservation is vital

Question: Discuss the evolution of the Rann of Kutch and the conservation challenges faced by the Indian wild ass (khur) in this region.

Source: [The Hindu](#)



Editorial, Ideas and Opinion

Common Practice Standards Must Have India Outlook

Why in News?

India's agroforestry can integrate with carbon finance via ARR projects, but global standards limit small farmers' participation due to fragmented landholdings.

Agroforestry Potential in India

- India currently has 28.4 million hectares under agroforestry, with potential expansion to 53 million hectares by 2050.
- Agroforestry covers 8.65% and contributes 19.3% of the country's carbon stocks.
- With adequate policies, the sector could provide an additional carbon sink of over 2.5 billion tons of CO₂ equivalent by 2030.

Common Practice in Carbon Standards

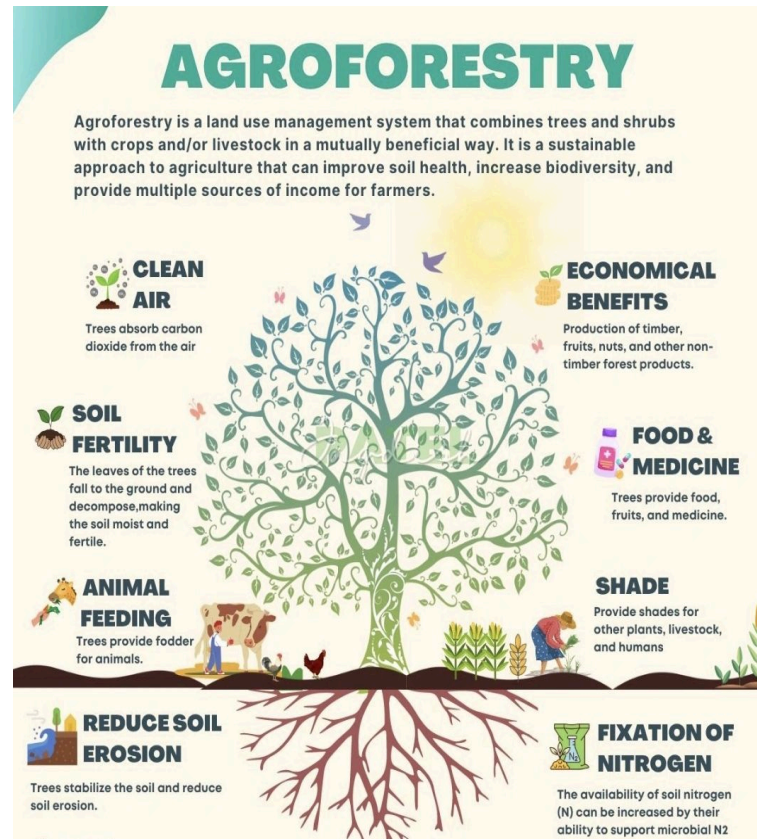
- Global carbon finance platforms, like Verra and Gold Standard, often exclude Indian farmers by classifying their practices as "common."
- With 86.1% of Indian farmers owning less than two hectares, the standards don't align with India's agricultural realities.

Challenges in India's Context:

- India's small-scale agroforestry practices fail to meet global carbon standards, restricting farmers from earning carbon credits.
- Global standards favour large-scale models, overlooking the challenges of India's fragmented agricultural landscape.

Need for India-Centric Approaches:

- **Redefining Common Practice:**
 - India's agricultural setup needs a redefined "common practice" criterion to include small-holder agroforestry.
 - Revising standards would boost carbon sequestration and enable wider farmer participation in ARR projects.
- **Benefits for Farmers**
 - offer alternative livelihoods, income diversification, and environmental sustainability.
 - They address issues like low productivity and environmental degradation, improving soil fertility, water retention, and reducing erosion for participating farmers.



Conclusion

- Revising carbon finance standards to align with India's small-holder agroforestry would enable farmers' participation in ARR projects, boosting sustainable development and rural incomes.

Question: Discuss the significance of redefining "Common Practice" in carbon finance for small and marginal farmers in India and how this can contribute to both economic development and environmental sustainability.

Source: [The Hind](#)



Daily Quiz

Q1. Consider the following statements regarding measures India can take to reduce food wastage:

1. The FAO reports that approximately 30% of global food production is lost or wasted, which contributes to hunger and greenhouse gas emissions.
2. Mechanization, such as the use of combine harvesters, has no impact on reducing post-harvest losses in crops.
3. The NABCONS 2022 survey estimates India's food losses at ₹1.53 trillion, highlighting significant losses due to poor cold chain infrastructure.
4. Promoting modern storage solutions, including airtight bags, can help minimize food losses and pilferage.

Which of the above statements is/are correct?

- A. 1 and 2 only
- B. 3 and 4 only
- C. 1, 3, and 4 only
- D. 1, 2, 3, and 4

Q2. Consider the following statements regarding the Supreme Court's clarification of POCSO provisions:

1. **Statement 1:** The Supreme Court clarified that viewing, downloading, and storing child sexual abuse material is punishable under the POCSO Act, thereby expanding liability.
2. **Statement 2:** The Madras High Court ruling stated that the POCSO Act only punishes the transmission or creation of child sexual exploitation material, not mere possession.

Which of the following is correct?

- A. Both statements are correct, and Statement 2 explains Statement 1.
- B. Both statements are correct, but Statement 2 is independent of Statement 1.
- C. Statement 1 is correct, and Statement 2 is incorrect.
- D. Statement 2 is correct, and Statement 1 is incorrect.

Q3. Consider the following Assertion & Reason statement regarding the socio-economic implications of hazardous sanitation work in India and the government's NAMASTE program:

1. **Assertion (A):** A significant percentage (91.9%) of urban sewer and septic tank workers belong to marginalized communities, primarily Scheduled Castes (SC), Other Backward Classes (OBC), and Scheduled Tribes (ST), highlighting systemic socio-economic inequities.
2. **Reason (R):** The NAMASTE program aims to mechanize sewer cleaning work and convert sanitation workers into "sanipreneurs," thereby improving their safety and reducing the mortality rate associated with hazardous cleaning tasks.

Which of the following is correct?

- A. Both A and R are true, and R is the correct reason for A.
- B. Both A and R are true, but R is not the correct reason for A.
- C. A is true, but R is false.
- D. A is false, but R is true.



Q4. Which of the following statements best describes the achievements and challenges of the Make in India initiative?

- The initiative has successfully increased manufacturing's GDP share to 25% and created over 100 million jobs.
- Despite improved rankings in the Ease of Doing Business index, manufacturing growth has stagnated, and there is a decline in employment, indicating challenges in achieving its objectives.
- The initiative has led to a significant increase in foreign direct investment (FDI) and has eliminated the need for any policy reform in the manufacturing sector.
- There is no evidence of premature deindustrialisation in India, and the agricultural workforce continues to shrink.

Q5. Consider the following statements regarding the study of Mars' atmosphere and the implications of trapped methane:

- Mars once had a thick atmosphere that enabled the presence of flowing water, which indicates it could have supported life.
- Geological reactions involving water and the rock olivine led to the formation of methane, which is now trapped in smectite clay on Mars.
- The absence of tectonic activity on Mars prevents the formation of smectite, unlike on Earth, where tectonic movements aid its formation.
- Methane trapped in the Martian surface clay cannot be utilized for future human missions due to its unstable nature.

Which of the above statements is/are correct?

- 1 and 2 only
- 2 and 3 only
- 1, 2, and 3 only
- 1, 2, 3, and 4

Q6. Consider the following statements regarding CERN's Future Circular Collider (FCC):

- Statement 1:** The Future Circular Collider (FCC) is proposed to be three times the size of the Large Hadron Collider (LHC) and aims to produce Higgs boson particles for detailed research.
- Statement 2:** The FCC is expected to be built within the next five years and will be the first particle accelerator to explore dark matter.

Which of the following is correct?

- Both statements are correct.
- Statement 1 is correct, and Statement 2 is incorrect.
- Statement 1 is incorrect, and Statement 2 is correct.
- Both statements are incorrect.

Q7. Consider the following Assertion & Reason statement regarding the Indian Army's focus on long-range rockets and advanced ammunition:

- Assertion (A):** The Indian Army is enhancing its artillery capabilities by focusing on long-range rockets and advanced ammunition to adapt to modern warfare dynamics.
- Reason (R):** The Indian Army's strategy is solely influenced by the ongoing Ukraine war, with no consideration of other regional security dynamics or historical conflicts.

Which of the following is correct?

- Both A and R are true, and R is the correct reason for A.
- Both A and R are true, but R is not the correct reason for A.
- A is true, but R is false.
- A is false, but R is true.

Q8. Which of the following statements best describes the role of zoonotic transmission in the spread of hepatitis E and its potential public health risks related to pigs?

- Zoonotic transmission of hepatitis E is solely limited to direct contact with infected animals, posing minimal risk to humans.
- Research indicates that pigs can act as a transmission route for rat-derived



hepatitis E virus to humans, raising significant public health concerns.

- C. The primary concern for hepatitis E transmission comes from contaminated water sources, making pigs irrelevant in the discussion.
- D. Hepatitis E is a disease primarily affecting humans, with no known animal reservoirs contributing to its transmission.

Q9. Consider the following statements regarding the Indian wild ass (khur) and the Rann of Kutch:

1. **Statement 1:** The Indian wild ass (*Equus hemionus khur*) has adapted to the extreme environment of the Rann of Kutch and is the only remaining species of its kind in India, with a population of about 6,000 individuals.
2. **Statement 2:** The Rann of Kutch is predominantly a forested area that supports a wide variety of wildlife, including significant populations of cheetahs and other large predators.

Which of the following is correct?

- A. Both statements are correct.
- B. Statement 1 is correct, and Statement 2 is incorrect.

- C. Statement 1 is incorrect, and Statement 2 is correct.
- D. Both statements are incorrect.

Q10. Consider the following Assertion & Reason statement regarding the need for redefining "Common Practice" in carbon finance for Indian agroforestry:

1. **Assertion (A):** Redefining "Common Practice" standards in carbon finance is essential for enabling small and marginal farmers in India to participate in agroforestry projects and benefit economically.
2. **Reason (R):** Current global carbon finance standards exclude Indian farmers because they are primarily designed for large-scale agricultural models and do not consider the unique challenges faced by small farmers in India.

Which of the following is correct?

- A. Both A and R are true, and R is the correct reason for A.
- B. Both A and R are true, but R is not the correct reason for A.
- C. A is true, but R is false.
- D. A is false, but R is true.



Solutions

1. Correct Answer is C

Explanation:

Statement 1: Correct. The FAO's report indicates that about 30% of global food production is lost or wasted, contributing significantly to hunger and increasing greenhouse gas emissions. This underscores the urgent need for action to reduce food waste.

Statement 2: Incorrect. Mechanization, including the use of combine harvesters, has been shown to significantly reduce post-harvest losses. For instance, using combine harvesters can lower paddy losses to about 2.84%. Therefore, this statement is misleading as mechanization plays a crucial role in minimizing losses.

Statement 3: Correct. The NABCONS 2022 survey reveals that India's food losses amount to ₹1.53 trillion, with a significant portion attributed to inadequate cold chain infrastructure, which is crucial for preserving perishable goods.

Statement 4: Correct. Improving storage solutions, such as developing modern facilities and utilizing airtight bags, is essential for minimizing food losses and preventing pilferage. This approach aligns with the recommendation to revisit outdated policies to enhance food security.

2. Correct Answer is A

Explanation:

Statement 1: This statement is correct as the Supreme Court explicitly clarified that not only the creation and transmission but also the viewing, downloading, and storing of child sexual abuse material constitutes a punishable offense under the POCSO

Act. This expands the scope of liability beyond what was previously understood.

Statement 2: This statement is also correct. The Madras High Court had initially interpreted the POCSO Act to only punish the transmission or creation of such material, ruling that mere possession did not incur liability. However, this interpretation was overturned by the Supreme Court, which clarified the law's intent to include possession and viewing.

3. Correct Answer is A

Explanation:

Assertion (A): True : The claim that 91.9% of urban sewer and septic tank workers belong to marginalized communities is supported by government data. The demographic breakdown indicates that 68.9% of these workers belong to Scheduled Castes, 14.7% to Other Backward Classes, and 8.3% to Scheduled Tribes. This statistic underscores the systemic socio-economic inequities in sanitation work, as a vast majority of workers come from disadvantaged backgrounds.

Reason (R): True & correct reason of A : The NAMASTE program's objective to mechanize sewer cleaning work directly addresses the hazardous nature of sanitation jobs that predominantly affect marginalized communities. By training sanitation workers and providing them with safety equipment and capital subsidies, the program seeks to transform these workers into "sanipreneurs," thereby enhancing their livelihoods and safety. The program's focus on mechanization and safety measures is a crucial step in reducing the high mortality rate associated with manual cleaning.



4. Correct Answer is B

Explanation:

Statement A is incorrect because the Make in India initiative has not achieved its goal of increasing manufacturing's GDP share to 25% or creating 100 million jobs by 2025.

Statement B is correct as it accurately reflects the current situation: the manufacturing sector has experienced stagnation in growth, and employment in manufacturing has declined, highlighting ongoing challenges.

Statement C is incorrect while there have been increases in FDI, the initiative has not fully eliminated the need for policy reforms in the manufacturing sector.

Statement D is incorrect as there is evidence of premature deindustrialisation, with more workers shifting back to agriculture rather than leaving it for industrial jobs.

5. Correct Answer is C

Explanation:

Statement 1: Correct. Mars was once believed to have a thick atmosphere that allowed for flowing water, suggesting that it may have been capable of supporting life in the past. This historical context is crucial in understanding the planet's evolution.

Statement 2: Correct. The study indicates that geological reactions, specifically the interaction between water and olivine, led to the conversion of carbon dioxide into methane. This process is significant as it explains part of the atmospheric loss on Mars.

Statement 3: Correct. Unlike Earth, where tectonic activity contributes to the formation of smectite, Mars does not have such movements. Instead, the formation of smectite on Mars is a result of the reactions between water and olivine, which is pivotal in trapping methane and affecting the atmosphere.

Statement 4: Incorrect. The study suggests that methane trapped in Martian surface clay could be utilized for future human missions as a

potential energy source. This aspect makes it an important resource for long-term space exploration and colonization efforts on Mars.

6. Correct Answer is B

Explanation:

Statement 1: This statement is correct. The FCC is indeed proposed to be three times the size of the LHC and aims to produce Higgs boson particles, enabling in-depth research on fundamental questions about the universe.

Statement 2: This statement is incorrect. While the FCC aims to explore fundamental aspects of particle physics, it is not expected to be completed within the next five years, and there are already existing research initiatives aimed at dark matter that do not rely solely on the FCC. The timeline for such a large project is typically much longer, considering planning, funding, and construction.

7. Correct Answer is C

Explanation:

Assertion (A): This statement is true. The Indian Army is indeed focusing on enhancing its artillery capabilities through long-range rockets and advanced ammunition, reflecting a strategic adaptation to modern warfare. This initiative includes developing systems like the Pinaka Multi-Barrel Rocket Launcher and procuring advanced missiles, indicating a significant shift in military strategy.

Reason (R): This statement is false. While the Indian Army is influenced by the ongoing Ukraine war, its strategy is not solely based on this conflict. The Indian Army is also taking into account various historical conflicts and broader regional security dynamics in South Asia. This multifaceted approach considers lessons from other military operations and the need for a robust defense posture in response to diverse threats.



8. Correct Answer is B

Explanation:

Statement A is incorrect because zoonotic transmission can occur through various pathways, including indirect contact, and does not solely rely on direct contact with infected animals.

Statement B is correct as it accurately reflects the findings that pigs may transmit rat-derived hepatitis E virus to humans, highlighting the public health risks associated with the pork industry.

Statement C is incorrect while contaminated water is a common transmission route for hepatitis E, the role of pigs in zoonotic transmission is significant and cannot be overlooked.

Statement D is incorrect because hepatitis E has animal reservoirs, particularly rats and pigs, which can contribute to its transmission to humans.

9. Correct Answer is B

Explanation:

Statement 1: This statement is correct. The Indian wild ass is indeed the only remaining species of its kind in India, thriving in the harsh conditions of the Rann of Kutch, with an estimated population of around 6,000 individuals. This species has developed unique adaptations to survive on the xerophytic vegetation of the region.

Statement 2: This statement is incorrect. The Rann of Kutch is characterized by its salt flats and semi-arid landscape rather than being predominantly forested. While it does support some wildlife, the region is not home to significant populations of cheetahs or other large predators, as these have disappeared from the area.

10. Correct Answer is A

Explanation:

Assertion (A): This statement is true : Redefining the "Common Practice" standards in carbon finance is crucial for small and marginal farmers in India. Such a redefinition would facilitate their participation in agroforestry projects, enabling them to access carbon credits and enhancing their economic prospects. This approach aligns with the need to adapt carbon finance mechanisms to local agricultural contexts.

Reason (R): This statement is also true & Correct reason of A : Current global carbon finance standards do indeed favor large-scale agricultural models, which results in the exclusion of small Indian farmers who predominantly operate on fragmented landholdings. By not accommodating the realities of small-scale agroforestry practices, these standards hinder farmers' ability to earn carbon credits, thus limiting their economic participation.





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