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Irrigation in India

Context: The latest Minor Irrigation Census (MIC) shows electricity as the dominant power source for water extraction from privately owned irrigation sources.

- MIC reports reflect past data, not the current state of use, with the latest edition focusing on irrigation trends in 2017-18.
- Granular data collection at the block level takes several years before becoming public.
- The rise in electricity usage for groundwater extraction corresponds to an increase in tubewells and borewells capable of deeper water extraction.
- Dugwells and ponds, drawing water from up to 15 meters, are still the dominant sources but decreased in number.
- Shallow tubewells, drawing from up to 35 meters, declined from 59 lakhs to 55 lakhs.
- Medium-sized wells, drawing from up to 70 meters, increased from 31 lakh to 43 lakhs, while deep wells (beyond 70 meters) rose from 26 lakh to 37 lakhs.
- The report doesn't discuss the reasons behind the increase in more powerful, deep-reaching tubewells.
- State governments' schemes and incentives may explain the growth of such tubewells, but energy-efficient water extraction could also be a factor.
- In total, there were 23.14 million minor irrigation setups in the country, with 94.8% for groundwater and 5.2% for surface water extraction.

States in Lead

- Uttar Pradesh had the highest number of MI schemes in the country at 17.2%.
- Following Uttar Pradesh, other leading states for MI schemes were Maharashtra (15.4%), Madhya Pradesh (9.9%), and Tamil Nadu (9.1%).
- In terms of groundwater schemes, Uttar Pradesh, Maharashtra, Madhya Pradesh, Tamil Nadu, and Telangana were the leading states.
- Maharashtra, Karnataka, Telangana, Odisha, and Jharkhand had the highest share in surface-water schemes

Irrigation Schemes in India

- **PMKSY:** Central scheme expands irrigation and enhances water efficiency in agriculture through four components.
- **AIBP:** Central scheme accelerates irrigation development, offering financial aid for new and existing infrastructure.
- **CADWM:** Central scheme improves irrigated agriculture productivity via water management, strengthening institutions and efficiency.
- **PMFBY:** Central scheme provides crop insurance and financial support for farmers facing losses from natural calamities, pests, and diseases.
- **RKVY:** Central scheme promotes agriculture and allied activities by providing financial aid for irrigation, water management, and other projects.

(Note: Read about each of the schemes in detail)

GRIHA Norms

Context: The upcoming Thal Sena Bhawan for the Indian Army will adhere to green norms set by GRIHA-IV.

- The new Thal Sena Bhawan (TSB) for the Indian Army is being constructed on a 39-acre site with a built-up area of 143,450 sq. m.
- It adheres to GRIHA-IV green norms, emphasizing environmental sustainability.
- Designed for a 100-year lifespan and earthquake-resistant, it's expected to be ready by May-June 2025.
- It features grid interactive solar PV systems, sensor-based LED lighting, EV chargers, and a building management system for energy efficiency.
- The complex incorporates a sewage treatment plant, solid waste management, rainwater harvesting, and green paver block parking for groundwater recharge.

Green Rating for Integrated Habitat Assessment

- GRIHA, known as Green Rating for Integrated Habitat Assessment, is an organization jointly established by TERI (The Energy and Resources Institute) and the Ministry of New and Renewable Energy (MNRE).
- GRIHA's primary purpose is to set clear benchmarks for green buildings and sustainable living environments.
- It achieves this by conducting comprehensive assessments of a building's environmental performance throughout its entire life cycle.
- GRIHA's assessment criteria include both quantitative and qualitative measures, and it considers various nationally recognized benchmarks.
- Buildings that successfully meet GRIHA's stringent environmental and sustainability requirements receive the designation of "green buildings."

GRIHA Rating Tool and Criteria

- GRIHA is a rating tool that assesses building performance against nationally accepted benchmarks and is applicable to all types of buildings across India's various climatic zones.
- GRIHA aims to quantify aspects like energy consumption, waste generation, and renewable energy usage to effectively manage and reduce them.
- It evaluates a building's environmental performance throughout its entire life cycle, setting a standard for what qualifies as a "green building."

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- The rating system balances established and emerging energy and environmental practices, both nationally and internationally.
- Guidelines and criteria are subject to revision every three years to incorporate the latest scientific developments.
- **Criteria**
 - The GRIHA rating system comprises 34 criteria categorized into four sections: site selection and planning, resource conservation, building operation and maintenance, and innovation points.
 - Projects earn points for meeting criteria, and the total points determine the certification level (from one star to five stars), with a minimum requirement of 50 points for certification.
- **International Recognition**
 - GRIHA has international recognition and supports global sustainable development efforts, including the adoption of renewable energy in the building sector.
 - It plays a role in data collection for global building energy through tools like the "Common Carbon Metric," contributing to initiatives like "The Climate Reality Project."

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and Invasive Alien Species

Context: The 140+ members of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have gathered at Bonn, Germany for the body's 10th plenary.

- A report developed by 86 experts from 49 countries will be approved by delegates at the plenary after four years of work.
- Invasive alien species are a major driver of biodiversity loss and are a focus of the Kunming-Montreal Global Biodiversity Framework (GBF) adopted in December 2022 by 193 Convention on Biological Diversity members.
- Target 6 of the GBF aims to eliminate, minimize, reduce, and mitigate the impacts of invasive alien species on biodiversity and ecosystem services by 2030.
- The goal is to decrease the rate of introduction and establishment of invasive alien species by at least 50% by 2030, contributing to biodiversity conservation.

IPBES

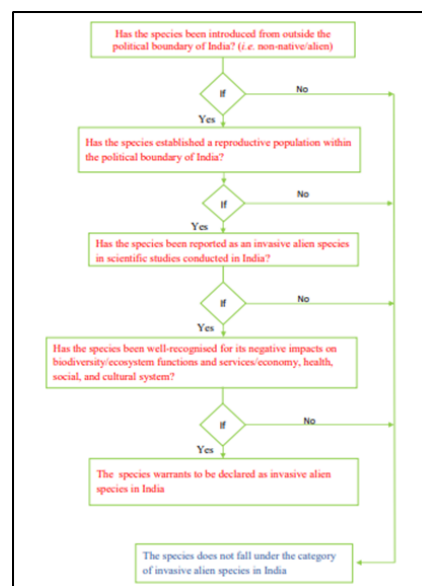
- IPBES is an independent intergovernmental body dedicated to enhancing the science-policy interface for biodiversity and ecosystem services, aiming to support the conservation and sustainable use of biodiversity, as well as long-term human well-being and sustainable development.
- IPBES is not a United Nations body but receives secretariat services from UNEP.
- IPBES currently includes 137 member states, open to any UN member state.
- IPBES operates with **four primary objectives**:
 - Conducting assessments on specific themes, methodological issues, and at regional and global levels.
 - Identifying policy-relevant tools and methodologies, facilitating their use, and catalysing further development.
 - Meeting the priority capacity, knowledge, and data needs of member states, experts, and stakeholders.
 - Ensuring the widest reach and impact of their work through communications and outreach.

Invasive Species

- An invasive species refers to an organism that originates from a different region and poses a threat to the native species in a particular area.
- These species can inflict harm by potentially causing extinctions among native plants and animals, diminishing biodiversity, engaging in competition with local organisms for limited resources, and modifying habitats.
- Typically, their introduction to a new area occurs through various means such as ship ballast water, accidental release, but most frequently, through human activities.
- The image shows the process of classifying a species as Invasive Alien Species.

Invasive species in India

- **Terrestrial Ecosystem:** 54 terrestrial plant species.
- **Aquatic Ecosystem:** 56 species, including microorganisms in freshwater and brackish water, aquatic plants, fishes, and marine invasive species.
- **Agriculture Ecosystem:** 47 species, encompassing fungi, bacteria, viruses, nematodes, and invasive insects.
- **Major Island Ecosystem:** 14 species, consisting of various insects, cnidarians, molluscs, fishes, amphibians, reptiles, birds, and mammals.
- Overall, India has 173 Invasive Alien Species (IAS) across these ecosystems.
- Commonly found alien species and their locations:
 - **African apple snail (*Achatina Fulica*)** - First reported in the Andaman and Nicobar Islands, now found across India.
 - **Papaya Mealy Bug (*Paracoccus marginatus*)** - Found in Assam, West Bengal, and Tamil Nadu.
 - **Cotton Mealy Bug (*Phenacoccus solenopsis*)** - Affects cotton crops in Deccan.



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- **Amazon sailfin catfish (*Pterygoplichthys pardalis*)** - Responsible for damaging fish populations in the wetlands of Kolkata.
- **Prominent invasive species-related cases in India:**
 - **Chilka Lake** - Affected by siltation and invasive freshwater species, leading to decreased fish productivity and biodiversity loss.
 - **Keoladeo National Park** - Invasive growth of *Paspalum distichum* changed the ecological character, impacting waterbird species.
 - **Kanjli Wetlands** - Invasive water hyacinth introduced to the area.
 - **Ropar Wetlands** - Various invasive weeds are a concern, with ongoing management plans.

NEWS IN BETWEEN THE LINES

Salimgarh Fort



Historical Significance: Salimgarh Fort, located along the Yamuna River in Delhi, was built in 1546 by Salim Shah Suri to defend against Humayun's army.

Renaming and Transition: After Humayun's victory, he renamed it Nurgarh as a sign of humiliation toward the Surs.

Jahangir's Reign: A bridge was built during Jahangir's reign, and the fort's land was given to Mughal noble Murtaza Khan during Akbar's rule.

Used as a Prison: Under Aurangzeb, it became a prison, where Zeb-un-Nissa wrote poetry during her incarceration.

1857 Revolt: During the 1857 revolt, it housed rebel soldiers and later became an English army camp.

World War II Use: In World War II, it imprisoned Indian National Army (INA) soldiers.

Present Condition: Salimgarh Fort is less known than the nearby Red Fort but is gaining recognition, especially in preparations for the G20 Summit.

Air Quality Life Index



What is Air Quality Life Index? The Air Quality Life Index (AQLI) is a measure that quantifies the impact of air pollution on life expectancy.

Purpose: Communicates air pollution's health effects to the public and policymakers.

Measurement: Uses PM2.5 concentration in the air.

Global Scope: Applicable worldwide for assessing air pollution's impact.

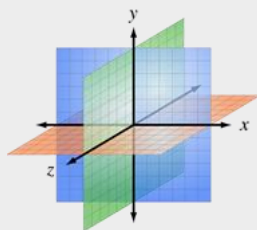
WHO Guidelines: Compares PM2.5 levels to WHO guidelines (typically 5 µg/m3).

South Asia's Crisis: South Asia, including Bangladesh, India, Nepal, and Pakistan, is highly polluted, with a 9.7% increase in particulate pollution from 2013 to 2021.

Country Impact: Bangladesh most polluted in 2021, potentially causing a 6.8-year loss in life expectancy. China reduced pollution by 42.3%, gaining 2.2 years in life expectancy.

India's Challenge: India, the second-most polluted country in 2021, saw PM2.5 levels exceed WHO guidelines by over 10 times, potentially leading to a 5.3-year loss in life expectancy.

Cartesian Coordinates



Coordinate System:

A coordinate system is a set of numbers that locates a point in space.

Cartesian Coordinates: Invented by René Descartes in the 17th century, they use numbers to specify a point's distance from perpendicular planes. For N planes, N numbers are used.

Location on a Plane: Similar to latitude and longitude on Google Maps, Cartesian coordinates use pairs (x and y) to locate points on a plane.

Three-Dimensional Space: In 3D, an extra number (z-axis) specifies a point's location, like choosing a floor in a building.

Analytic Geometry: Descartes' invention bridged algebra and geometry, leading to analytic geometry, a fundamental math branch.

Applications: Cartesian coordinates are used in fields like astronomy, engineering, and geometry-related disciplines.

Pirola Variant



What is Pirola Variant?

The Pirola variant is known as BA.2.86. It is a new Covid-19 variant with 30+ spike protein mutations compared to XBB.1.5 (a subtype of Omicron).

Global Presence: Detected in various countries, including the US and UK, in unrelated cases.

Mutation in Viruses: Viruses, like coronaviruses, naturally mutate during replication.

Advantageous Mutations: Some mutations may help viruses adapt and become more transmissible or resistant to immunity.

Expert Perspective: Anne Hahn, from the Yale SARS-CoV-2 Genomic Surveillance Initiative, finds Pirola noteworthy among Omicron subvariants.

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G20 Park



G20 Park Unveiled:

- NDMC inaugurates G20 Park in Chanakyapuri.
- Features 19 sculptures of G20 member countries' national birds and animals.

Waste-to-Art Concept:

- Sculptures created from recycled metal scrap materials.
- Materials sourced from NDMC storage facilities.

Preparation for G20 Summit: Part of preparations for the upcoming G20 Summit on September 9-10.

Sculpture Creation Process: Initiated by Lalit Kala Akademi-affiliated artists in Garhi village.

Theme: "One Earth, One Family, One Future"

Diverse Sculptures:

- Represents various national birds and animals, promoting unity among G20 member nations.
- It includes peacock, bison, jaguar, crane, camel, magpie, emu, gray jay, brown bear and golden eagle.
- The G20 includes the European Union and 19 individual countries, symbolizing international cooperation.

Place in News

Port of Reni

Recently, a Russian drone attack lasting over three hours targeted the Reni sea port in Ukraine's Odesa region.

Location:

- The Port of Reni is located in southern Ukraine, specifically in the Odesa region.
- It is situated along the Danube River, making it an important river port for maritime trade.

Geographical Significance:

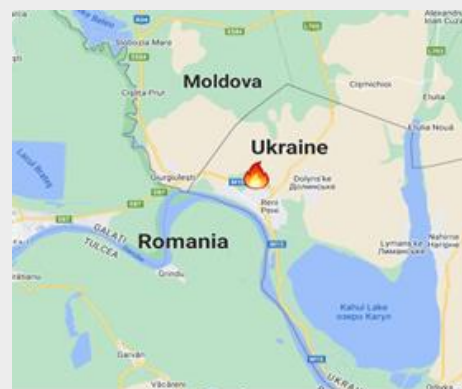
- Reni is one of Ukraine's significant river ports along the Danube River, which flows through multiple European countries.

Connection to the Black Sea:

While situated along the Danube River, the Port of Reni provides a connection to the Black Sea, allowing for the transportation of goods to and from international markets.

Importance for Ukraine:

- The port's location and infrastructure make it vital for Ukraine's international trade, especially for agricultural products.
- It contributes to Ukraine's economy by serving as a key export gateway.



POINTS TO PONDER

- ❖ What marks the beginning of Aditya-L1's 110-day trajectory to the L1 Lagrange point? -Trans-Lagrangian1 insertion manoeuvre
- ❖ What is NeGD integrating into the DIKSHA platform? -Personalised Adaptive Learning (PAL)
- ❖ What did researchers from the Oregon Health & Science University (OHSU) use to test menstrual product absorbency? -Human blood
- ❖ Pulikali is a folk dance of which Indian state? - Kerala
- ❖ Sukapaika River is a distributary of which river? -Mahanadi

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