



1 June, 2024

Coal Gasification

Context: BCGCL has initiated a tender for a coal gasification project in Odisha.

➤ Coal Gasification Process:

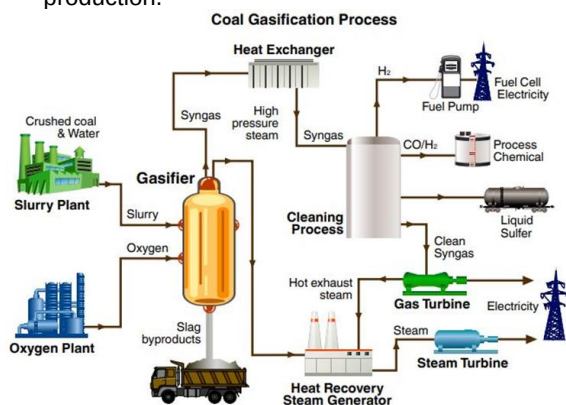
- Coal is partially oxidized with air, oxygen, steam, or carbon dioxide to generate a fuel gas.
- The resulting gas, rich in methane, carbon monoxide, hydrogen, carbon dioxide, and water vapor, replaces natural gas and other fuels for electricity generation.
- Underground Coal Gasification (UCG) involves converting coal into gas within the seam itself, retrieved through wells.
- Gasification transforms coal's carbon content into electricity, hydrogen, and various forms of energy through partial oxidation.
- The produced Syngas, mainly composed of methane, carbon monoxide, hydrogen, carbon dioxide, and water vapor, can be further converted into fertilizers, fuels, solvents, and synthetic materials.

➤ Underground Coal Gasification (UCG):

- UCG, or in-situ gasification, converts coal into gas within the coal seam itself.
- Gas retrieval is done through wells, offering an alternative to traditional coal extraction and combustion methods.

➤ By-products of Coal Gasification:

- Syngas production yields valuable byproducts such as coke, coal tar, sulfur, and ammonia.
- Coke serves as a non-smoking fuel and is employed in the production of water gas and producer gas.
- Coal tar finds applications in road paving through fractional distillation.
- Sulfur is utilized in the manufacturing of sulfuric acid.
- Ammonia is commonly employed in fertilizer production.



➤ Significance of Coal Gasification:

- Substituting coking coal with syngas obtained from coal gasification facilities presents a cost-effective alternative in the steel manufacturing process.
- Syngas from coal gasification finds widespread applications in energy generation and as a feedstock for chemical processes.
- Hydrogen generated through coal gasification can be utilized in various applications, contributing to the development of a Hydrogen Economy.

- Advancements in coal gasification techniques offer an alternative source of hydrogen production for industries.

➤ Steps Taken by the Government to Control Coal Gasification:

- The government introduced a revenue share concession of 20% on coal used for gasification to promote the adoption of clean fuels.
- Coal India Limited (CIL) aims to construct a minimum of three gasification facilities, apart from Dankuni, under a Build-Own-Operate (BOO) framework through global tendering.
- A memorandum of understanding (MOU) has been signed with GAIL for the sale of synthetic natural gas, aligning with global sustainability standards.
- Technological advancements ensure enhanced coal recovery, greater operational flexibility, increased productivity, heightened safety measures, and cost-effectiveness.
- The Ministry of Coal has initiated the National Coal Gasification Mission to raise awareness among stakeholders and develop a comprehensive roadmap for sustainable development.

Draft resolution on improving organ transplantation availability

Context: At the 77th World Health Assembly, member states greenlit a resolution to improve organ transplantation, covering human cells and tissues.

➤ Resolution Overview:

- Member states were tasked with developing a global strategy for adoption in 2026.
- Encouragement for establishing World Donor Day to raise awareness and donations.
- Recognition of inequitable access to transplantation across developing and developed countries.

➤ Key Recommendations:

- Increase availability of human cells, tissues, and organs for transplantation.
- Focus on developing deceased donation to its maximum therapeutic potential.
- Emphasize donation after neurological determination of death and, where appropriate, donation after circulatory determination of death.

➤ Commitments by Member States:

- Develop a strategy to integrate organ transplantation into healthcare systems.
- Prevent exploitation of living donors with adequate follow-up.
- Establish an expert committee to assist in developing the global strategy and its implementation.

➤ Statistics and Challenges:

- Organ donation in India increased from 4,990 in 2013 to 16,041 in 2022.
- India faces a significant shortage in meeting the demand for kidney transplants.

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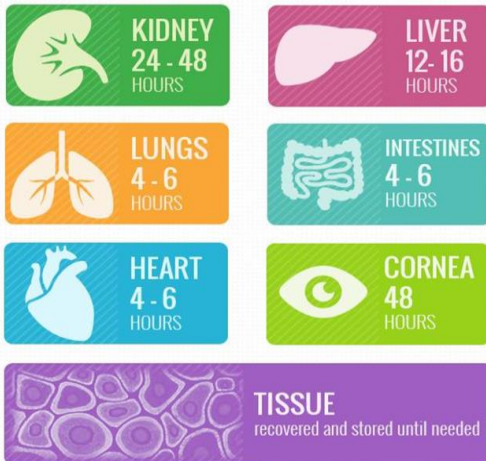


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- Global solid organ transplants increased by 52% compared to 2010, with over 150,000 performed annually.
- Challenges in scaling transplantation include legislation, infrastructure, and financing.
- **Impact of COVID-19 and Addressing Trafficking:**
 - COVID-19 pandemic negatively affected donation and transplantation activities.
 - Insufficient access to transplantation therapies contributes to trafficking in persons for organ removal and trafficking in human organs.
 - Encouragement for official international cooperation to facilitate universal access to transplantation therapies.

FACTORS IN THE PROCESS

Each organ has a different time frame between recovery and transplant.



➤ World Health Assembly (WHA):

- The World Health Assembly (WHA) serves as the decision-making body of the World Health Organization (WHO) and is attended by delegations from all WHO member states.
- It convenes annually at the WHO headquarters in Geneva, Switzerland.
- The WHA is responsible for deciding on WHO's policies, including the appointment of the Director-General.
- It administers financial policies and reviews and approves the proposed programme budget.

State of Environment in Figures 2024

Context: India experienced rapid warming, enduring its second-hottest year on record in 2023, according to the State of Environment in Figures 2024.

➤ Temperature Trends in India (2023):

- India experienced its second-hottest year on record in 2023.
- Remarkably warm winters, monsoons, and post-monsoon periods were observed.

- At least 102 weather stations across 26 states and Union Territories shattered their monthly highest 24-hour maximum temperature in 122 years.
- Ten stations in major cities like Bengaluru, Jamshedpur, Kochi, among others, were among those with record-breaking temperatures.

➤ Regional Temperature Trends (2023):

- Twenty-seven weather stations in Andhra Pradesh, Kerala, and Tamil Nadu reported record-breaking temperatures.
- Thirty-four stations reported record-breaking 24-hour maximum temperatures in September.

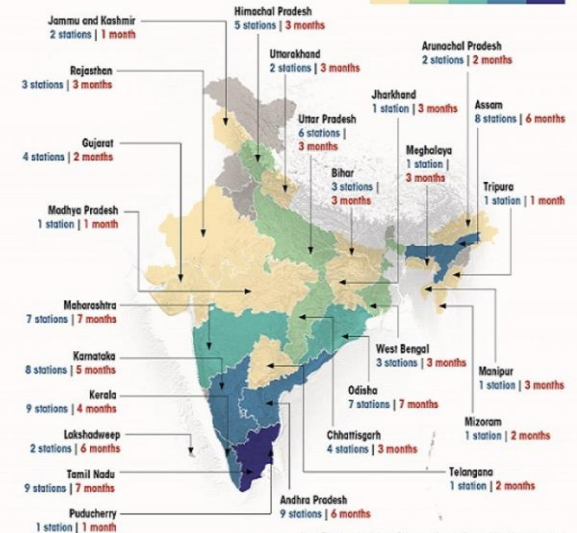
➤ Minimum Temperature Records (2023):

- India recorded its hottest minimum temperature in 122 years in 2023.
- Temperature records, whether maximum, mean, or minimum, were consistently broken during the last six months of 2023.
- Minimum temperatures remained above normal in five out of six months, with anomalies increasing from July to December.
- December saw the highest minimum temperature in 122 years, with a notable anomaly of 1.71°C above normal.

In 2023, some 102 weather stations in 26 of the 36 states/UTs broke their monthly highest 24-hour maximum temperature in 122 years

10 of the stations were in million-plus cities: Bengaluru, Jamshedpur, Kochi, Kota, Kozhikode, Lucknow, Madurai, Thiruvananthapuram, Thiruvananthapuram, Thiruvananthapuram	34 of the weather stations with record-breaking 24-hour maximum temperatures were reported in September	27 of the weather stations with record-breaking temperatures were in Andhra Pradesh, Kerala and Tamil Nadu (9 each)
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00 Number of weather stations that broke monthly 24-hour maximum temperature
00 Number of months when the 24-hour records were broken



Note: The state for Selsam Ridge weather station could not be ascertained
Source: "Annual Climate Summary 2023", India Meteorological Department, April 2024

➤ Temperature Trends in 2024:

- In the first four months of 2024, minimum temperatures remained above normal in three months.
- The southern peninsular region consistently experienced its second-highest minimum temperature in 122 years during these four months.

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DELHI MUKHERJEE NAGAR: 9205274741, 42 | **LAXMI NAGAR:** 9205212500, 9205962002 | **RAJENDRA NAGAR:** 9205274743 | **UTTAR PRADESH PRAYAGRAJ:** 0532-2260189, 8853467068 | **LUCKNOW (ALIGANJ):** 0522-4025825, 9506256789 | **LUCKNOW (GOMTI NAGAR):** 7234000501, 7234000502 | **GREATER NOIDA:** 9205336037, 38 | **KANPUR:** 7887003962, 7897003962 | **GORAKHPUR:** 7080847474, 9161947474 | **ODISHA BHUBANESWAR:** 9818244644/7656949029



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➤ **Concerns and Implications:**

- Rising maximum temperatures and record-breaking temperatures reported from various states, including Delhi, are concerning.

- The trend for minimum temperatures in 2023 and 2024 suggests a new normal, indicating warmer nights.

NEWS IN BETWEEN THE LINES

NIMHANS



Recently, the National Institute of Mental Health and Neuro Sciences (NIMHANS) in Bengaluru has been awarded the Nelson Mandela Award for Health Promotion for 2024 by the World Health Organization (WHO).

About the National Institute of Mental Health and Neuro Sciences:

- The National Institute of Mental Health and Neuro Sciences (NIMHANS) is an Institute of **National Importance** and **operates as an autonomous institute under the Ministry of Health and Family Welfare**.
- It was established in **1974** in **Bengaluru**, Karnataka, with the aim of addressing the growing need for specialized care and research in the fields of mental health and neurosciences.
- It was conferred the status of an Institute of National Importance by an Act of Parliament in **2012**.
- It specializes in providing comprehensive care, **conducting cutting-edge research** and offering academic programs in the domains of mental health, **neurology, psychiatry, psychology** and allied disciplines.
- Its headquarter is in **Bengaluru**, Karnataka.

The Nelson Mandela Award:

- The Nelson Mandela Award for Health Promotion was established by the World Health Organization (WHO) in **2019**.
- It honors individuals, **institutions, governmental or non-governmental organizations** for their outstanding contributions to health promotion.

Tirumala Temple



Recently, the Union Home Minister of India visited the Tirumala Temple along with his family members.

About the Tirumala Temple:

- The **Sri Venkateswara Swami Temple**, also known as the **Tirumala Temple**, Tirupati Temple, or Tirupati Balaji Temple.
- It is a Hindu temple located in the **Tirumala Hills of Tirupati, Andhra Pradesh**.
- The temple is dedicated to **Venkateswara, an incarnation of Vishnu**, who is believed to have appeared on Earth to save humanity from the trials of **Kali Yuga**.
- The temple is also known as **Kaliyuga Vaikuntha**, and the deity is referred to as Kaliyuga Prathyaksha Daivam.
- The temple is built in the **Dravidian style of architecture** and is believed to have been built around 300 AD.
- It is located at a height of 853 meters on the Tirumala Hills, which are part of the **Seshachalam Hills**.
- The temple is considered to be the **abode of Vishnu on Earth**.
- It is one of the **richest temple in the world in terms of donations** received and wealth.

Hollongapar Gibbon Sanctuary



Recently, the Northeast Frontier Railway (NFR) has earmarked funds to construct canopy bridges for India's only ape to move across a railway track bifurcating its prime habitat in eastern Assam Hollongapar Gibbon Sanctuary.

About Hollongapar Gibbon Sanctuary:

- Hollongapar Gibbon Sanctuary, **formerly known as the Gibbon Wildlife Sanctuary** or Hollongapar Reserve Forest, is an isolated protected area of evergreen forest located in Jorhat district of Assam.
- The sanctuary was officially established and renamed in **1997** and renamed on **25 May 2004** as the Hoollongapar Gibbon Sanctuary.
- The Sanctuary contains India's only gibbons – the **hoolock gibbons** and Northeastern India's only nocturnal primate – the **Bengal slow loris**.
- The upper canopy of the forest is dominated by the **Hollong tree**, while the Nahar dominates the **middle canopy**.
- The lower canopy consists of **evergreen shrubs and herbs**.
- On **30 July 1997**, the sanctuary was constituted under the civil district of **Jorhat** and named it the **"Gibbon Wildlife Sanctuary"** after the only apes found in India.
- It is the only sanctuary in India **named after a gibbon** due to its distinction for containing the densest gibbon populations in Assam.
- The **gibbon, known for its vocalisation, spends much of its time on the upper canopy** of tall trees, mostly the **hollong** (Dipterocarpus macrocarpus).

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Place in News

Malaysia

Recently, Malaysia's new High Commissioner to India, Dato Muzaffar Shah Mustafa, emphasized the longstanding close relationship between Malaysia and India, aiming to boost trade from \$20 billion to \$25 billion over the next three years.

Malaysia (Capital: Kuala Lumpur)

Location: Malaysia is a country located in Southeast Asia.

Boundaries: Malaysia shares its land borders with **Thailand** (north), **Indonesia** and **Brunei** (south) and **Brunei** and maritime borders with **Singapore**, **Vietnam** and **Indonesia**.

Geographical Features:

- Mount **Kinabalu** in East Malaysia is the country's **tallest mountain**.
- The **Titiwangsa Range** in Peninsular Malaysia and the **Crocker Range** in East Malaysia
- **Langkawi**, **Tioman** and **Redang** are the prominent islands.
- Major rivers in Malaysia include the **Rajang**, **Kinabatangan**, **Pahang**, **Perak**, **Baram**, **Gombak**, **Klang**, and **Sungai Besar**.
- **Bombalai Hill** in Sabah is the only active volcano in Malaysia.
- Malaysia is rich in minerals, including tin, petroleum, **natural gas**, **copper**, **iron ore**, **bauxite** and **gold**.

International Organizations: Malaysia is a member of various international organizations, including the Association of Southeast Asian Nations (**ASEAN**), **United Nations**, **Commonwealth of Nations**, Non-Aligned Movement, Organisation of Islamic Cooperation (**OIC**), Asia-Pacific Economic Cooperation (**APEC**) and East Asia Summit (**EAS**).



POINTS TO PONDER

- Which species of rhino is specifically found in India? – **Greater one-horned rhino**
- Which community is known for practicing the traditional craft of Bela Block Printing which is in danger of dying out with no young takers for it.? – **Khatri**
- Which multi-national exercise did the Indian Air Force (IAF) contingent recently participate in at the Eielson Air Force Base in Alaska? – **Red Flag**
- Which state in India recently recorded the sighting of a Eurasian or common whimbrel, a long-distance migratory bird, tagged with a Global Positioning System (GPS) transmitter? – **Chhattisgarh**
- A new plant species discovered in Kerala has been named after which Nobel Prize-winning scientist for her discovery of Jumping Genes? – **Barbara McClintock**

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