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Current affairs summary for prelims

7 March, 2024

Coal Gasification Scheme

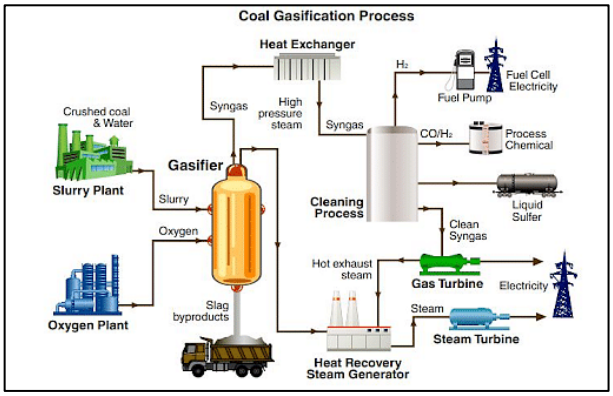
Context: *The Ministry of Coal has issued three draft Requests for Proposals (RFPs) to seek input from interested Government PSUs and Private Investors for setting up coal gasification plants in India.*

About the Scheme:

- The Union Cabinet has granted approval for a ₹8,500 crore incentive scheme aimed at promoting coal gasification projects.
- The integration of gasification technology in India is projected to diminish the nation's reliance on imports of natural gas, methanol, ammonia, and other crucial commodities.
- The government has set a target to gasify 100 million tonnes (MT) of coal by the year 2030.
- Allocated funds categorized into **three segments**.
  - **Category I: Government PSUs Support:**
    - ✓ ₹4,050 crores earmarked for Government PSUs.
    - ✓ Up to 3 projects eligible.
    - ✓ Grant amount capped at ₹1,350 crores or 15% of project's capital expenditure.
  - **Category II: Private Sector and Government PSUs Support:**
    - ✓ ₹3,850 crores allocated for both Private Sector and Government PSUs.
    - ✓ Each project entitled to a grant of ₹1,000 crores or 15% of capital expenditure.
    - ✓ Tariff-based bidding mandatory for at least one project.
  - **Category III: Demonstration Projects and Small-scale Gasification Plants:**
    - ✓ ₹600 crores designated for Demonstration Projects and small-scale Gasification Plants.
    - ✓ Grant set at ₹100 crores or 15% of capital expenditure.
    - ✓ Entities with a minimum Capex of ₹100 Crore and minimum production of 1500 Nm^3/hr. Syn gas eligible.

Coal Gasification:

- Coal gasification involves partially oxidizing coal with air, oxygen, steam, or carbon dioxide to produce a fuel gas, which is then used to generate electricity instead of traditional fuels like piped natural gas and methane.



- In-situ gasification of coal, also known as Underground Coal Gasification (UCG), entails turning coal into gas while it remains in the seam and retrieving it through wells.
- Gasification transforms all carbon in coal into electricity, hydrogen, and other energy forms through partial oxidation, rather than directly burning coal.
- It produces Syngas, primarily composed of methane, carbon monoxide, hydrogen, carbon dioxide, and water vapour, which can be converted into various fertilizers, fuels, solvents, and synthetic materials.

Government Initiatives in Coal Gasification:

- Offering a 20% revenue share concession on coal used for gasification to promote clean fuel adoption.
- Planning to establish three gasification facilities, in addition to Dankuni, through global tendering, and signing an MOU with GAIL for the sale of synthetic natural gas.
- Embracing technological advancements for better coal recovery, operational flexibility, increased productivity, enhanced safety, and reduced costs.
- Establishing the National Coal Gasification Mission by the Ministry of Coal to raise awareness among stakeholders and develop a clear roadmap with defined responsibilities.

MethaneSAT

Context: *A satellite aimed at changing how we perceive methane emissions from oil and gas production has been launched from California's Vandenberg Space Force Base.*

Why Track Methane Emissions?

- Methane is a potent greenhouse gas, second only to carbon dioxide in contributing to global warming.
- It's responsible for 30% of global heating since the Industrial Revolution and is 80 times more potent than CO2 over a 20-year period.
- Methane also contributes to ground-level ozone formation, which could be causing about one million premature deaths annually.

About MethaneSAT:

- Developed by the Environmental Defense Fund (EDF) in partnership with Harvard University, the Smithsonian Astrophysical Observatory, and the New Zealand Space Agency.
- Orbiting the Earth 15 times a day, MethaneSAT will monitor the oil and gas sector to track methane emissions.
- It will provide detailed data on emission sources and trends in near real-time, aiding stakeholders and regulators.

Features of MethaneSAT:

- Equipped with a high-resolution infrared sensor and spectrometer for accurate methane detection.
- Can identify emissions sources as small as three parts per billion and larger emitters over a wide area of about 200 km by 200 km.
- Data analysis will be done using cloud-computing and AI technology developed by Google, a mission partner.

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➢ **Significance of MethaneSAT:**
- Launch coincides with the implementation of stricter methane management policies globally.
- Helps countries and companies meet methane reduction targets set at COP meetings.
- Provides transparency by making emission data publicly available, although it may not directly compel polluters to reduce emissions.

➢ **Global Warming Potential (GWP):**
- GWP measures the heat absorbed by a greenhouse gas in the atmosphere compared to the heat absorbed by the same mass of carbon dioxide (CO2).
- It indicates a gas's impact on global warming based on its ability to absorb energy and its atmospheric lifespan.
- GWP is calculated over a specific time period, usually 100 years, to assess how much energy a gas absorbs relative to CO2.
- Gases with higher GWP values contribute more to global warming as they absorb more energy per unit of mass.
- CO2 serves as the baseline with a GWP of 1, while other gases have different GWP values depending on their characteristics and timeframe.
- GWP is used to calculate carbon dioxide equivalent, providing a standardized measure for comparing the climate effects of different gases.
- It is calculated by multiplying the GWP of a gas by its mass to determine its contribution to global warming relative to CO2.

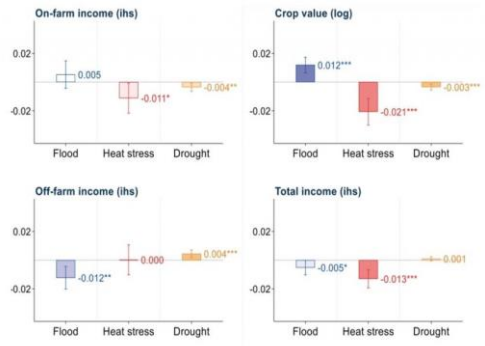
Greenhouse Gas (GHG)	Global Warming Potential (GWP)
Carbon dioxide (CO2)	1
Methane (CH4)	25
Nitrous oxide (N2O)	289
Hydrofluorocarbons (HFCs)	124 – 14,800
Perfluorocarbons (PFCs)	7,390 – 12,200
Sulfur hexafluoride (SF6)	22,800
Nitrogen trifluoride (NF3)	17,200
Adopted from Brander & Davis, 2012	

The Unjust Climate Report

Context: *Women and youth experience greater agricultural income losses from heat stress and floods due to unequal capacity to respond and adapt to extreme weather events, according to a FAO report.*

➢ **Numerical Highlights:**
- **Income Losses:**
  - Poor households lose 5% of their total income due to heat stress and 4.4% due to floods.
  - Floods widen the income gap between poor and non-poor rural households by approximately USD 21 billion a year, and heat stress by over USD 20 billion a year.
  - A 1°C increase in long-term temperatures leads to a 53% increase in farm incomes of poor households and a 33% decrease in their off-farm incomes relative to non-poor households.
- **Gender Disparities:**
  - Female-headed households experience income losses of 8% due to heat stress and 3% due to floods relative to male-headed households.
  - Heat stress widens the income gap between female-headed and male-headed households by USD 37 billion a year, and floods by USD 16 billion a year.
  - A 1°C increase in long-term average temperatures results in a 34% reduction in the total incomes of female-headed households compared to male-headed households.
- **Youth and Children:**
  - Households headed by young people witness their total incomes increase by 3% due to floods and 6% due to heat stress relative to older households.
  - Extreme temperatures lead children to increase their weekly working time by 49 minutes compared to prime-aged adults, mostly in the off-farm sector.

➢ **Policy Highlights:**
- **Multifaceted Policies:**
  - Policies and programmes should address both farm and off-farm sources of rural people's vulnerabilities.
  - They must tackle specific constraints faced by vulnerable populations, including limited access to resources and low risk tolerance.
- **Social Protection and Advisory Services:**
  - Linking social protection programmes to advisory services can encourage adaptation and compensate farmers for losses.
  - Bundling cash-based social assistance with climate advisory services and extension support can enhance positive impacts.
- **Gender-Transformative Methodologies:** Gender-transformative methodologies can challenge discriminatory gender norms and empower women to make economic decisions.
- **Participatory Extension Methodologies:** Participatory extension methodologies can boost the participation of vulnerable people and increase their sense of agency in addressing climate risks.
- **Investing in Data Collection:** Investing in the collection of disaggregated data is essential to assess the impacts of climate actions on vulnerable populations.



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NEWS IN BETWEEN THE LINES

Jim Corbett National Park

Recently, the Supreme Court has condemned the illegal felling of over 6,000 trees within the Jim Corbett National Park.

About Jim Corbett National Park:

- Jim Corbett National Park is a wildlife sanctuary in the **Nainital district of Uttarakhand**.
- It was established in **1936 as Hailey National Park** and is India's oldest and most prestigious national park.
- The park is **part of the Corbett Tiger Reserve**, which is the largest tiger reserve in the world.
- It is also being honoured as the place where Project Tiger was first launched in the year **1973**.
- It has been divided into six major different tourism zones- **Bijrani Safari, Jhirna Safari, Dhela Safari, Dhikala, Durga Devi** and **Sitabani Buffer.**
- **Flora:** Corbett National Park is home to dense moist deciduous forests with over 600 species of plants including **Sal**, **Khair** and **Sissoo**.
- **Fauna:** It is also home to **leopards** and various other mammals including jungle cats, **barking deer**, spotted deer, sambar deer and **sloth**.

Non-lethal Weapons

Recently, the Maldives signed its first military cooperation agreement with China, securing free "non-lethal" military equipment and training to strengthen national autonomy.

About Non-lethal Weapons:

- Non-lethal weapons (NLWs) are weapons that are **designed to minimize injury or death**.
- They are **used by law enforcement** and the **military** for protection and security missions.
- These weapons **encompass bean bags, rubber bullets, pepper spray, electric stun guns, police batons, tear gas, water cannon** and **acoustic weapons.**
- They can be effective **for self-defense**, but they are not as effective as lethal weapons.

OPEC

Recently, the head of Organization of Petroleum Exporting Countries (OPEC) expressed confidence that the organization would secure a larger share of India's oil imports in the coming decades.

About OPEC:

- The Organization of the Petroleum Exporting Countries (OPEC) is an **intergovernmental organization of 13 oil-exporting developing nations.**
- **Angola withdrew** its membership effective **1 January 2024**.
- **As of now, OPEC has a total of 12 Member Countries** (Algeria, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates and Venezuela)
- It was **founded in Baghdad, Iraq, in September 1960**, with an agreement signed by five countries: **Iran, Iraq, Kuwait, Saudi Arabia** and **Venezuela**.
- The mission is to **coordinate** and **unify petroleum policies** among Member Countries while ensuring stabilization of oil prices in international markets to eliminate harmful fluctuations.
- Its headquarter is in **Vienna, Austria**.

USIEF

Recently, the United States-India Educational Foundation (USIEF) has announced the opening of its annual competition for Fulbright-Nehru and other Fulbright fellowships for Indian citizens.

About USIEF:

- The United States-India Educational Foundation (USIEF) is a **program** that aims to **promote mutual understanding** between the people of the **United States and India**.
- It was established in **1950** as part of the U.S. government's Fulbright Program, which is a leading program for cultural and educational exchange.
- It offers a variety of programs, including **Fulbright Fellowships, Study in the U.S. and India**, Institutional Collaboration, and **Fulbright-Nehru Fellowships jointly funded by the U.S. and Indian governments** along with the Fulbright-Nehru Competition.
- It has **awarded around 20,000 grants and scholarships** in almost every academic domain since its inception.

Orans

Recently, a state government notification in Rajasthan has sparked fear among community dwellers about potential loss of access to forest produce and livelihoods due to the proposal to classify Orans (sacred groves) as deemed forests.

About Orans:

- Orans, also **known as Sacred groves in India**, are **patches of forested areas or woodlands dedicated to local deities or spirits**, often protected by communities due to religious or cultural significance.
- They **hold immense cultural** and religious importance for communities, serving as sites for worship, rituals and ceremonies.
- They are considered sacred and are **often associated with legends, myths and traditional beliefs passed down through generations.**

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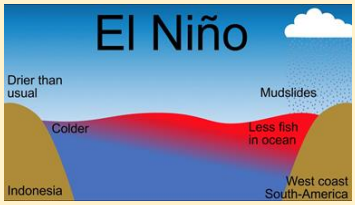
	▪ They act as biodiversity hotspots, **preserving unique flora and fauna** due to minimal human interference. ▪ Orans often provide valuable ecosystem services, including the provision of forest products such as **medicinal plants, timber, fruits and non-timber forest produce** (NTFP), which contribute to the livelihoods of local communities.
El Nino 	*Recently, the 2023-2024 El Nino peaked as one of the five strongest on record, with ongoing climate effects despite a weakening trend, according to the World Meteorological Organization.* **About El Nino:** ▪ El Nino refers to a **periodic warming of the ocean surface in the central and eastern tropical Pacific Ocean,** leading to significant climate fluctuations worldwide. ▪ El Nino events occur every two to seven years on average and typically last nine to 12 months at a time. ▪ During El Nino, **warmer-than-average sea-surface temperatures disrupt normal weather patterns**, leading to various climatic anomalies. ▪ It is associated with increased rainfall in the **Horn of Africa and the southern U.S**., while causing dry and **warm conditions in Southeast Asia, Australia and southern Africa.** ▪ This event can lead to above-normal temperatures over land areas and contribute to **extreme weather events globally**. ▪ It impacts not only weather patterns but **also agricultural productivity, water resources, and public health, affecting economies** and societies worldwide.
Place in News **Japan**	*Recently, External Affairs Minister S. Jaishankar emphasized the need for India and Japan to bolster their defense capabilities to benefit the larger region, including the Red Sea area.* **Japan (Capital: Tokyo)** **Location:** Japan is an island country in East Asia. **Boundaries:** ▪ Japan is surrounded by the **Pacific Ocean** (East), the **Sea of Japan** (West), **the Sea of Okhotsk** (North) and **the East China Sea** (Southwest). ▪ It shares maritime borders with **China**, **North Korea**, **South Korea**, the **Philippines**, **Russia**, the **Northern Mariana Islands** and **Taiwan**. **Physical Features:** ▪ The country's five main islands, from north to south, are **Hokkaido, Honshu, Shikoku, Kyushu** and **Okinawa.** ▪ The country is **part of the Ring of Fire** and is prone to earthquakes, tsunamis and volcanic eruptions. ▪ **Mount Fuji**, or **Fuji-san**, is the tallest and largest active volcano in Japan.

POINTS TO PONDER

- Where was the foundation stone for the second rocket launchport of the Indian Space Research Organisation (ISRO) laid by Prime Minister Narendra Modi on February 28, 2024? **- Kulasekarapattinam in Thoothukudi, Tamil Nadu**
- Who won the top three prizes in the National Youth Parliament Festival, 2024 recently held in New Delhi? **- Yatin Bhaskar Duggal from Haryana (first prize), Vaishna Pitchai from Tamil Nadu (second prize) and Kanishka Sharma from Rajasthan (third prize)**
- The Holistic Progress Card (HPC) for the foundational (Classes 1 and 2), preparatory (Classes 3 to 5) and middle (Classes 6 to 8) stages of education has been devised by which standard-setting body under the NCERT? **- Performance Assessment, Review, and Analysis of Knowledge for Holistic Development (PARAKH)**
- How many banks have become part of RBI's UDGAM (Unclaimed Deposits – Gateway to Access inforMation) portal according to the RBI? **- 30**
- Where was India's first city-specific Zero Carbon Buildings Action Plan (ZCBAP) launched recently? **- Nagpur**