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## Current Affairs - 19 November 2024

### ONE DAY ONE GENOME INITIATIVE

The Department of Biotechnology (DBT) and Biotechnology Research and Innovation Council (BRIC) introduced the 'One Day One Genome' initiative to showcase the enormous microbial potential of India.



- It will highlight the **unique bacterial species** found in our country and emphasize their critical roles in environment, agriculture and human health.
- This initiative is **coordinated by Biotechnology Research and Innovation Council-National Institute of Biomedical Genomics (BRIC-NIBMG)** an institute of the Department of Biotechnology.
- This initiative aims to release a fully **annotated bacteriological genome** isolated in the country freely available to the public.
- This will be complemented with a **detailed graphical summary**, infographics and genome assembly/annotation details.
- These documents will thus give an **idea about the scientific and industrial use** of these microbes.
- Consequently, microbial genomics data will become **more accessible to the general public**, scientific researchers and thereby stimulate discussions; innovations directly benefit the entire community and ecosystem.

### Role of microorganisms

- Microorganisms are **crucial for our ecosystem**. They play an important role in all **biogeochemical cycles**, soil formation, mineral purification, degradation of organic wastes and toxic pollutants along with methane production.
- Cumulatively they help to maintain the **homeostasis in our planet**.
- In agriculture, they help in nutrient cycling, nitrogen fixation, maintaining soil fertility, controlling pests and weeds and stress responses.



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- Microorganisms are **sympiotically associated with plants** and help them in nutrient and water uptake.
- There are many more microbial cells than the number of human cells in a human body. They are essential for our digestion, immunity and even mental health.
- All infectious diseases are mainly caused by pathogenic microorganisms. On the other hand, non-pathogenic microorganisms are indispensable for our defense against infectious diseases.

### WHAT IS THE EASTERN MARITIME CORRIDOR (EMC)?



- The **Chennai-Vladivostok Sea route**, also known as the EMC, will link **Russia's east coast with South India**.
- The EMC offers a significant **reduction in both cargo transit time between India and the Russian Far East of up to 16 days and in distance by up to 40%**, promising substantial efficiency gains in transportation.
  - **Currently, the route from Mumbai to St. Petersburg, Russia, via the Western Sea Route and Suez Canal spans 8,675 nautical miles or 16,066 km.**
  - At present, a large container ship from India **takes around 40 days to reach Russia's Far East region** through Europe.
  - In contrast, the **distance from Chennai to Vladivostok** via the EMC is significantly shorter, at **only 5,647 nautical miles, or 10,458 km.**
  - This translates to **substantial savings of 5,608 km in distance**, providing significant reductions in logistical costs and enhancing the efficiency of cargo transportation between Russia, India, and Asia.
- En route, **EMC passes through the Sea of Japan, the East China Sea, the South China Sea, the Malacca Straits, the Andaman Sea, and the Bay of Bengal.**

The route includes **port options** if needed, such as Dalian, **Shanghai, Hong Kong, Ho Chi Minh City, Singapore, Kuala Lumpur, Bangkok, Dhaka, Colombo, and Chennai.**



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## Current Affairs - 19 November 2024

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### WHAT IS GSAT-N2 (GSAT-20)?



- It is **India's advanced communication satellite**.
- It was developed by **New Space India Limited (NSIL)**, the **commercial arm of ISRO** under the Department of Space.
- It was **launched onboard SpaceX's Falcon-9 rocket** into a **geosynchronous transfer orbit**.
- It is designed to **provide data and internet services to remote regions** and enable **in-flight Internet connectivity across the Indian subcontinent**.

#### Features:

- It is a **high-throughput communication satellite** operating in the **Ka-band**.
- The satellite is equipped with **multiple spot beams** and is designed to **support a large user base**, utilizing small user terminals.
- GSAT-N2 features **32 user beams**—8 narrow spot beams over the Northeast region and 24 wide spot beams covering the rest of India.
- These beams will be **supported by hub stations across mainland India**.
- The GSAT-N2 satellite, with a lift-off mass of **4,700 kg**, has a **mission life of 14 years**.
- This is **India's highest throughput satellite** and the **only one exclusively operating in the highly sought-after Ka-band**.

#### Why was the Falcon-9 rocket chosen?

- While **ISRO's Mark-3 launch vehicle can place up to 4,000 kg** into a geostationary transfer orbit, the **GSAT-N2's weight of 4,700 kg** required a different solution.
- As a result, **ISRO turned to SpaceX's launch vehicle** for the mission, marking **ISRO's first commercial collaboration with SpaceX**.



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### G20 SUMMIT IN RIO BEGINS

- G-20, is a group of finance ministers and central bank governors from 19 individual countries and European Union. It was established in 1999.
- It was elevated to a forum of Heads of State/Government in 2008 to effectively respond to the global financial crisis of 2008.
- It is a **forum, not a legislative body**, its agreements and decisions have no legal impact, but they do influence countries' policies and global cooperation.
- **Members**
  - It consists of 19 countries and the European Union (EU):
    - **Countries:** Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, United Kingdom, and United States.
  - **Special Invitees:** Guest nations and organizations, including the United Nations and the World Bank, participate in G20 summits.
- **Aims/Objectives**
  - **Economic Stability:** Foster global economic growth and financial stability.
  - **Sustainable Development:** Promote policies addressing climate change and equitable development.
  - **Crisis Management:** Coordinate responses to financial and health crises (e.g., COVID-19).
  - **Global Collaboration:** Strengthen multilateral cooperation on trade, investment, and innovation.
  - **Inclusivity:** Represent voices of both advanced and emerging economies, including the Global South.
- **Achievements (Examples)**
  - **Financial Crisis Mitigation (2008):** Coordinated response to the global financial crisis, preventing deeper recession.

## Current Affairs - 19 November 2024

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- **Paris Agreement Support (2015):** Played a key role in fostering international consensus on climate change goals.
  - **Debt Relief for Developing Nations (2020):** Launched the Debt Service Suspension Initiative (DSSI) during the pandemic to aid vulnerable countries.
  - **COVID-19 Pandemic:** Facilitated vaccine distribution and economic recovery plans through global cooperation.
    - In March 2020, G20 leaders pledged to inject \$5 trillion into the global economy to reduce the economic impact of the coronavirus pandemic.
  - **Digital Transformation (2023):** India's G20 presidency focused on fostering digital public infrastructure to bridge the global digital divide.
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### UNEMPLOYMENT IN INDIA

- Unemployment occurs when individuals who are capable of working, actively seeking work, and willing to work at prevailing wages are unable to find jobs.
- It is an important indicator of the economic health of a country, reflecting the level of economic activity, productivity, and social well-being.

#### **Measuring Unemployment in India:**

- Government of India employs various methods and surveys to measure unemployment.
- Key agencies responsible for unemployment data collection and analysis include the Ministry of Statistics and Programme Implementation (MoSPI), National Sample Survey Office (NSSO), and the Centre for Monitoring Indian Economy (CMIE).

#### **National Sample Survey Office (NSSO) Surveys:**

- It uses two primary measures to classify the working status of individuals:
  - **Usual Principal and Subsidiary Status (UPSS):**
    - The UPSS classifies an individual's principal status-whether employed, unemployed, or out of the labor force-based on the activity they spent the most time on in the previous year.



## Current Affairs - 19 November 2024

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- An individual who works in a subsidiary role for at least 30 days within the year is also counted as **employed** under this measure.
- **Current Weekly Status (CWS):**
  - The CWS method adopts a shorter reference period of one week.
  - An individual is counted as employed if they worked for at least one hour on any day during the seven days preceding the survey date.
  - As a result, unemployment rates under CWS are typically higher than those measured by UPSS, as the probability of finding work over a week is lower compared to an entire year.

**\*\*Note:** NSSO merged with Central Statistics Office (CSO) to form the National Statistical Office (NSO) in May, 2019.

### Centre for Monitoring Indian Economy (CMIE):

- The CMIE is an independent private limited entity that serves both as an economic think-tank as well as a business information company.
- CMIE provides high-frequency data on unemployment through its **Consumer Pyramids Household Survey (CPHS)**.
- This data is updated regularly and offers insights into unemployment trends on a monthly basis.

### Key Unemployment Indicators Used in India:

- **Unemployment Rate (UR):** The percentage of the labor force that is unemployed and actively seeking employment.
  - **Labor Force Participation Rate (LFPR):** The percentage of the working-age population that is either employed or actively seeking employment.
  - **Worker Population Ratio (WPR):** The proportion of the working-age population that is employed.
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## Current Affairs - 19 November 2024

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### SHOULD FOSSIL FUELS BE REGULATED LIKE NUCLEAR WEAPONS?

A growing coalition of governments and civil society organisations are advocating for a **Fossil Fuel Non-Proliferation Treaty (FF-NPT)**, aimed at phasing out fossil fuels and promoting a just transition to renewable energy.

#### What is the Fossil Fuel Non-Proliferation Treaty (FF-NPT)?

- **About:** Conceptualised in **2016** and officially launched in **2019**, the FF-NPT proposes to make it **legally binding** on nations to end fossil fuel extraction, wind down existing production, and manage a just transition to renewable energy.
- **Objective:** Inspired by international treaties regulating nuclear weapons, **this initiative seeks to address the escalating climate crisis** by curbing fossil fuel production and ensuring equitable global energy access.
- **Origins and evolution:** Conceptualised around the time the **Paris Agreement** was signed, the FF-NPT has gained endorsements from notable entities, including former UN Secretary-General Ban Ki-Moon, indigenous communities, and small island states.
- **Recent developments:**
  - **At COP29 to the UNFCCC in Baku** (Azerbaijan), 10 more countries joined discussions on FF-NPT, though their identities remain undisclosed.
  - **The treaty has been endorsed by** 13 Small Island Developing States in the Pacific, such as Vanuatu and Tuvalu, and major coal-producing nations like Colombia.
- **Financial institutions' support:** A collective endorsement by 25 members of the Global Alliance for Banking on Values marks the initiative's first major backing from the financial sector.

#### India's Position on the FF-NPT and Way Ahead for the FF-NPT:

- **India's position:** While India has not been extensively engaged, the FF-NPT initiative recognises its significance:



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- As a major fossil fuel consumer, **India's emissions are projected to rise by 4.6% in 2024**, according to the Global Carbon Project.
- Advocates believe India could benefit from the treaty, ensuring **justice and equity** in the global energy transition.
- **Way ahead:** The treaty must align with the Paris Agreement's goals, supporting financial mechanisms like the **New Collective Quantified Goal**.

### Conclusion:

- The FF-NPT offers a bold vision for tackling the climate crisis by regulating fossil fuel production akin to nuclear disarmament.
  - With increasing support from governments, financial institutions, and vulnerable nations, the initiative underscores the **urgent need for global cooperation and equitable solutions**.
  - However, financial and political challenges must be overcome to **turn this vision into a legally binding reality**.
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### DELHI BREATHES POISON - WORST AIR QUALITY SINCE 2019

#### Why Delhi-NCR struggles with severe air pollution every winter?

- **Background**
  - Although emissions remain similar throughout the year, pollution and hazardous air quality worsen in Delhi-NCR during winter months.
  - New Delhi faced hazardous air quality when the Air Quality Index (AQI) crossed 400 on November 12.
  - Since then, the situation has worsened as AQI deteriorated to 494 on Nov 18.
  - Thick smog continues to blanket the city, severely limiting visibility and disrupting both traffic and flight operations.
- **Top contributor to air pollution in Delhi**
  - A study by the Centre for Science and Environment reveals that during the time period of October 12- November 3, 2024:





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## Current Affairs - 19 November 2024

---

- vehicular emissions are the largest contributor to Delhi's air pollution, accounting for 51.5 per cent of the city's pollution;
- Neighbouring districts add 34.97 per cent,
- farm fires contribute 8.19 per cent, and
- dust particles make up 3.7 per cent of the total air pollution in the city.

### Major factors responsible for winter pollution

- **Crop burning in surrounding states**
    - Farmers in states like Punjab, Haryana, and Uttar Pradesh burn crop stubble to clear fields as an immediate and simple solution after harvest.
  - **Frozen, unmoving winter air**
    - Delhi's cold weather causes air to be severely frozen and still. Pollutants are caught near the ground, stuck in one place.
  - **Overpopulation**
    - With a population of over 20 million, Delhi's fast-paced urban growth puts immense pressure on its infrastructure.
  - **Vehicular emission**
    - Delhi's roads are crowded with vehicles, many of which are old and release high levels of harmful gasses.
  - **Fireworks during festivals**
    - Despite the firecrackers being banned, they continue to burst during festivals like Diwali. These fireworks release severely harmful chemicals, including sulfur dioxide and airborne particles.
  - **Construction and dust**
    - Big building sites and roads that are being built produce a lot of dust, especially during dry weather.
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