

21 November 2024

One Day One Genome

Context: The One Day One Genome initiative, launched by the Department of Biotechnology (DBT) and the Biotechnology Research and Innovation Council (BRIC), aims to highlight India's vast microbial diversity and its potential applications in agriculture, health, and environmental management.

Vision of One Day One Genome

- **Focus on Microbial Diversity:** The initiative seeks to showcase India's unique microbial species and their potential in various sectors such as agriculture, human health, and environmental sustainability.
- **Genomic Data Generation:** The primary aim is to sequence bacterial genomes and create a comprehensive database of microbial diversity.
- **Unlock Hidden Potential:** By sequencing microbial genomes, the initiative will uncover the vital roles of microorganisms and their applications in improving human health, agriculture, and the environment.

How the 'One Day One Genome' Initiative Works:

- **Genome Sequencing:** The initiative focuses on sequencing the genomes of microorganisms to uncover their genetic blueprint, functional properties, and potential applications in agriculture, health, and industry.
- **Publicly Accessible Data:** Genomic data from the sequencing will be freely available to researchers, industries, and the public, encouraging collaboration and innovation in biotechnology and environmental management.
- **Detailed Data Presentation:** Annotated bacterial genomes will be released with graphical summaries, infographics, and genome details, making the data accessible and understandable for both scientists and the public.
- **Collaboration and Engagement:** The initiative promotes collaboration among researchers, biotech companies, policymakers, and the public to drive discussions and innovations that benefit society.

Led By:

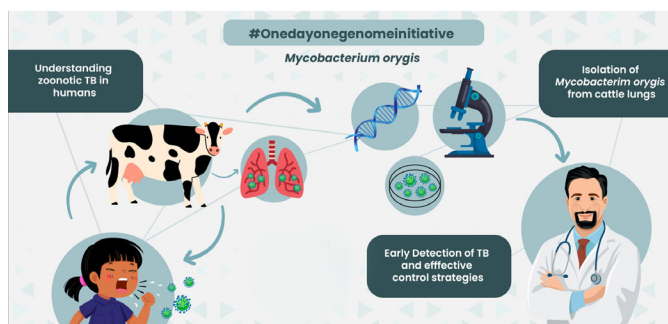
- **Biotechnology Research and Innovation Council (BRIC):** BRIC leads the initiative, coordinating biotech

expertise to ensure effective implementation.

- **National Institute of Biomedical Genomics (NIBMG):** NIBMG provides technical expertise in microbial genomics, assisting in genome sequencing and data analysis.

What is genome?

- The genome is the complete set of genetic information contained within an organism's DNA, including all of its genes and non-coding regions. It's essentially the blueprint for life, instructing the development, growth, and function of an organism.
- **Key Components:**
 - » **DNA (Deoxyribonucleic acid):** The molecule that contains genetic information.
 - » **Genes:** Units of heredity that encode proteins or functional RNA molecules.
 - » **Non-coding regions:** Regulatory elements, repetitive sequences, and other functional regions.
 - » **Chromosomes:** Thread-like structures composed of DNA and proteins.



Microbial Importance in Ecosystem, Agriculture, and Human Health

- **Ecosystem Roles:**
 - » Microbes drive biogeochemical cycles, soil formation, nitrogen fixation, and waste degradation.
 - » They help in pollution control by breaking down toxic pollutants and purifying water.
- **In Agriculture:**
 - » Microbes enhance soil fertility, nitrogen fixation, and plant growth.
 - » They control pests and diseases, reducing pesticide use, and help plants cope with environmental stress.
- **Human Health:**

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- » Gut microbes aid digestion, vitamin synthesis, and immunity.
- » A balanced microbiome supports the immune system and protects against infections.

Launch of the Global Energy Efficiency Alliance at COP29

Context: At COP29 in Baku, Azerbaijan, the United Arab Emirates (UAE) unveiled the Global Energy Efficiency Alliance, a landmark initiative aimed at doubling global energy efficiency rates by 2030 and reducing carbon emissions. This initiative builds on the UAE's prior commitments made under the 'UAE Consensus' at COP28, where nations, organizations, and businesses pledged to reduce carbon footprints and adopt sustainable practices.

Key Objectives:

- Double global energy efficiency rates by 2030.
- Reduce carbon emissions.
- Minimize natural resource consumption.

Goals and Vision:

- Promote energy efficiency through knowledge sharing, technology transfer, and public-private partnerships.
- Establish best practices for energy efficiency, with a focus on regions like Africa that face barriers to technological and financial solutions.
- Encourage investment in energy efficiency projects to drive sustainable progress.

Strategic Importance:

- The launch of the Alliance at COP29 underscores the growing importance of energy efficiency in addressing climate change and achieving global sustainability goals.
- The UAE's leadership solidifies its position at the forefront of global climate action, driving international collaboration for a sustainable energy future.

About COP29:

- The 2024 United Nations Climate Change Conference (COP29) is currently taking place in Baku, Azerbaijan, from November 11 to 22, 2024. This major global climate event is presided over by Mukhtar Babayev, with Samir Nuriyev heading the Organizing Committee.



Key Agenda Items:

- **Climate Finance:** A major focus will be on discussing how to support developing countries in tackling climate change and securing financial resources to implement climate action plans.
- **Energy Transition:** Another significant topic is transitioning from fossil fuels to renewable energy sources, aiming to reduce global dependence on oil, gas, and coal.
- **Just Transition:** A ministerial roundtable will address the Just Transition, discussing how to manage the shift to a low-carbon economy while ensuring fair treatment for workers and communities dependent on fossil fuels. The United Arab Emirates' Just Transition Work Programme will also be featured.

About UNFCCC:

- The United Nations Framework Convention on Climate Change (UNFCCC) is a foundational international treaty designed to combat climate change by stabilizing greenhouse gas concentrations in the atmosphere.

Key Details:

- **Drafted:** May 9, 1992
- **Signed:** United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, from June 4–14, 1992.
- Additional signatories in New York between June 20, 1992, and June 19, 1993.

Objective (Article 2):

- To stabilize greenhouse gas concentrations in the atmosphere at a level that prevents dangerous human interference with the climate system.
- This stabilization goal aims to be achieved by:

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Current affairs summary for prelims

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- » Promoting sustainable economic development.
- » Ensuring that food production is not threatened.
- » Allowing ecosystems to adapt naturally to the changing climate.

Teesta Valley on Brink of Disaster: Experts Warn of Catastrophic Consequences

Context: The Teesta Valley, spanning Sikkim and West Bengal, is at risk of disaster due to Glacial Lake Outburst Flood (GLOF). Community organizations Save The Hills and the Darjeeling Himalaya Initiative (DHI) have issued urgent warnings to both state governments and central government, urging immediate action to prevent further devastation in next monsoon season.

Background:

- The region was severely impacted by the 2023 Glacial Lake Outburst Flood (GLOF), which claimed over 100 lives, displaced thousands, and caused extensive environmental damage, disrupting agriculture and biodiversity. Vital military installations were also damaged, raising security concerns.

Key Concerns:

- **Lack of Coordination:** Both state governments are working independently, neglecting the interconnected nature of the Teesta River basin.
- **Absence of Unified Disaster Management:** Without a unified approach, recovery and preparedness efforts remain inadequate, leaving communities vulnerable.
- **Recurring Threat from the Teesta River:** The river poses a constant risk each monsoon, with overflowing waters threatening lives, infrastructure, and agricultural land.

Recommendations for Action:

- **Joint Committee Formation:** Establish a Sikkim-West Bengal Joint Committee to coordinate disaster preparedness and recovery.
- **Expert Task Force:** Form a task force to develop a comprehensive action plan, assessing vulnerabilities and proposing restoration strategies.

- **Structural Mitigation:** Reinforce embankments, build flood barriers, and re-channel the Teesta River to manage flooding.
- **Non-Structural Strategies:** Install flood warning systems, improve communication, and conduct awareness campaigns to ensure preparedness.
- **Land-Use Planning:** Identify high-risk zones, establish evacuation routes, and create safe zones for at-risk communities.
- **Afforestation Programs:** Launch tree planting initiatives to restore the ecosystem, prevent soil erosion, and mitigate landslide risks.

About Glacial Lake Outburst Flood:

- A Glacial Lake Outburst Flood, or GLOF, is essentially a type of flood that happens when a glacial lake bursts, releasing massive amounts of water into the surrounding area.
- This usually occurs when the natural dam containing the lake fails, often due to erosion, heavy rainfall, earthquakes, or ice avalanches.
- In 2013, a GLOF occurred in Uttarakhand's Kedarnath, causing flash floods and killing thousands.
- The South Lhonak Lake in Sikkim burst in 2023, resulting in flash floods and loss of life.

About Teesta Valley:

- The Teesta Valley, spanning Sikkim and West Bengal, holds ecological, economic, strategic, cultural, environmental, and social significance.
- It is a biodiversity hotspot with species like the red panda and snow leopard. The Teesta River supports irrigation, drinking water, and hydroelectric power.
- Economically, it drives agriculture, hydroelectricity, and tourism. Strategically, it connects India to Nepal, Bhutan, and Bangladesh, and is vital for defense.
- Culturally, it is home to diverse ethnic groups and historic sites. Environmentally, it aids in carbon sequestration, water security, and soil conservation.
- The valley provides livelihoods, development, education, and healthcare for local communities.

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Vision Next Program for Textile Manufacturing Industry

- The central government has introduced the Vision Next program to strengthen India's textile manufacturing sector and enhance its global competitiveness. The sector's value has risen to \$176 billion and is projected to grow to \$350 billion by 2030, driven by innovation and improved manufacturing capabilities.
- A review meeting at the National Institute of Fashion Technology in Chennai emphasized the critical role of Tamil Nadu in India's textile industry. The state's significant contribution, along with the government's initiatives, is expected to accelerate the sector's expansion.
- Currently, the textile sector employs 4.6 crore people, with the number expected to reach 6 crore by 2030. Additionally, funds have been allocated for the creation of a Textile Park in Virudhunagar district, Tamil Nadu, aimed at boosting production, fostering innovation, and generating employment opportunities.
- The Vision Next initiative is set to transform the Indian textile industry, positioning the country as a global leader in the sector by 2030.

Coal India Ltd Receives Green World Award for CSR Excellence

- Coal India Limited (CIL), under the Ministry of Coal, has been honored with the prestigious Green World Environment Award 2024 in the Corporate Social Responsibility (CSR) category and named a Green World Ambassador.
- The recognition highlights CIL's exemplary work in the Thalassemia Bal Sewa Yojna, which provides permanent curative treatment for over 600 Thalassemia patients through Bone Marrow Transplants (BMT).
- Initiated in 2017, CIL became the first Public Sector Undertaking to adopt such a program. Under this initiative, financial assistance of up to ₹10 lakh is extended for BMT in collaboration with 17 prominent hospitals across India. This initiative underscores CIL's commitment to healthcare as part of its CSR efforts.
- CIL, producing over 80% of India's coal, also plays a critical role in environmental sustainability. It has implemented initiatives such as reforestation of mined-out areas, creation of eco-parks, and water resource management benefiting rural communities.



Sanyukt Vimochan 2024

- The Indian Army successfully conducted the multilateral Humanitarian Assistance and Disaster Relief (HADR) exercise Sanyukt Vimochan 2024 in Ahmedabad and Porbandar, Gujarat. Led by the Konark Corps of the Southern Command, the exercise showcased India's disaster response capabilities, emphasizing inter-agency coordination.
- The event began with a Tabletop Exercise (TTX) simulating a cyclone scenario in Gujarat's coastal region, focusing on interagency collaboration for swift disaster management.
- Representatives from the National Disaster Management Authority (NDMA), Gujarat State Disaster Management Authority (GSDMA), Indian Armed Forces, and nine friendly foreign nations participated.
- The second day featured a Multi-Agency Capability Demonstration at Porbandar, where participants practiced rescue operations, casualty evacuation, and rehabilitation strategies. The exercise highlighted the collaboration of the Indian Army, Navy, Air Force, Coast Guard, and disaster response agencies.
- Aligned with the Atmanirbhar Bharat initiative, an industrial display showcased indigenous disaster management



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technology. The exercise is a testament to India's commitment to global humanitarian efforts and self-reliance. The event strengthened India's leadership in disaster management and international collaboration.

Prime Minister Modi's Historic Visit to Guyana

- On November 20, 2024, Prime Minister Narendra Modi became the first Indian Prime Minister to visit Guyana in 56 years. He was welcomed with great warmth by Guyana's President, Mohamed Irfaan Ali, at Georgetown Airport.
- During the visit, Prime Minister Modi will co-chair the 2nd India-CARICOM Summit with Grenada's Prime Minister, Dickon Mitchell. The summit focuses on strengthening relations between India and CARICOM countries in areas like energy, infrastructure, agriculture, health, and technology.
- India and Guyana share a long-standing development partnership. Recent contributions from India include providing two HAL 228 aircraft, a seagoing yacht, solar lighting systems for 30,000 indigenous families, and training 800 Guyanese professionals under the ITEC program.



About Guyana:

- Guyana, located on the northern edge of South America, shares borders with Venezuela, Brazil and Suriname and maritime borders with Barbados and Trinidad and Tobago.
- Its capital is Georgetown. Guyana is known for Mount Roraima, its highest point, and the Kaieteur Falls, which are five times higher than Niagara Falls.
- The Essequibo River is the largest in the country. Guyana is home to around 3,20,000 people of Indian origin, highlighting strong cultural ties between the two nations.

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