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Volcanic Eruptions

Mauna Loa of Hawaii, the world's largest active volcano, erupted after 38 years spewing ash and debris into the sky.

- A volcano is a rupture in the Earth's crust that allows hot ashes, gases, and magma (lava) to escape into the air and travel along the nearby land surface.

Process of Volcanic Eruption

- Under the surface of the Earth, the amount that the Earth's temperature increases with depth due to geothermal gradient.
- **Magma** - At a certain depth, the heat high enough to melts rocks.
- Magma is the molten rock which is lighter than solid rock and hence it rises, collecting in magma chambers.
- **Magma chambers** - are found at a relatively shallow depth (upper mantle).
- These magma chambers have the potential to cause volcanic eruptions.
- As magma builds up in these chambers, it forces its way up through cracks and fissures in Earth's crust.
- This upwelling of magma is called as volcanic eruption.
- **Lava** – It refers to the magma that surfaces on the Earth's crust.

Types of Explosive Eruptions

- The intensity and explosiveness of a volcano depends upon the composition and viscosity of the magma.

Less Explosive	More Explosive
Magma should be thin and runny.	Magma should be thick and sticky.
Gasses are able to escape gradually in runny magma.	Thick magma makes it harder for gasses to escape on a consistent basis.
The flow of lava out of the mouth of the volcano is steady but relatively gentle.	Unescapable gases build-up pressure until a breaking point is reached. When the gasses escape violently, all at once, it causes an explosion.
Typically less explosive volcanic eruptions are less dangerous.	Explosive sort of eruption can be deadly.
Example: Mauna Loa	**Example:** Mount Vesuvius

Dangers of Explosive Volcano

- **Tephra** - In an explosive volcanic eruption, lava blasts into the air, it ejects fragments

of volcanic rock and lava called tephra.
- These tephra can be extremely dangerous, depending on their size ranging from tiny particles to massive boulders.
- When thick clouds of tephra race down the side of the volcano, they destroy everything in their path.
- **Ash Falls** - Ash erupted into the sky falls back to Earth like powdery snow. If thick enough, blankets of ash can suffocate plants, animals, and humans.
- **Mudflows** (**lahars**) - When the hot volcanic materials mix with nearby sources of water, they can create mudflows which are capable of burying entire communities alive.
- **Pyroclastic flows** – It is a fluidized emulsion of volcanic particles, eruption gases, and entrapped air, resulting in a flow of viscosity low enough to be mobile and high enough to fall back on the ground.

> *The Volcanic Explosivity Index (VEI) is a scale used to measure the explosivity of a volcano. It has a range of 1 to 8 with a higher VEI indicating more explosivity.*

References

1. Indian Express - What is the science behind volcanic eruptions?
2. Down to Earth - Mauna Loa wakes up after almost 40 years

CITES Big Cat Task Force

CITES COP19 has proposed a tentative budget of $150,000 for the Task Force which will be secured by external funding from the United States.

- The 19th Conference of Parties (COP19) to CITES adopted the decision on a Big Cat Task Force from the previous COP (CoP18-Geneva, 2019) with a few amendments.
- The Task Force is a forum to discuss challenges that affect enforcement and implementation of laws regarding illegal trade in big cats.
- Participation of these Parties in the Task Force could facilitate and promote exchanges concerning possible best practices and solutions.

Functions of Big Cats Task Force

- Discuss enforcement and implementation issues related to the illegal trade in specimens of big cats.

- Exchange intelligence and other information (like status, scale, and dynamics) on the illegal trade in big cats, especially those listed in the CITES appendix.
- Share information about techniques and tools for identifying big cat specimens in trade, and identify needs and knowledge gaps.
- Develop strategies and make recommendations to improve international cooperation regarding the enforcement of CITES concerning illegal trade in specimens of big cats.

Membership of the Task Force

- Parties most affected by illegal trade in big cats which include 44 countries across the world.
- Representatives from the International Consortium on Combating Wildlife Crime (ICCWC) partner organizations.
- Other Parties and organizations and experts who could contribute.
- Species of priority concern of Big Cats Task Force
    - Cheetah (*Acinonyx jubatus*)
    - Clouded leopard (*Neofelis nebulosa*)
    - Lion (*Panthera leo*)
    - Jaguar (*Panthera onca*)
    - Leopard (*Panthera pardus*)
    - Tiger (*Panthera tigris*)
    - Snow leopard (*Panthera uncia*)

References

1. Down To Earth - CITES COP19 adopted Big Cat Task Force
2. CITES - Big Cats Task Force

Carbon Capture Utilisation and Storage

NITI Aayog released a study report on the Policy Framework of Carbon Capture, Utilisation, and Storage (CCUS).

- The report is titled 'Carbon Capture, Utilisation and Storage (CCUS) Policy Framework and its Deployment Mechanism in India',
- The report suggests CCUS technology for decarbonising carbon dioxide (CO_2) from high polluting sectors such as steel, cement, oil, gas, petrochemicals, chemicals and fertilisers.
- The report says CCUS has a critical role to play for the country to halve CO_2 emissions by 2050.
- Carbon Capture and Storage (CCS) and CCUS are technologies that help in promoting the low carbon-hydrogen economy and in removal of the CO2 stock from the atmosphere.
- **CCS** - Carbon Capture and Storage (CCS) is a way of reducing carbon emissions from power generation or industrial activity, such as steel or cement making.
- It’s a three-step process, involving:
    1. Capturing the CO_2 produced.
    2. Transporting the captured CO_2.

    3. Storing it deep underground.
- **CCUS** - Carbon Capture, Utilization, and Storage (CCUS) is a related concept of CCS and follows similar steps in the process.
- It is a way to reduce carbon emission by either storing or reusing it so that captured carbon dioxide does not enter the atmosphere.
- The difference between CCS and CCUS is that the captured carbon could be **re-used instead of storing**.
- The captured carbon could be used in industrial processes by converting it. For example, plastics, concrete or biofuel.

References

1. The Hindu - NITI Aayog proposes CCUS to industrial emissions
2. Economic Times - Carbon capture key for sustainable development
3. Department of Science and Technology - CCUS

Tribal Development Report 2022

The Bharat Rural Livelihoods Foundation, released a first-of-its-kind Tribal Development Report-2022.

- Tribal Development Report-2022 was released in two volumes by the Bharat Rural Livelihoods Foundation (BRLF).
    1. Volume I: Livelihoods
    2. Volume II: Human Development and Governance
- The report looks at the status of tribal communities at an all-India level and in central India.
- The goal of the report is to inform stakeholders, including key policymakers, practitioners, activists, and academics, to help understand the scope of tribal issues.
- It highlights the need for a paradigm shift to agroecology-based, nature-positive farming and sustainable water use driven by local institutions.
- It also presents a progress report on the implementation Panchayat (Extension to Scheduled Areas) Act (or PESA), 1996, and the Forest Rights Act (FRA).

Central India is home to 80% of the tribal communities in the country.

Bharat Rural Livelihoods Foundation (BRLF)

- BRLF was set up by the Government of India as an independent society under the Ministry of Rural Development, to scale up civil society action in partnership with the central and state governments.

References

1. Down To Earth - Adivasis at bottom of India's development pyramid
2. The Hindu - Study on status of tribal communities in India
3. East Mojo - First-of-its-kind Tribal Development Report

Samanvay 2022

Indian Air Force conducted the Annual Joint Humanitarian Assistance and Disaster Relief (HADR) Exercise 'Samanvay 2022'.

- Samanvay is an annual multi-agency Humanitarian Assistance and Disaster Relief (HADR) Exercise.
- The 2022 Samanvay exercise was conducted by the Indian Air Force at the Agra Air Force Station.
- Representatives from ASEAN nations and the national and regional stakeholders involved in disaster management attending the exercise
- The aim of the exercise includes assessing the efficacy of institutional Disaster Management structures and contingency measures.
- The exercise promotes a synergistic approach by involving various stakeholders involved in Disaster Management.
- The exercise would aid in the evolution of institutional frameworks for effective communication, interoperability, cooperation in HADR.
- The exercise also aims to provide a unique platform for the exchange of domain knowledge, experience and best practices with the participating ASEAN member countries.

Disaster Management in India

In India, National Disaster Management Authority (NDMA) is the apex statutory body for disaster management.

It was formally constituted on 27th September 2006, in accordance with the Disaster Management Act, 2005 with Prime Minister as its Chairperson.

References

1. PIB - HADR exercise 'Samanvay 2022'
2. The Hindu - Humanitarian Assistance and Disaster Relief 2022
3. News On Air - Samanvay 2022: Annual Joint HADR exercise