VOLCANIC ERUPTIONS - GEOGRAPHY & GS I MAINS

Q. The present decade faces the varying impacts of volcanism on regional environments. Discuss (10 marks, 150 words)

News: *Incredible Footage of the Volcanic Eruption in Iceland*

What's in the news?

- On December 18, a volcano emerged on the Reykjanes peninsula in Iceland, just north of the town of Grindavik, near the world famous Blue Lagoon.

Key takeaways:

- The volcanoes on the Reykjanes peninsula have awakened after eight hundred years. The tectonic plates of Eurasia and North America are moving apart.

Volcanoes:

- Volcanoes are natural geological features characterised by openings or ruptures in the Earth's surface through which magma, volcanic ash, and gases are expelled.
- Volcanic activity occurs on a global scale, with volcanoes dotting diverse landscapes, from towering peaks to oceanic depths.
- These geological marvels not only shape the Earth's surface but also have significant implications for the environment, ecosystems, and human populations in their vicinity.

Types of Volcanoes:

1. Cinder Cones:

- Cinder cones are circular or oval cones made up of small fragments of lava from a single vent that has been blown up.
- Cinder cones result from eruptions of mostly small pieces of scoria and pyroclastics that build up around the vent. Most cinder cones erupt only once. Cinder cones may form as flank vents on larger volcanoes, or occur on their own.

2. Composite Volcano:

- Composite volcanoes are steep-sided volcanoes composed of many layers of volcanic rocks, usually made from high-viscosity lava, ash and rock debris.
- These types of volcanoes are tall conical mountains composed of lava flows and other ejecta in alternate layers, the strata that give rise to the name.

3. Shield Volcano:

- Shield volcanoes are volcanoes shaped like a bowl or shield in the middle with long gentle slopes made by basaltic lava flows.
- These are formed by the eruption of low-viscosity lava that can flow a great distance from a vent.

Impacts of Volcanism:

1. Ashfall and Air Quality:

- Volcanic eruptions release volcanic ash, which can blanket vast areas, affecting air quality and visibility.
- Fine ash particles can cause respiratory issues, damage crops, and disrupt transportation and infrastructure.

2. Climate Effects:

- Volcanic eruptions release large amounts of gases and aerosols into the atmosphere, including Sulphur dioxide.
- These substances can form sulphate aerosols, which reflect sunlight and lead to a temporary cooling effect on the Earth's surface.
- In contrast, volcanic gases such as carbon dioxide can contribute to long-term climate change.

3. Lahars and Debris Flows:

- Volcanic eruptions can trigger the rapid movement of volcanic debris, water, and ash, known as lahars or debris flows.
- These flows can devastate surrounding areas, destroying vegetation, infrastructure, and altering river courses.

4. Volcanic Gases:

- Eruptions release gases such as Sulphur dioxide, hydrogen Sulphide, and carbon dioxide.
- These gases can have detrimental effects on air quality, plant and animal life, and contribute to the formation of acid rain.

5. Ecosystem Disruption:

- Volcanic eruptions can cause significant disruption to terrestrial and marine ecosystems.
- They can destroy habitats, trigger mass extinctions of plant and animal species, and lead to the loss of biodiversity.

The varying impacts of volcanism on regional environments includes destruction of infrastructure, displacement of populations, damage to vegetation and agriculture, air pollution, and changes to the physical landscape. Understanding and monitoring volcanic activity is crucial for assessing and mitigating these environmental impacts, ensuring the safety and well-being of affected regions.