

Volcano and its Types

Why in News?

Lava flows from a volcano in Iceland were slowing down recently, although new vents could open at short notice, according to the Icelandic Meteorological Office.

What are volcanoes?

- According to the US Geological Survey, volcanoes are ***openings, or vents*** where lava, tephra (small rocks), and steam erupt onto the Earth's surface.
- **Occurrence** - It can be on land and in the [ocean](#) in Earth.
- Scientific evidences also show their presence in other planets like [Mars](#) and [Venus](#).
- **Formation** - They are formed when material significantly hotter than its surroundings is erupted onto the surface of the Earth.
- **Earth Core** - Earth's interior has outer crust, middle mantle and inner core layer.
- Mantle is denser than that of the crust and contains a weaker zone called asthenosphere from which the molten rock materials find their way to the surface.
- Liquid rock is known as magma when it is underground and called as lava when it breaks through the surface.
- **3 ways of magma rise**
 1. **Divergence of tectonic plates** - Here, the magma rises up to fill in the space and when this happens underwater volcanoes can form.
 2. **Convergence of tectonic plates** - When this happens, part of Earth's crust can be forced deep into its interior, which under high heat and pressure melts, and rise as magma.
 3. **At hotspots** - They are hot areas inside of the Earth, where magma gets heated up and it becomes less dense, leading to its rise.

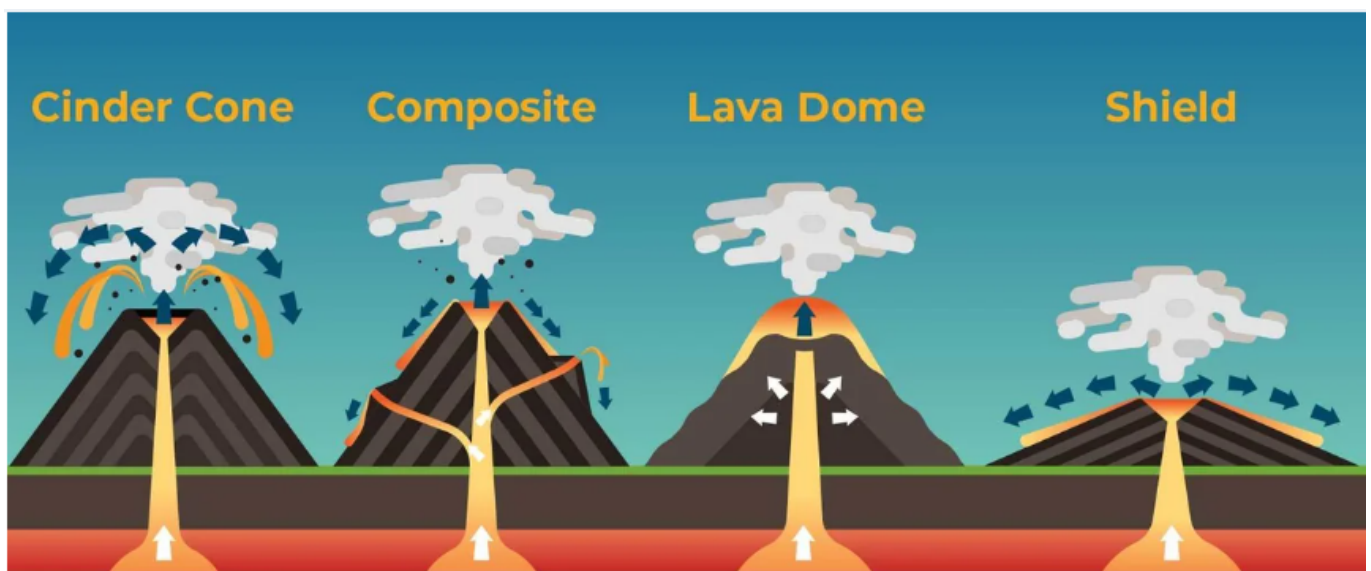
*The **Pacific Ring of Fire** includes New Zealand, Southeast Asia, Japan and the western coast of the Americas, is a region in which about 90% of all earthquakes worldwide strike.*

- **Erupted material** - It includes lava flows, pyroclastic debris, volcanic bombs, ash and dust and gases (nitrogen, sulphur and minor amounts of chlorene, hydrogen and argon).

What are the different types of volcanoes?

- According to the British Geological Survey, the type of volcano depends
 - On the viscosity of the magma

- On the amount of gas in the magma
- On the composition of the magma
- On the way the magma reaches the surface
- On basis of their activity - Active dormant and extinct
- **Shield Volcanoes** - They form very large, gently sloped volcanoes with a wide base. Example: Mauna Loa in Hawaii.
- **Cinder cones** - They are the smallest volcanic landform, formed from accumulation of many small fragments of ejected material.
- **Composite Volcanoes (Stratovolcanoes)** - They are characterised by eruptions of cooler and more viscous lavas than basalt and have steep sides and are more cone-shaped than shield volcanoes.
- **Caldera** - These are the most explosive of the earth's volcanoes.
- When they erupt, they collapse on themselves rather than building and this collapsed depressions are called calderas.
- **Flood Basalt Provinces** - They outpour highly fluid lava that flows for long distances. Example: The Deccan Traps from India.
- **Mid-Ocean Ridge Volcanoes** - They occur in the oceanic areas where the central portion of this ridge experiences frequent eruptions.



- [Active volcano](#) - It is called so if the materials mentioned are being released or have been released out in the recent past.
 - [Iceland](#), a volcanically active regions on the Earth witnesses an eruption every 4 to 5 years but since 2021, it has spiked to almost 1 eruption per year.

What are impacts of volcanic eruptions?

- **Advantages** - They help to stabilize the heat of the core part of our planet.
- They form new land forms after the drying process of liquid lava.
- The lava contains different minerals which enriches the existing soil.
- It lead to the formation of geysers which are sources of geothermal electricity which help in domestic and industrial use.
- It facilitate moderation of climate and receive higher rainfall than flat areas.

- **Disadvantages** - It leads to lot of destruction to life and property.
- It can create other natural hazards like Tsunami.
- It can produce harmful gases and the lava heat act as a booster for the global warming.
- The lava flow often cause wild fire in the nearby forestlands.

References

1. [The Indian Express| Volcanoes and its types](#)
2. [The Indian Express| The activeness of volcano](#)

