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Q7

Mention the global occurrence of volcanic eruptions in 2021 and their impact on regional environment.

UPSC Civil Services Mains 2021 · GS I · 10 marks · Geophysical Phenomena

Important Geophysical phenomena such as earthquakes, tsunamis, volcanic activity, cyclone etc., geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

Core demand of the question

- Mention the global occurrence of volcanic eruptions in 2021 and their impact on regional environment
- Keep the answer within a 10-mark length

Revision summary

La Soufrière 2021 ash-evacuated St Vincent and dusted neighbours.

Nyiragongo lava struck Goma with deaths and urban damage.

Cumbre Vieja on La Palma buried farms through a long 2021 eruption.

Iceland's **Fagradalsfjall** was lava and gas, not a trans-Atlantic ash crisis.

Indonesian arcs added farm and flight ash; Hunga Tonga belongs to 2022.

Introduction

The year 2021 was volcanically busy on several plates. Eruptions in the Caribbean, Africa, the Atlantic, Iceland, and Indonesia changed air, land, and local livelihoods more than they changed the global climate.

Body**Major 2021 eruptions**

- **La Soufrière**, St Vincent (April 2021): explosive ash forced evacuations across the island and dusted Barbados and the eastern Caribbean.
- **Nyiragongo**, Democratic Republic of Congo (May 2021): fast lava into Goma killed people, cut water, and left a CO₂ and instability risk on the rift.
- **Cumbre Vieja**, La Palma, Canary Islands (September-December 2021): long lava flows buried banana farms and houses; ash and SO₂ hit local air and the island economy.
- **Fagradalsfjall**, Iceland: a tourist lava eruption with local gas, not a jet-blocking ash cloud like Eyjafjallajökull 2010.
- **Indonesia remained active** (Sinabung, Merapi, Semeru **late 2021**): ash on farms and aviation warnings on a dense island arc.

Regional environmental impact

- Ash and sulphur irritate lungs, coat crops, and acidify rain locally. La Palma and St Vincent showed agricultural loss more than a global temperature drop.
- Lava permanently remaps land and groundwater, as on La Palma's west coast.
- Aviation and shipping take short detours; 2021 did not repeat a Europe-wide ash shutdown.
- Humanitarian displacement in Goma showed that a volcano is also an urban disaster on the East African Rift.

Note on 2022

- **Hunga Tonga-Hunga Ha'apai** was January 2022, after the 2021 calendar the question names; do not fold it into 2021.

Flow diagram

2021 volcanoes -> La Soufriere ash
2021 volcanoes -> Nyiragongo Goma
2021 volcanoes -> La Palma lava
2021 volcanoes -> Indonesia ash
La Soufriere ash -> Crops air displacement

Conclusion

2021's eruptions were regional: Caribbean ash, Goma lava, La Palma's buried farms, Icelandic lava tourism, and Indonesian ash. The climate signal was local air and land, not a new global winter.

Facts & figures

La Soufrière 2021

Explosive Caribbean eruption with regional ashfall and mass evacuation.

Nyiragongo 2021

Flank lava into Goma on the East African Rift.

Cumbre Vieja

La Palma eruption that destroyed thousands of buildings and banana land.

Fagradalsfjall

Reykjanes Peninsula fissure eruption of 2021, high visibility, limited ash.

Volcanic ash

Silicate particles that damage engines, lungs, and standing crops at the regional scale.