

## CORPORATE OFFICE

### Delhi Office

706 Ground Floor Dr. Mukherjee  
Nagar Near Batra Cinema Delhi -  
110009

### Noida Office

Basement C-32 Noida Sector-2  
Uttar Pradesh 201301



# Yojna IAS

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yojnaias.com

## CURRENT AFFAIRS

website : [www.yojnaias.com](http://www.yojnaias.com)

Contact No. : +91 8595390705

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## ESIM

*This article covers "Daily Current Affairs" and the topic details "eSIM". This topic has relevance in the "Science and Technology" section of the UPSC CSE exam.*

### For Prelims:

What is SIM?

What is eSIM?

### For Mains:

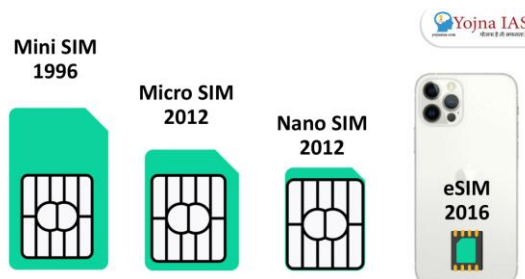
GS3: Science and Technology

### Why in the news?

Marking a new era, tech industry leaders such as Apple with its iPhones, Google's Pixel series, and Samsung have incorporated eSIM capability into their products.

### Background Information: SIM

- A 'SIM,' short for 'subscriber identification module,' is an integrated circuit or microchip that identifies a subscriber within a particular network.
- This SIM card is a small, removable card used in mobile phones and other cellular devices.
- It contains essential information that identifies the device to the mobile network, including a unique serial number (IMSI), the mobile network's information, and a secure element for authentication.
- **SIM cards adhere to the ISO/IEC 7816 International Standard** maintained by the International Organization for Standardization and the International Electrotechnical Commission.



### What is eSIM?

- An eSIM, short for "embedded SIM," is a digital SIM card built into a mobile device instead of a physical removable card like a traditional SIM card.

- eSIM technology allows users to activate and switch between mobile networks and plans without needing a physical SIM card replacement.

**Key features and characteristics of eSIMs include:**

- **Embedded Nature:** eSIMs are integrated into the device during manufacturing and cannot be removed or replaced by the user. This design saves physical space in the device.
- **Remote Provisioning:** eSIMs can be remotely provisioned or activated by the user or mobile service provider. This means users can choose their mobile plan and network by downloading the necessary data to the eSIM, eliminating the need for a physical card.
- **Multiple Profiles:** Many eSIM-enabled devices can store multiple profiles, allowing users to switch between different mobile service providers or plans directly on the device without changing the SIM Card.
- **Compatibility:** eSIM technology is becoming more widespread and is supported by various mobile carriers and device manufacturers, making it easier for users to use eSIM functionality.
- **International Roaming:** eSIMs are particularly useful for international travellers. Users can add or switch to a local carrier's plan while travelling, avoiding expensive international roaming fees.
- **Environmental Impact:** The reduction of physical SIM cards can reduce e-waste and the environmental impact associated with manufacturing and disposing plastic SIM cards.

**Key challenges associated with eSIM technology:**

- **Interoperability:** Varying standards can cause compatibility issues between carriers and devices. eSIM interoperability means an eSIM's ability to work with multiple carriers.
- **Security:** eSIMs require strong security measures to protect against data breaches and software attacks like eSIM swapping.
- **Regulation:** Developing regulatory frameworks for eSIM technology is a complex task that involves balancing innovation and consumer protection.
- **Limited eSIM Adoption:** Not all carriers have embraced eSIM technology, especially when serving localised audiences.
- **Support and Monitoring Challenges:** IoT adopters have cited a lack of technical support and monitoring tools as a significant challenge.
- **Data Privacy Concerns:** eSIM technology theoretically allows network operators to track subscriber data, including activity within apps on the device.
- **User Digital Literacy:** In some countries, like the United States, subscribers can self-program eSIMs. This may be challenging for individuals with low digital literacy, including elderly users.

**Sources: How do SIM cards work? | Explained – The Hindu**

**Q1. With reference to SIM, consider the following statements:**

1. SIM stands for 'Service Information Module' and is an integrated circuit or microchip that identifies a subscriber within a particular network.
2. Currently, SIM Cards are used only in mobile phones.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2

(d) Neither 1 nor 2

**Answer: (d)**

**Q2. Consider the following:**

1. Saves physical space in the device
2. Store multiple profiles
3. Useful for travellers
4. Universal Compatibility
5. Unparalleled Security

**How many of the above are advantages of eSIM technology?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) Only four

**Answer: (c)**

**Q3. Discuss key features and challenges of eSIM technology on the mobile telecommunications industry and its users.**

**Gaurav Nikumbh**

## **CALDERA**

*This article covers "Daily Current Affairs" and the topic details "Caldera". This topic has relevance in the Geography section of the UPSC CSE exam.*

*GS 1: Caldera*

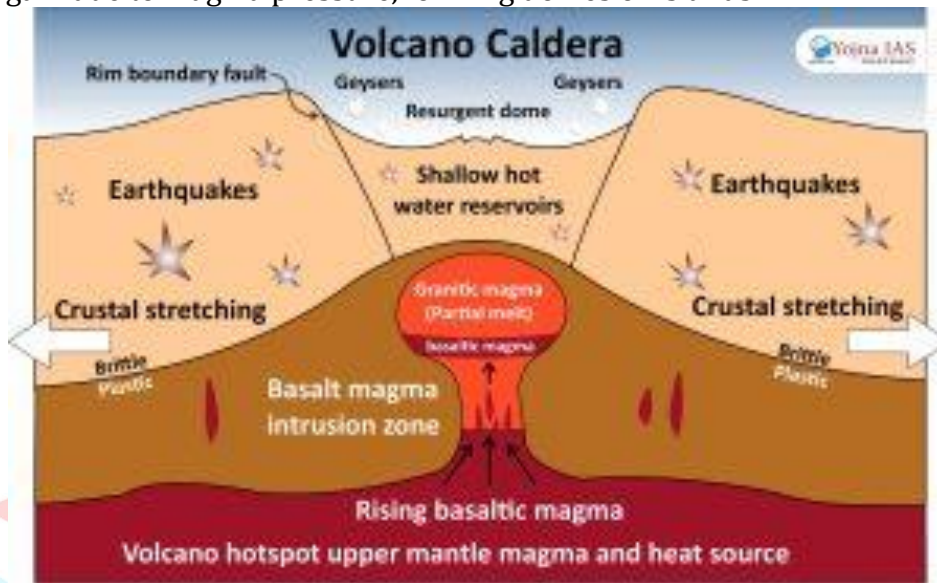
**Why in the news?**

Scientists at the California Institute of Technology (Caltech) have detected over 2,000 earthquakes occurring in the Long Valley Caldera in recent years.

**About Long Valley Caldera:**

- The Long Valley Caldera is a dormant supervolcano situated in the Eastern Sierra Nevada Mountains of California, USA. It was formed approximately 760,000 years ago by a super-eruption that expelled about 140 cubic miles of magma. This eruption blanketed much of east-central California with hot ash, which was even carried as far as what is now Nebraska.
- Since 1978, the caldera has been experiencing regular earthquake swarms, leading to concerns that it may be at risk of erupting again. Despite its dormant status, the ongoing seismic activity serves as a reminder of the caldera's volatile past and potential future.
- **Caldera definition:** A caldera is a large, bowl-shaped depression formed by the collapse of a volcano after a massive eruption. It is the most destructive type of volcanic eruption. Calderas may have uneven shapes due to different rates of collapse.

- **Caldera types:** There are three main types of calderas, based on their formation and characteristics. They are:
  - **Crater-lake calderas:** These are formed by the collapse of a stratovolcano after a Plinian eruption, which is very explosive and releases huge amounts of lava, ash, and rocks. These calderas often fill with water, forming lakes.
  - **Shield volcano calderas:** These are formed by the gradual subsidence of a shield volcano due to the periodic release of lava. This is less explosive and produces fountains of lava. These calderas have nested or terraced shapes, rather than a single large depression.
  - **Resurgent calderas:** These are the largest and rarest type of calderas, formed by the widespread collapse of vast magma chambers due to extremely destructive eruptions called pyroclastic sheet flows. These eruptions have not occurred in historic times. These calderas may rise again due to magma pressure, forming domes or islands.



**SOURCE:**

California's supervolcano cooling down but may still cause quakes: Report

**Q.1 Consider the following statements:**

1. Crater-lake calderas result from the collapse of stratovolcanoes .
2. Shield volcano calderas form gradually due to less explosive lava releases, creating nested or terraced depressions.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**ANSWER: C**

**Q.2 Discuss the correlation between the distribution of volcanoes and earthquake belts. How do tectonic plate boundaries play a pivotal role in shaping these patterns?**

**Rishabh**