



## Cryptocurrency

**For Prelims:** Cryptocurrency, Blockchain Technology, Central Bank Digital Currency (CBDC).

**For Mains:** Impact of cryptocurrency on Indian economy.

### What is Cryptocurrency?

- A **cryptocurrency** is a **digital or virtual currency** that uses **cryptography for security**.
- It is a **decentralized currency**, meaning it is not controlled by any **government or institution**.
- Some examples of cryptocurrencies include **Bitcoin, Ethereum**, and **Litecoin**.



### How Does Cryptocurrency Work?

- Transactions with **cryptocurrency** are recorded on a **public digital ledger** called **blockchain**.
  - This ledger is maintained by a network of computers around the world, and **each new transaction is verified and added to the blockchain** by these computers.
  - This **decentralization** and **use of cryptography** make it **difficult for anyone to manipulate the currency** or the transactions recorded on the blockchain.
- To use **cryptocurrency**, individuals or businesses must first acquire a **digital wallet**, which is a **software program** that stores the **user's public and private keys**.
  - These keys are used to **send and receive cryptocurrency**, and they are also used to verify transactions on the blockchain.
- Users can acquire cryptocurrency through a process called "**mining**" which involves **using**

computer power to solve complex mathematical equations, which validate and record transactions on the blockchain, in return for a certain amount of cryptocurrency.

## What is Blockchain Technology?

- **Blockchain technology** is a **decentralized, digital ledger** that **records transactions** across a network of computers.
- Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger.
  - The decentralized nature of technology ensures that **no single entity can alter or delete previous transactions**, providing a **high degree of security and transparency**.
- Blockchain is the **foundation of cryptocurrencies** such as **Bitcoin**, but it has many **potentials uses beyond digital currencies**.

## What are Some Examples of Cryptocurrencies?

<b>Bitcoin (BTC):</b>	<ul style="list-style-type: none"> <li>▪ It is the first and most well-known <b>cryptocurrency</b>, created in <b>2009</b>.</li> <li>▪ <b>Bitcoin</b> was invented by an unknown person or group of people using the name <b>Satoshi Nakamoto</b> and <b>open-source software in 2009</b>. It is considered the <b>first decentralized cryptocurrency</b>.</li> <li>▪ <b>Bitcoin has no single administrator</b>, and the currency can be sent electronically from one person to another through the <b>peer-to-peer bitcoin network</b> without the need for intermediaries.</li> <li>▪ Transactions are verified by network nodes through <b>cryptography</b> and recorded in a <b>blockchain</b>.</li> </ul>
<b>Ethereum (ETH):</b>	<ul style="list-style-type: none"> <li>▪ <b>Ethereum (ETH)</b> is a <b>decentralized, opensource blockchain platform</b> that enables developers to create <b>decentralized applications (dApps)</b>.</li> <li>▪ It uses its own <b>cryptocurrency, Ether</b>, as a means of <b>payment for transaction fees</b> on the <b>Ethereum network</b>.</li> <li>▪ It also has a <b>built-in programming language</b> that enables developers to create and deploy <b>smart contracts</b> and <b>applications on the Ethereum network</b>.</li> </ul>
<b>Litecoin (LTC):</b>	<ul style="list-style-type: none"> <li>▪ <b>Litecoin (LTC)</b> is a <b>peer-to-peer cryptocurrency</b> and <b>open-source software</b> project.</li> <li>▪ It is inspired by and <b>nearly identical to Bitcoin (BTC) but with faster transaction times</b> using a <b>Scrypt hashing algorithm</b>.</li> <li>▪ It is designed to process small transactions faster and more efficiently than <b>Bitcoin</b>.</li> </ul>
<b>Ripple (XRP):</b>	<ul style="list-style-type: none"> <li>▪ <b>Ripple (XRP)</b> is a <b>digital asset and cryptocurrency</b> that is designed to facilitate fast and low-cost <b>international money transfers</b>.</li> <li>▪ It is built on the <b>Ripple Protocol</b>, a decentralized <b>open-source protocol</b> for facilitating <b>payments and remittances</b>.</li> <li>▪ Ripple can be used to transfer any currency, including <b>USD, EUR, and Bitcoin</b>, and it is used by <b>major financial institutions and currency exchanges</b>.</li> </ul>
<b>Bitcoin Cash (BCH):</b>	<ul style="list-style-type: none"> <li>▪ <b>Bitcoin Cash (BCH)</b> is a <b>cryptocurrency</b> that was created as a result of a hard fork from <b>Bitcoin</b>.</li> <li>▪ It has a larger block size limit (<b>8MB</b>) compared to <b>Bitcoin (1MB)</b>, allowing for faster transactions.</li> <li>▪ It is considered by some to be a <b>"purer" version of Bitcoin</b>, as it adheres more closely to the original <b>peer-to-peer</b> electronic cash system.</li> </ul>

## What is the Legal Status of Cryptocurrency?

- **In India:**
  - The **legal status of cryptocurrency** in India is currently in a **state of flux**.
  - The **Reserve Bank of India (RBI)** has issued several warnings against the use of **cryptocurrencies**, stating that they pose risks to investors and are **not legal tender**.
  - **In 2018** the **Supreme Court struck down** a circular of **Reserve Bank of India**, which **bans financial institutions** from dealing in **digital or cryptocurrencies**.
  - In **2022**, the **Government of India** mentioned in the **Union budget 2022-23** that the transfer of any **virtual currency/cryptocurrency** asset will be subject to **30% tax deduction**.
    - **The Govt** has also set up a panel to explore the **potential use of blockchain technology** and the possibility of issuing a **Central Bank Digital Currency**.

## (CBDC).

- **Elsewhere:**
  - At present, [El Salvador](#) and the **Central African Republic (CAR)** are the **only two countries** in the world where **Bitcoin** functions as a **legal currency**.
  - However, many countries have taken steps to **recognize and regulate** the use of certain **cryptocurrencies**, such as **Bitcoin**.
    - Some countries, such as **Japan** and **South Korea**, have issued regulations for **cryptocurrency exchanges**.
    - Nations like **Germany** and **Switzerland**, have recognized **Bitcoin** as a "**legal means of payment**."
  - Other countries, such as **China** and **Russia**, have taken a more cautious approach and have **imposed restrictions** on the use of **cryptocurrencies**.

## What is India's Central Bank Digital Currency?

- The **Central Bank Digital Currency (CBDC)** pilot launched by the **RBI** in the retail segment has components based on **blockchain technology**.
- **CBDCs** are a digital form of **paper currency** and unlike **cryptocurrencies** that operate in a regulatory vacuum, these are **legal tenders** issued and backed by a **central bank**.
- It is the same as a **fiat currency** and is exchangeable **one-to-one** with the **fiat currency**.
- **Digital currency** refers to the digital version of the Indian rupee, which is also known as the **digital rupee or e-rupee**.

## What are the Challenges?

- **Volatility:** Cryptocurrency prices are highly volatile, which makes it difficult for businesses to accept it as a form of payment.
- **Regulation:** There is a lack of clear regulation around cryptocurrency, which makes it difficult for businesses and individuals to know how to legally use it.
- **Security:** Cryptocurrency exchanges and wallets are susceptible to hacking attacks, which can result in the loss of funds.
- **Adoption:** Despite its growing popularity, cryptocurrency still has low adoption rates, which makes it difficult for individuals to use it as a form of payment in everyday life.
- **Scalability:** The scalability of cryptocurrencies is limited, which makes it difficult for the technology to handle a large number of transactions.
- **Energy consumption:** The process of verifying transactions in a cryptocurrency network, known as mining, is energy-intensive, and contributes to climate change.

## Way Forward

- Clarity on the **legal status of cryptocurrencies** is important for their widespread adoption and use. When governments provide a **clear framework for cryptocurrency**, it creates a more **stable environment for businesses** and **individuals** to invest in and use them. This can also encourage innovation and growth in the industry.
  - The examples of countries like **El Salvador** and the **Central African Republic** recognizing **cryptocurrencies** as **legal tender** show that it is possible for governments to embrace this new technology and create a favorable environment for it to thrive.
- The **RBI** has started a **blockchain-based Central Bank Digital Currency (CBDC)** pilot program. The government should take this into consideration because **cryptocurrency** is based on **blockchain technology** as well.
- Launching **cryptocurrency** with a **strong regulatory framework** can ensure its proper use, **prevent fraud** and **illegal activities**, and increase consumer protection. On the other hand, a complete restriction of cryptocurrency may stifle innovation and limit its potential benefits to society.
- The **classification of cryptocurrencies** as either **goods** or **asset classes** is still **unclear** and subject to change in many countries, including **India**. Currently, **software** is considered a **good**

and can be taxed as such under **Indian law. Profits** and **earnings** from the **sale of cryptocurrencies** are considered **taxable income**, but only after the **legalization of cryptocurrencies**.

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