



Iron Age and and Urbanization

For Prelims: [Iron Age](#), [Indus Valley Civilisation](#), [Bronze Age](#), [Arthashastra](#), [NBPW Culture](#), [Vindhyas](#), [Megalithic Culture](#), [Urbanization](#), [Ganga Valley](#).

For Mains: Iron age in India, Role of iron technology in states formation and urbanisation

[Source: IE](#)

Why in News?

A report titled '**Antiquity of Iron: Recent Radiometric Dates from Tamil Nadu**', claims that use of **iron in Tamil Nadu** dates back to the **first quarter of the 4th millennium BCE**.

- The [Iron Age](#) in India is believed to have emerged between **1500 and 2000 BCE**, closely following the [Indus Valley Civilisation](#) (Bronze Age).

What is the Iron Age?

- **About:** The **Iron Age** is a prehistoric period that followed the [Bronze Age](#), characterized by the **widespread use of iron** for tools, weapons, and other implements.
 - **Iron metallurgy** involves **multiple stages**, including **ore procurement** and **manufacturing tools**.
- **Antiquity of Iron in India:**
 - **Rigvedic Period:** **No** knowledge of **iron** was recorded.
 - **Early Historic Period:** References to **iron smithing** are found in early Buddhist literature and Kautilya's [Arthashastra](#).
- **Significant Excavation Sites:**
 - **Raja Nal Ka Tila (North-Central India):** Iron tools and slag found in pre-NBP (Northern Black Polished) deposits (**1400-800 BCE**).
 - **Malhar (Chandauli, Uttar Pradesh):** Evidence of **iron tools, furnaces, and slag** indicates it was an important iron metallurgy center.
- **Cultural Associations:**
 - **Black-and-Red Ware (BRW):** Characterized by distinctive pottery with **black interiors and red exteriors** due to **inverted firing** techniques.
 - It is found in Harappan context (Gujarat), Pre-PGW context (northern India), and Megalithic context (southern India).
 - **Painted Grey Ware (PGW) Culture:** Characterized by **grey pottery with black geometric patterns**.
 - Iron reported at multiple sites in the **Ganga valley and South Indian Megaliths (1st millennium BCE)**.
 - **Northern Black Polished Ware (NBPW) Culture:** Wheel-made pottery which is **fine, black, and highly polished**. Significant in north India.
 - During 700 BCE-100 BCE ([NBPW Culture period](#)), the formation of states and **emergence of urbanism** in the Ganga valley crystallized.

- **NBPW Culture** was associated with **2nd Urbanization** in the **Ganga Valley** (6th century BCE) during which **Buddhism** flourished.
- **Ahar Chalcolithic Culture:**
 - **Middle phase (2500-2000 BCE):** Evidence of **iron artifacts**.
 - **Late phase (2000-1700 BCE):** Iron usage became **more prominent**.
- **Megalithic Culture:** **Megaliths** (large stones used to construct a **prehistoric structure**), linked to iron, are found in the **Vindhyas** (southern Uttar Pradesh), **Vidisha region**, and much of **South India**.



Megalithic Culture Relationship with Iron

- **Megalithic Culture:** It is a **prehistoric phase** marked by **large stone structures** used for **burials, sacred spaces, and rituals**.
 - The **Megalithic culture** in south India is closely associated with the **beginning of iron usage**.
- **Iron Uses:** Around **33 types of iron tools** have been identified from Megalithic burials. These served various **purposes**:
 - **Agriculture:** Hoes, sickles, and axes.
 - **Domestic use:** Dishes and tripod stands.
 - **Artisanal activities:** Chisels and nails.
 - **War and hunting:** Swords, daggers, spears, and arrowheads.
- **Notable Evidence of Iron Use:**

- **Naikund (Vidarbha):** Discovery of an **iron smelting** furnace.
- **Mahurjhari (Nagpur):** **Head ornaments for horses** made of copper sheets with iron knobs.
- **Paiyampalli (Tamil Nadu):** Large quantities of **iron slag**, indicating local iron smelting.
- **Advancements in Iron Technology:** People learned to **control fire and extract iron from ore**, marking a key technological advance.

How Iron Technology Helped in Urbanization in the Ganga Valley?

- **About Urbanization:** According to historian, and archaeologist **Gordon V. Childe**, **urbanization** relies on **surplus production**, leading to **ruling classes, social stratification, and monumental architecture**.
 - It refers to the **shift** from **agriculture**-based economies to **industries, services, and trade** as the primary sources of income.
- **Role of Iron Technology:** The **2nd Urbanization** in the **Ganga Valley** (**6th century BCE**) was marked by the **proliferation of settlements and Iron technology** played a pivotal role by:
 - **Clearing Forests:** Iron tools enabled **deforestation, creating arable land**.
 - **Boosting Agricultural Productivity:** Iron plows **enhanced efficiency and yields**.
 - **Agricultural Surplus:** Increased **productivity** supported **large populations** and complex societies.
 - The **first urbanization (2500 and 1900 BCE)** in India was during the Indus Valley Civilization.
- **Impact on Urbanization:** It led to development of **16 Mahajanapadas** in the Indian subcontinent.
 - **Population Growth:** The agricultural surplus facilitated **population growth**, essential for the development of urban centers.
 - **Development of Settlements:** Settlements grew in **number and complexity**, showing a clear hierarchy.
 - **Social Stratification and State Formation:** Surplus production enabled the emergence of **ruling classes, social hierarchy** (e.g., **varna system**), and centralized power structures.
 - **Trade and Craft Specialization:** Surplus allowed people to engage in non-agricultural activities like **trade and crafts**, leading to economic diversification and urban growth.



Conclusion

Iron technology played a crucial role in the **development of urban centers** in ancient India, especially in the **Ganga Valley**. It boosted agricultural productivity, supported **population growth, and enabled the rise of social hierarchies and state formation**, marking a significant shift towards urbanization during the second urbanization phase.

Drishti Mains Question:

Q. Discuss the role of iron technology in the urbanization of the Ganga Valley.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. With reference to the difference between the culture of Rigvedic Aryans and Indus Valley people, which of the following statements is/are correct? (2017)

1. Rigvedic Aryans used the coat of mail and helmet in warfare whereas the people of Indus Valley Civilization did not leave any evidence of using them.
2. Rigvedic Aryans knew gold, silver and copper whereas Indus Valley people knew only copper and iron.
3. Rigvedic Aryans had domesticated the horse whereas there is no evidence of Indus Valley people having been aware of this animal.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (c)

Q. Which of the following Kingdoms were associated with the life of the Buddha? (2014)

1. Avanti
2. Gandhara
3. Kosala
4. Magadha

Select the correct answer using the code given below:

- (a) 1, 2 and 3
- (b) 2 and 4
- (c) 3 and 4 only
- (d) 1, 3 and 4

Ans: (c)

Mains

Q. The ancient civilization in the Indian sub-continent differed from those of Egypt, Mesopotamia and Greece in that its culture and traditions have been preserved without a breakdown to the present day. Comment. **(2015)**