



## Africa's Rift Valley and the Creation of a New Ocean Basin

**For Prelims:** Red Sea, Rift Valley, Nubian African Plate, Arabian Plate, Gulf of Aden.

**For Mains:** Tectonic Plates, Factors Responsible for Africa's Rifting Plates.

### Why in News?

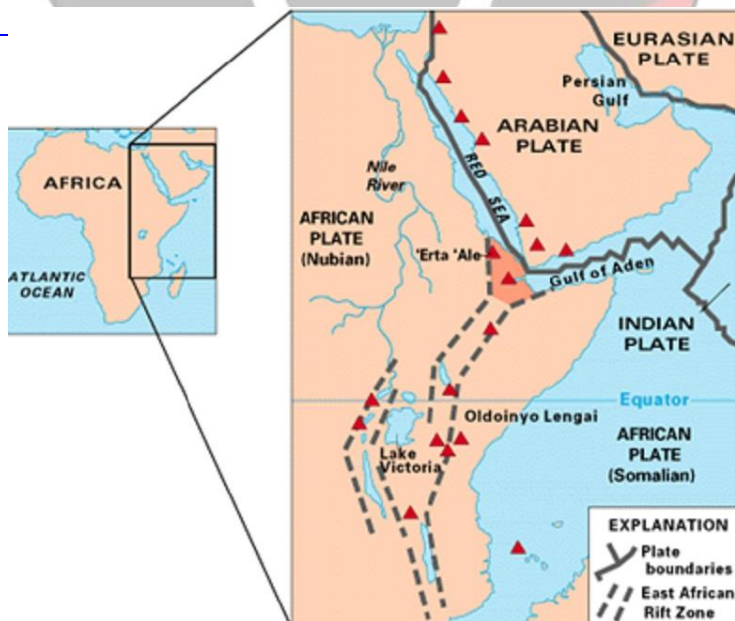
In 2020, a study revealed that the **gradual separation of the African continent is leading to the formation of a new ocean basin.**

- The division of the continent is **connected to the East African Rift (also called the Great Rift Valley)**, a crack that stretches 56 kilometres and appeared in the desert of Ethiopia in 2005, triggering the formation of a new sea.

### What are the Factors Responsible for Africa's Rifting Plates?

- **Factor:**
  - The three plates — the **Nubian African Plate, Somalian African Plate and Arabian Plate** — are separating at different speeds.
  - The **Arabian Plate is moving away from Africa** at a rate of about an inch per year, while the **two African plates are separating even slower**, between half an inch to 0.2 inches per year.
    - In the past **30 million years, the Arabian Plate has been gradually moving away from Africa**, which has already led to the creation of the [Red Sea](#) and the [Gulf of Aden](#).

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- **Possible Outcome:**
  - As the **Somali and Nubian tectonic plates** continue to pull apart from each other, a **smaller continent will be created** from the rift, which will include **present-day Somalia and parts of Kenya, Ethiopia, and Tanzania**.
  - The **Gulf of Aden and the Red Sea** will eventually flood into the **Afar region in Ethiopia and the East African Rift Valley**, leading to the formation of a **new ocean**.
    - **This new ocean will result in East Africa becoming a separate small continent with its own unique geographic and ecological characteristics.**
  - The necessary separation of the Somali and Nubian tectonic plates will take **5 to 10 million years** to create a new ocean basin.
- **Current Situation:**
  - While the rifting process has been occurring for some time, the potential division made headlines worldwide in **2018** when a **large crack emerged in the Kenyan Rift Valley**.

## What are the Opportunities and Challenges of this Rifting?

- **Opportunities:**
  - The **emergence of new coastlines** will unlock a **myriad of opportunities** for economic growth in countries (e.g., landlocked countries, such as **Uganda and Zambia**), that will have access to **new ports for trade, as well as fishing grounds** and subsea internet infrastructure.
- **Challenges:**
  - **Displacement and Habitat Loss: Displacement of communities, settlements, and habitat loss** of various flora and fauna are consequences that will **lead to environmental degradation**.
    - The necessary **evacuation of people and the potential loss of lives** will be an **unfortunate cost of this natural phenomenon**.
    - As of 2015, more than **15 million people were internally displaced in Africa**, according to the **United Nations Environment Programme** report on displacement and environment.
  - **Pressure on Natural Resources: Rapid urbanisation** and increased settlements will put **pressure on natural resources**, leading to a scarcity of water, energy, and food.
    - **Uncontrolled waste disposal** will also be a significant concern.
  - **New Faults:** The separation of the Nubian and Somali plates can **result in the formation of new faults, fissures, and cracks** or the reactivation of pre-existing faults, leading to seismic activity.

## What is Rifting?

- The **Earth's lithosphere** is divided into **several tectonic plates** that move in relation to each other at varying speeds.
  - **Tectonic forces** not only move the plates but also have the potential to cause them to rupture, resulting in the **formation of a rift and potentially leading to the creation of new plate boundaries**.
- Rifting refers to the geological process in which a **single tectonic plate is split into two or more plates separated by divergent plate boundaries**.
  - This process leads to the emergence of a lowland region known as a rift valley.
  - **Example: Narmada Rift Valley(India), Baikal Rift Valley(Russia).**

## What is Great Rift Valley?

- The Great Rift Valley is a massive geological formation that stretches around **6,400 kilometers from northern Syria to central Mozambique in East Africa**.
- The valley is home to the **Jordan River**, which flows through the Jordan Valley and eventually empties into the Dead Sea on the border between Israel and Jordan.
- The **Gulf of Aden is an eastward continuation of the Rift**, and from there it extends

southeastward as **part of the mid-oceanic ridge of the Indian Ocean.**

- In eastern Africa, the **valley divides into the Eastern Rift and the Western Rift.** The Western Rift, also known as the **Albertine Rift**, contains some of the **deepest lakes** in the world.

### UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. The Narmada river flows to the west, while most other large peninsular rivers flow to the east. Why? (2013)**

1. It occupies a linear rift valley.
2. It flows between the Vindhya and the Satpuras.
3. The land slopes to the west from Central India.

**Select the correct answer using the codes given below:**

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 3
- (d) None

**Ans: (a)**

**Source: DTE**

PDF Reference URL: <https://www.drishtiias.com/printpdf/africa-rift-valley-and-the-creation-of-a-new-ocean-basin>

