

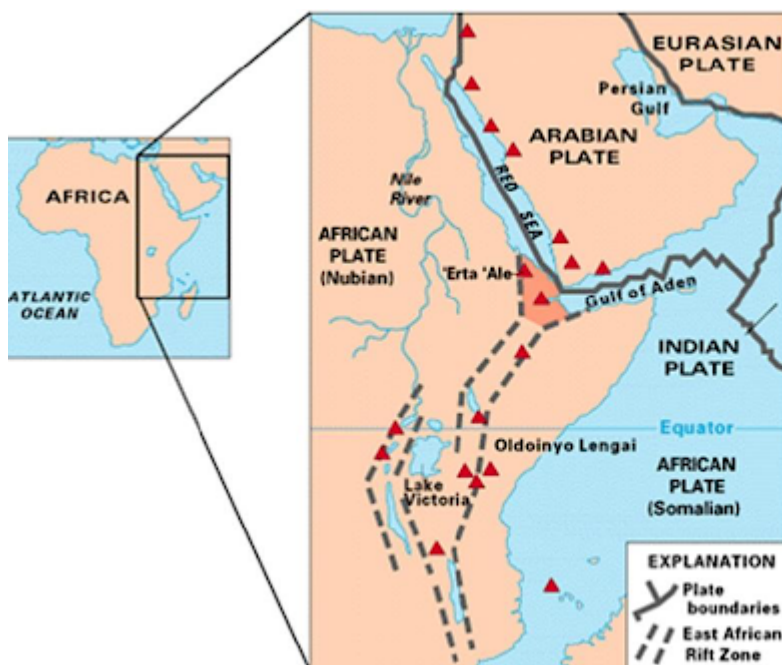
Africa's rift valley could give birth to a new ocean

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In news— Scientists, in 2020, predicted a new ocean would be created as Africa gradually splits into two separate parts.

Key highlights of the study-

- According to the study, the **division of the continent is connected to the East African Rift**, a crack that stretches 56 kilometres and appeared in the desert of Ethiopia in 2005, triggering the formation of a new sea.
- **This geological process will inevitably divide the continent**, resulting in currently landlocked countries, such as Uganda and Zambia, obtaining their own coastlines in due time, which would take five to 10 million years.



- While the prospect of a new coastline is undoubtedly exciting, the process will not be without significant repercussions.
- The necessary **evacuation of people and the potential**

loss of lives will be an unfortunate cost of this natural phenomenon. However, on the upside, the emergence of new coastlines will unlock a myriad of opportunities for economic growth.

- **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 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.
- While the process of rifting may often go unnoticed, **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.
- Additionally, the close proximity of the hot molten asthenosphere to the surface causes volcanism, further displaying the ongoing process of continental breakup.

What is rifting?

- The Earth's lithosphere, comprised of the crust and upper part of the mantle, is divided into several tectonic plates that are not stationary but rather 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,** which can occur either on land or at the bottom of the ocean. **These rift valleys occur due to the movement of Earth's tectonic plates.**
- The phenomenon of rifting can be traced back at least 138 million years, when South America and Africa were divided into separate continents.
- In the present day, the gradual separation of the Somali and Nubian tectonic plates is leading to the formation of a rift that could eventually lead to the creation of a new ocean basin.
- 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.
- The seismic data obtained by the researchers revealed that similar tectonic processes triggered the rift formation at the ocean's bottom.
- The crack was located at the intersection of three tectonic plates – the African Nubian, African Somali, and Arabian – that have been separating for some time, added the report.
- Although 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. This highlights the ongoing process of rifting and its potential for creating a new ocean basin.