

May 19, 2025



Tulips in My Garden, May 13, 2025

News and notes

Before going on to discuss the geology and geopolitics of [Kenya](#), here are some news items I thought were interesting.

Comments

If anyone has comments on any of my postings, please leave a comment on the LinkedIn page for the posting or email me at raymondreichelt@gmail.com.

Geopolitics

- [White House Has Presented Iran With Written Nuke Deal Proposal In Huge First.](#)
- [Guyana Soldiers Attacked by Venezuela Amid Oil Territory Dispute.](#)
- India and Pakistan: [Diplomacy Amid Destruction.](#)
- [US Department of Energy Deploys Aircraft to Pakistan Following Indian Strikes on Nuclear Facilities.](#)
- [The four tourist destinations Lonely Planet co-founder avoids.](#)

Research and News

- Sea-level change over Earth's history: [Tectonics vs eustasy: The oceanic container and its contents](#).
- [Direct dating of Qaidam Basin stratigraphy, Northern Tibet](#).
- Dune geology: [Modeling the dynamics of aeolian meter-scale bedforms induced by bed heterogeneities](#).
- [Quantifying salt extrusion versus surface salt flow rates at Mt. Sedom to gain insights on its mechanics and potential external atmospheric forcing](#); related, podcast on [Geology Bites](#).
- [Petrological evidence for multiple magma injection in the Takada Granodiorite from the San'in batholith, Southwest Japan](#).
- [Petrology of arc type volcanic rocks from Moneron Island, constructed Cretaceous volcanic zone of Rebun-Kabato zone, south Sakhalin, Far East Asia](#).
- Sandstone intrusions: [Geometric and Spatial Analysis of Wing-Like Intrusions as Outcrop Analogues for Subsurface Analysis](#).
- [Paleoenvironment reconstruction and differential OM enrichment mechanism of the Upper Triassic Chang 7 member source rocks in the Ordos Basin](#).
- Attention budding alchemists: [How to make gold](#).
- [Complementary in situ garnet Lu-Hf geochronology and monazite U\(-Th\)-Pb petrochronology: an example from the Archean Slave craton, Northwest Territories, Canada](#).
- [Biogeochemical characterization of micritized carbonate grains in the shallow-marine Al-Kharrar Lagoon \(Red Sea, Saudi Arabia\)](#).
- [Origins and Alteration of Ediacaran Carbonates Recording the Shuram Excursion in Oman](#).
- Something new: [Discovery of a New Type of Carbohydrothermal Pegmatite at Moose Creek Valley, Ice River Alkaline Complex, British Columbia – Evidence for Extensive Ti Mobilization](#).
- Bad science: [Dozens of Elsevier papers retracted over fake companies and suspicious authorship changes](#).
- [First breaths of a hospitable Earth](#).
- [Mineralogical controls on Li, Sr and oxygen isotope composition of mixed Casingle bond Mg carbonate phases with implications for sedimentary dolomites](#).
- [River incision, seepage erosion, sea-level change, and the development of a coastal plain landscape since 15 Ma in the New Jersey Pine Barrens, USA](#).

- [A 2 m.y. record of bedrock incision and drainage integration of the upper Green River, western United States.](#)
- Geophysics: [Imaging Bajocian Coral Ridges in the Paris Basin and Deciphering Their Origin.](#)
- Under the ice: [Antarctica has a huge, completely hidden mountain range. New data reveals its birth over 500 million years ago.](#)

Plate Tectonics

- [Plate drift velocity controls on the levels of hydrocarbon source rock development taking the Palaeozoic as an example.](#)
- The beginning of plate tectonics: [Incipient continent formation by shallow melting of an altered mafic protocrust.](#)
- [Analyzing Recent Tectonic Activity Along the Karak Wadi Al Fayha Fault System Using Seismic, Earthquake, and Remote Sensing Data.](#)
- [The big impact of small quakes on tectonic tremor synchronization.](#)
- [Sensitivity Analysis of the Thermal Structure Within Subduction Zones Using Reduced-Order Modeling.](#)
- [Demise of the Barra Honda Carbonate Shoal \(Costa Rica\) at the Paleocene-Eocene Boundary Linked to Climate Change and Forearc Tectonics.](#)
- [Relict Back-Arc Basin Crustal Structure in the Western Greater Caucasus, Georgia.](#)

Paleontology

- [Chicago Archaeopteryx informs on the early evolution of the avian bauplan; Phys.org summary \[here\]\(#\).](#)
- [Early Eocene pelodyradid from the Tingamarra Local Fauna, Murgon, southeastern Queensland, Australia, and a new fossil calibration for molecular phylogenies of frogs.](#)
- [Patterns of postcranial fusion in the emu \(*Dromaius novaehollandiae*\) and Cretaceous theropod dinosaur *Troodon formosus*; guess what, birds are dinosaurs.](#)
- [Early evolvability in arthropod tagmosis exemplified by a new radiodont from the Burgess Shale; Phys.org summary \[here\]\(#\); a specimen of *Mosura* \(named after \[Mothra\]\(#\)\) will be exhibited for the first time at the Manitoba Museum in Winnipeg later this year.](#)
- [Cacatualepis: a new genus name for coccolepids from the Australian Mesozoic.](#)
- [New Miocene frogs from the Riversleigh World Heritage Area, north-western Queensland, and their palaeoecological implications.](#)
- [A new herrerasaurian dinosaur from the Upper Triassic Upper Maleri Formation of south-central India; SciNews summary \[here\]\(#\).](#)

- [Near-collapse of the geomagnetic field may have contributed to atmospheric oxygenation and animal radiation in the Ediacaran Period](#); Earth.com summary [here](#).
- [New SOCOL:14C-Ex model reveals that the Late-Glacial radiocarbon spike in 12350 BC was caused by the record-strong extreme solar storm](#); Science Alert summary [here](#).

Mining and Energy

- [Cameco CEO says Carney supportive of nuclear energy industry as uranium demand grows](#).
- [China emerging as top customer for Canadian oil shipped via Trans Mountain Pipeline](#).
- [Lynas becomes first producer of heavy rare earths outside China](#).
- [US Fracking Company Forecasts Major Shale Slowdown](#).
- [The Return of Peak Oil](#); related: [EIA forecasts world oil consumption growth to slow amid less economic activity](#).
- [Alberta regulator approves Northback coal mining project in Rockies](#).
- [India's Oil Imports Hit Record High as Demand Surges Past China](#).
- Geothermal research: [Numerical experiments of geyser eruption caused by ascent-driven decompression boiling, using the wellbore-reservoir simulator T2Well/ECO2N](#).
- [Natural hydrogen resource accumulation in the continental crust](#).
- [Montney Shale: The Next Big Shale Boom Could Be North of the Border](#).
- [De Beers secretly sells discounted diamonds to selected traders](#).
- 05/12 [US will fast-track Utah uranium mine permit](#).
- [RANKED: World's top 20 largest gold mines](#).

Petroleum and Ore Geology

- Petroleum geology: [Integrated 3D forward stratigraphic and basin modeling of the Santos Basin, offshore Brazil: Implications of sedimentary depositional facies and CO2 migration for silicification of continental carbonate reservoirs](#).
- Source rock geology: [Paleoenvironment reconstruction and differential OM enrichment mechanism of the Upper Triassic Chang 7 member source rocks in the Ordos Basin](#).
- [Geology and genesis of the Shenshuitan deposit in the Wulonggou gold district, Qinghai Province, China](#).
- [Traces of metasomatic episodes and hydrothermal REE fractionation in the vein filling apatite phases of the Jolotca ore field in the Ditrău Alkaline Massif, Romania](#).

- [Post-magma hydrothermal activity contributed to the generation of Bachi ion-adsorption REE deposits in South China: implications from U-Pb dating and geochemistry of REE-bearing accessory minerals.](#)
- [Explainable machine learning reveals apatite fertility and porphyry copper mineralization processes in the syn- and post-subduction settings.](#)
- [Source-to-Sink Evolution of Volcano-Sedimentary Li-B Deposits at Rhyolite Ridge, Southwestern Nevada](#)

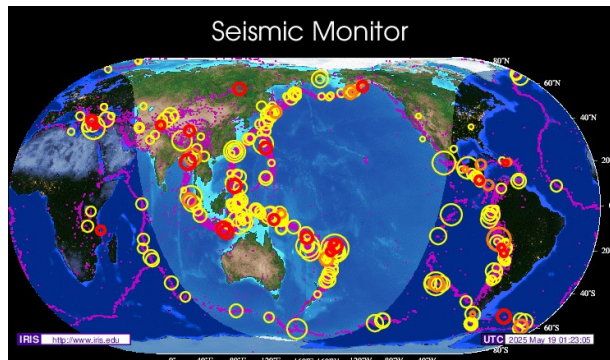
Environmental Geology and Hydrogeology

- [Climate-driven sulfate export in alpine watersheds may stimulate methylmercury production; Phys.org summary \[here\]\(#\).](#)
- [Depleting groundwater and the road to change; IAH News summary \[here\]\(#\).](#)

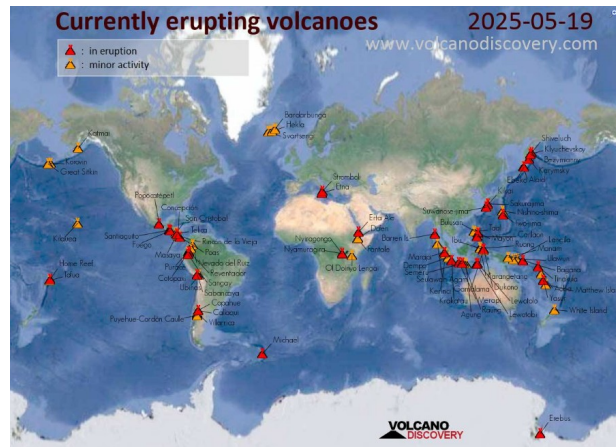
Glaciers and Climate Change

- Periglacial environment: [Postglacial canyon incision primes ice-cored hillslopes for thaw slumping in the western Canadian Arctic.](#)
- [Submerged bedrock shore platforms, Orkney Islands, UK: A new record of significant, though chronologically uncertain sea-level change and coastal erosion.](#)
- [Downstream Hydrology Reduces Glaciers' Direct Contribution to Sea-Level Rise.](#)
- [Lingering beneath crumbling walls: The origin of Holocene rock glaciers.](#)
- [⁸¹Kr dating of 1 kg Antarctic ice; Phys.org summary \[here\]\(#\).](#)
- [Onset of strong Iceland-Scotland overflow water 3.6 million years ago; Phys.org summary \[here\]\(#\).](#)

Volcanoes, Earthquakes and Geohazards



[Seismic Monitor](#)



[Active Volcano Map](#)

Volcanoes

- United States Geological Survey (USGS) Volcano Observatories:
 - [Cascades Volcano Observatory Weekly Update](#).
 - [What lurks beneath: learning from lava ooze outs](#).
 - [Rock, Glass, and Flowbands: Yellowstone's Rhyolite Anatomy](#).
- [Smithsonian / USGS Weekly Volcanic Activity Report](#).
- [WebTephraCalc: a tephra fall volume estimation system using WebGIS and OGC web services](#).
- [Sakurajima volcano in southwestern Japan erupts](#).
- [Crustal to mantle melt storage during the evolution of Hawaiian volcanoes](#).
- ['River of fire' unleashes toxic gases as eruption destroys town in La Palma – Earth from space](#).
- [Magmatic system of the Kikai submarine caldera, SW Japan, imaged by passive seismic tomography](#).
- [Social sensing a volcanic eruption: application to Kilauea, 2018](#).

Earthquakes

- [Euro-Mediterranean Seismological Centre \(EMSC\)](#).
- [Earthquakes Monitoring Live Worldwide](#).
- [Aftershock characteristics of the 2024 Noto Peninsula earthquake \(Mw7.5\) through centroid moment tensor analysis using a 3-D seismic velocity structure model](#).
- [Assessment of Seismic Hazard Potential for a Geothermal Field: A Case Study in West Texas](#).
- USGS reports: [M 6.4 – 137 km W of Neiafu, Tonga](#); New Zealand Herald summary [here](#).
- USGS reports: [M 6.0 – 23 km SSE of Fry, Greece](#); Greek Reporter summary [here](#).

Other Geohazards

- [Stability Assessment of the Tepehan Landslide: Before and After the 2023 Kahramanmaras Earthquakes](#).
- [Application of LiDAR Differentiation and a Modified Savage–Hutter Model to Analyze Co-Seismic Landslides: A Case Study of the 2024 Noto Earthquake, Japan](#).
- [Amber in the Cretaceous deep sea deposits reveals large-scale tsunamis](#); Phys.org summary [here](#).

Free Geology Books and Other Stuff

Free geology books can be downloaded from these sites:

- [OreZone Readers and Experts Telegram Channel](#); the Ore Zone channel also shows employment opportunities for geologists.
- [The Groundwater Project](#) has many groundwater geology books for free download; also they now have a [Free Online Learning Module: Pumping Test Analysis](#).
- Free Groundwater Modeling Course – [HydroGeoCenter](#).
- From Western Australia: [Carbonatite, lamprophyre and host rocks in the northern Aileron Province](#).
- Two volumes of Geology of Indonesia now can be accessed for [FREE/GRATIS](#). The books can be accessed from: vol 1 <https://lnkd.in/eH6Gcka4>; vol 2 <https://lnkd.in/egTYmpjk>.
- Brett Davis' book on veins in a deforming rock mass: "[The Veining Bible](#)"; also at [this site](#).

Upcoming Events

- [Sedimentary Geology and the Energy Transition Conference, June 2-5, 2025 – Salt Lake City, UT USA](#).
- Calgary, AB: [2025 Bootleggin' Breakfast – July 8th & 10th](#); during the Calgary Stampede.
- [June 10, Kentucky Geological Survey 64th Annual Seminar: Geology in the Modern World](#).
- [Society for Sedimentary Geology conference, Mountjoy IV – August 10-13, 2025, in Montreal, Canada](#).
- [Copper to the World Conference, Tuesday 26 – Wednesday 27 August 2025](#), in Adelaide, Australia; report on 2024 conference [here](#).
- [The 52nd Congress of the International Association of Hydrogeologists, 15-19 September 2025, Melbourne Australia](#).
- [GeoManitoba 2025 78th Annual Canadian Geotechnical Society Conference & 9th Canadian Permafrost Conference, RBC Convention Centre, Winnipeg, Manitoba, September 21 – 24, 2025](#).
- [29 September – 1 October 2025, Stuttgart, Germany, Nature Conference on Advancing Perovskite-Based Photovoltaics](#).
- [November 3 – 4, 2025 Central Canada Mineral Exploration Convention 2025 Victoria Inn Hotel & Convention Centre, 1808 Wellington Avenue, Winnipeg, Manitoba R3H 0G3, Canada](#).
- [5th International Professional Geology Conference \(IPGC\), November 5 to 7, 2025, Zaragoza, Spain](#).
- 2025 [Society of Petroleum Engineers Distinguished Lecturer Schedule](#).
- [List of geoscience events in 2025 from the International Union of Geological Sciences](#).
- [American Geophysical Union List of Upcoming Meetings](#).
- The Geological Society: [Events & Courses](#).

May 19, 2025

Geology and the Fate of Societies – Kenya



Figure 1a – Kenya

Credit: [CIA World Factbook, public domain](#)



Figure 1b – Location of Kenya

Credit: [CIA World Factbook, public domain](#)

Located in [East Africa](#), the [Republic of Kenya](#) is on the shores of [Indian Ocean](#); its land borders are with: [Tanzania](#), to the south; [Uganda](#), to the west; [South Sudan](#), to the northwest; [Ethiopia](#), to the north; and [Somalia](#), to the east and northeast.

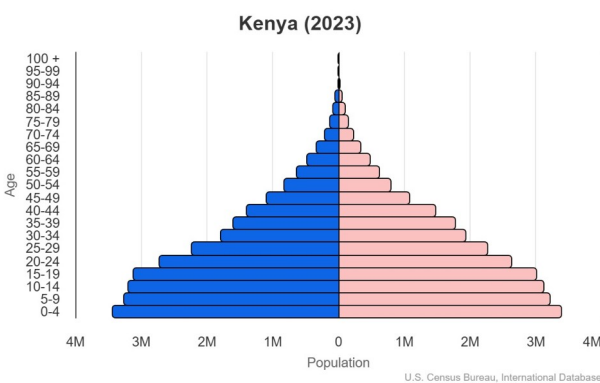
The government of Kenya is a unitary [presidential republic](#). The President is [William Ruto](#), and the Deputy President is [Kithure Kindiki](#). The legislature consists of an upper house, the [Senate](#) (Senate Speaker [Amason Kingi](#)) and a lower house, the National Assembly (Assembly Speaker [Moses Wetangula](#)). The Capital and largest city is [Nairobi](#) (pop. ~4,828,000).

According to the [Central Intelligence Agency](#) (CIA) [World Factbook on Kenya](#), the total area of Kenya is 580,367 square kilometres (km²) of which 569,140 km² is land and 11,227 km² is water. Also according to the CIA, 58,246,378 people live in Kenya; 29.5% of whom live in urban areas. Of the approximately 58.2 million people, there a wide variety of ethnic groups: [Kikuyu](#) 17.1%, [Luhya](#) 14.3%, [Kalenjin](#) 13.4%, [Luo](#) 10.7%, [Kamba](#) 9.8%, [Somali](#) 5.8%, [Kisii](#) 5.7%, [Mijikenda](#) 5.2%, [Meru](#) 4.2%, [Maasai](#) 2.5%, [Turkana](#) 2.1%, non-Kenyan 1%, and other 8.2% (2019 est.). The main languages spoken in Kenya are [Swahili](#) and [English](#) together with the languages of the various ethnic groups.

A 2019 survey compiled by the CIA indicates that most Kenyans consider themselves [Christian](#) 85.5% ([Protestant](#) 33.4%, [Catholic](#) 20.6%, [Evangelical](#) 20.4%, [African Instituted Churches](#) 7%, other Christian 4.1%). Another 10.9% are [Muslim](#); 1.8% are something other; 1.6% said they have no religion; and 0.2%

don't know or gave no answer. In terms of education, 82.6% of the total population aged 15 and over can read and write.

Economically, the per capita [GDP \(PPP\)](#) in Kenya is \$7,530; the [Gini](#) coefficient is 38.7, indicating medium inequality; and the [Human Development Index](#) is medium at 0.628. In 2023, the [top exports of Kenya](#) were tea (\$1.37b), cut flowers (\$817m), gold (\$400m), tropical fruits (\$323m), and coffee (\$304m). The top destinations for Kenyan exports were Uganda (\$893M), United States (\$838M), United Arab Emirates (\$716M), Netherlands (\$706M), and Pakistan (\$520M). Also in 2023, the top [imports of Kenya](#) were refined petroleum (\$4.06b), palm oil (\$846m), wheat (\$654m), packaged medicaments (\$439m), and hot-rolled iron (\$416m). The top country of origin for Kenyan imports were China (\$4.66B), United Arab Emirates (\$2.86B), India (\$2.08B), Saudi Arabia (\$1.02B), and Malaysia (\$859M).

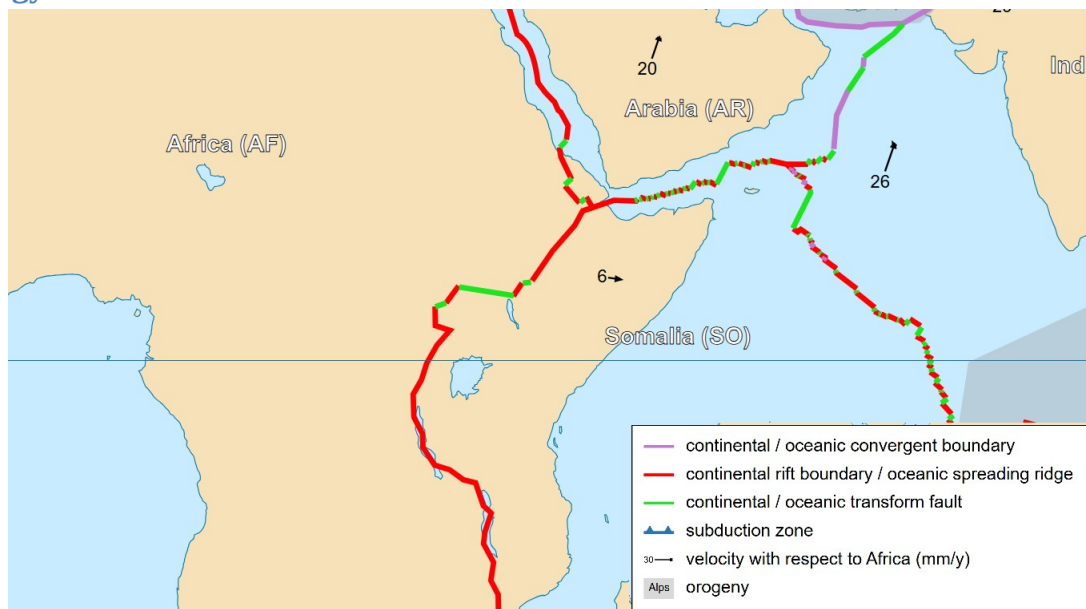


The [demographics of Kenya](#) show a young country with a growing population. The median age is 21.2 years old; 35.8% of the population is less than 15 years old; and 60.9% is between 15 and 64 years old. The total fertility rate is 3.23 births per woman, well above the replacement rate of 2.1. The net migration rate is -0.2 migrant(s)/1,000 population and the subsequent annual growth rate is 2.10%. The life expectancy at birth for both sexes is 70.4 years (68.6 years for men and 72.2 years for women).

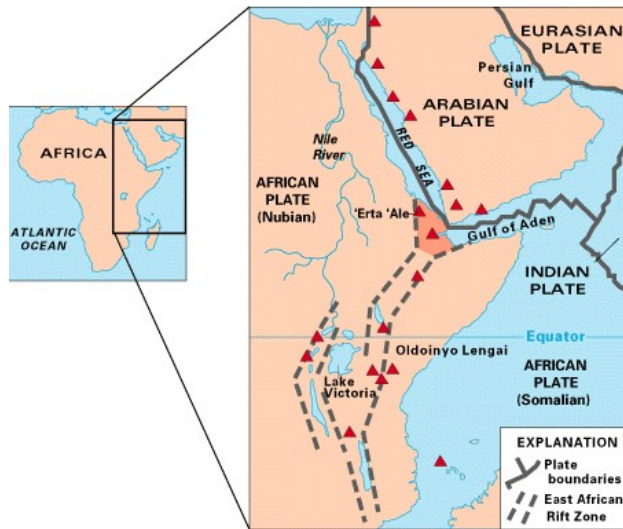
Figure 2 – Demographics of Kenya

Credit: [U.S. Census Bureau, International Database, public domain](#)

Geology

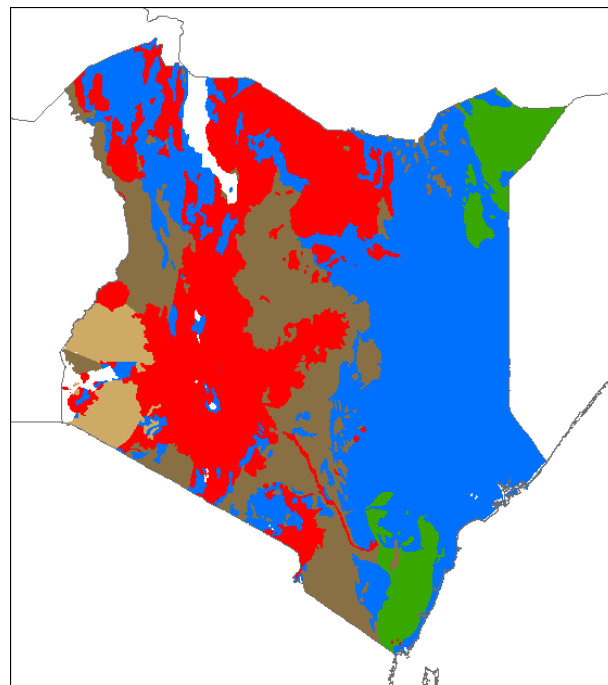


Credit: [Eric Gaba \(Sting-fr: Sting\); Creative Commons Attribution-Share Alike 2.5 Generic license](#)



Tectonically, Kenya sits within the area known as the [East African Rift System](#) (EARS). Most of Kenya is on the [Somalia Plate](#) while to the east is the [Nubian Plate](#). The two plates are separating at approximately 6–7 mm per year. The area around [Lake Victoria](#) has a [microplate](#) called the [Victoria Microplate](#). The Victoria Microplate appears to be slowly rotating anti-clockwise with respect to the African plate. This rotation is apparently caused by the [configuration of mechanically weaker and stronger lithospheric regions in the EARS](#).

Figure 4 – Tectonic Map of the East African Rift System
 Credit: [USGS, public domain](#)



Kenya - Geology

- Sedimentary - Tertiary-Quaternary; largely unconsolidated
- Igneous Volcanic
- Sedimentary - Palaeozoic-Mesozoic
- Precambrian - Proterozoic
- Precambrian - Archaean

Figure 4 – Basic Geology of Kenya
 Credit: [BGS Africa Groundwater Atlas, Creative Commons Attribution 3.0 Unported license](#)

The [geology of Kenya](#) can be divided into five main groups:

1. The largely unconsolidated [Cenozoic](#) sedimentary formations

These formations include:

- Unconsolidated [Holocene](#) deposits;
- Sand of the [Kilindini Formation](#) ([Pleistocene](#));
- [Marafa Sandstone Formation](#) and [Magarini Sands](#) ([Pliocene](#)); and
- [Baratamu Formation](#), conglomerate, limestone and sand ([Miocene](#) to [Eocene](#)).

2. Cenozoic igneous volcanic deposits

- [Quaternary](#) volcanism, mostly within the Rift Valley, formations of craters and cinder cones such as [Mt. Longonot](#), [Menengai Crater](#), and [Mt. Suswa](#);
- Volcanic deposits of [Mounts Kenya](#), [Elgon](#) and [Kilimanjaro](#);
- [Late Miocene](#) aged [phonolites](#) at [Kapiti](#) and [Yatta](#); and
- [Lower Miocene](#) aged eroded lavas and [pyroclastic](#) deposits of [South Nyanza](#).

3. [Mesozoic](#) to [Palaeozoic](#) sedimentary formations

These formations include:

- Limestones, sandstones, siltstones and shales of the Mtombku Formation ([Jurassic](#) to [Cretaceous](#)) and the Kambe Limestone (Jurassic);
- Sandstones, shales and siltstones of the Mazeras Formation (Jurassic); Mariakani Sandstone ([Triassic](#)), the Maji-ya-Chumvi ([Permian](#) to Triassic); and the Taru Grits (Permian).

4. [Proterozoic](#) metamorphic rocks

There are two main systems of Proterozoic aged rock:

- The [Bukoban system](#); and
- The [Mozambique Belt](#).

5. [Archean](#) metamorphic rocks.

In Kenya, there are two main systems of Archean aged rocks:

- The [Kavirondian](#) system; and
- The [Nyanzian](#) system.

Figure 6, below links to an interactive geology map of Kenya from Macrostrat. To look into particular features, open the map and then click on the map to go to interactive function.

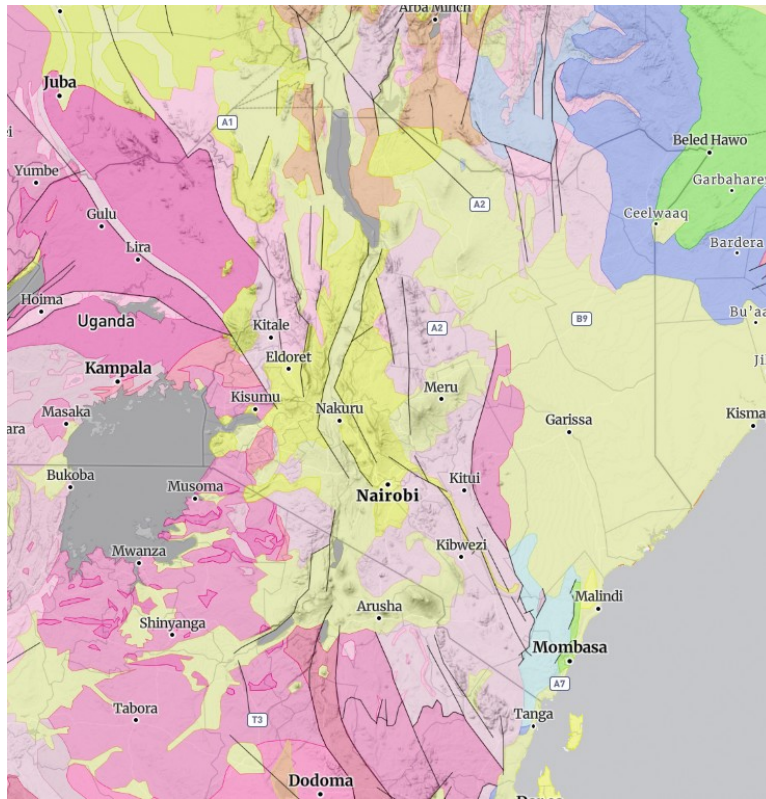


Figure 6 – Interactive Geology Map of Kenya (click on the map to go to interactive function)
[Credit: Macrostrat, Creative Commons Attribution 4.0 International license](#)

Resources

Agriculture



Figure 7 – Tigoni Tea Farm near Nairobi, Kenya
[Credit: Ninara, Creative Commons Attribution 2.0 Generic license](#)

According to the CIA World Factbook, about half, 49.7%, of the land in Kenya is used for agriculture (11.1% arable land, 1.3% permanent crops, 37.4% permanent pasture). Of the rest forest covers 6.3% and the remaining 43.9% has other, or no, use. There are 1,030 km² of irrigated land. Agriculture accounts for 21.8% of Kenya's GDP. The top ten agricultural products in Kenya, based on tonnage, are: sugarcane, milk, maize, bananas, tea, potatoes, cassava, cabbages, camel milk, mangoes/guavas. Production statistics from the [United Nations Food and Agriculture Organization](#) (FAO) can be found [here](#). Also according to the FAO, life can be fairly precarious in Kenya since 72.8% of the population suffered from [moderate to severe food insecurity 2021-23](#). One interesting fact is that, in 2023, Kenya produced 2,577,800 tonnes of tea leaves and 48,700 tonnes of green coffee beans, mostly for export.



Figure 8 – Fishing Boat on Lake Victoria

Credit: [VickyOmondi](#), [Creative Commons Attribution 4.0 International](#) license

The [fishing industry in Kenya](#) includes an inland freshwater fishery, an offshore marine fishery, aquaculture, and a sports fishery. Most of the fishing in Kenya is done by small fishing boats, often operating as a [subsistence](#) fishery.

In terms of wild-caught fish, the inland freshwater fishery accounts for about 85% of the catch (76% for the Lake Victoria basin, 8% from [Lake Turkana](#), and 1% from other freshwater bodies). Fishing in the Indian Ocean accounts for the remaining 15% of the wild-caught harvest. Species of fish caught in the freshwater fishery include: [Nile Perch](#), [tilapia](#), [catfish](#), [Silver Cyprinid](#), and [trout](#). The marine fishery catches include: [Swordfish](#), [Blue Sharks](#), [prawns](#), and various other fin fish. Aquaculture generally raises tilapia and catfish.

Production statistics on the Kenyan fishing industry can be found [here](#). If sports fishing in Kenya interests you, such as for those trout that the [English introduced](#), check out this [site](#).

Mineral Resources



Figure 9 – Green [Titanite](#) (Sphene) from Kenya

Credit: [Robert M. Lavinsky](#), [Creative Commons Attribution 3.0 Unported](#) license

If you think that the complex geology of Kenya and its location in the tectonically active East African Rift System would endow the country with a wide variety of mineral resources, [you'd be right](#). The [USGS Minerals Yearbook](#) for Kenya indicates that the country is a major producer of industrial minerals such as [fluorite](#), [ilmenite](#), [rare earth elements](#), [rutile](#), natural [soda ash](#), and [zircon](#). The country also produces metallic minerals such as [cobalt](#), [gold](#), [iron ore](#), [mercury](#), [manganese](#), [niobium](#), and [platinum](#). Energy mineral production, [coal](#) and [petroleum](#), is mostly prospective. Production statistics from the USGS can be found [here](#).

Major mines in Kenya include:

- The [Kakamega](#) goldfield mines, there was a "[gold rush](#)" here in the 1930's;
- [Kerio Valley Fluorspar Mine](#);
- [Lake Magadi Cobalt Mine](#);
- [Mrima Hill Mine](#), uranium, thorium, niobium;
- [Rangwa-Ruri-Homa Mine](#), uranium, thorium, rare earth elements;
- [Kapoponi, Kitui Magnesite Mine](#);
- [Gilgil Manganese Mine](#); and
- [Tharaka-Nithi and Samia](#) iron ore deposits.

Climate in Kenya varies with elevation and distance from the ocean. The main climate zones are: equatorial climate ([Af](#)), monsoon climate ([Am](#)), tropical savanna climate ([Aw](#)), warm desert climate ([BWh](#)), warm semi-arid climate ([BSh](#)), temperate oceanic climate ([Cfb](#)), humid subtropical /subtropical oceanic highland climate ([Cwb](#)), and temperate mediterranean climate ([Csb](#)).

Kenya looks like an interesting place to visit. Before you go, check out the travel advisories [here](#) and [here](#). Among the exciting things you may wish to avoid are: risks from terrorism, banditry, kidnapping, and armed robbery. The border regions adjacent Somalia and Ethiopia are not recommended for travel nor are [Pokot](#) and [Turkana](#) counties. The capital, Nairobi has bad neighbourhoods ([Eastleigh](#), [Kibera](#) and [Pangani](#)) to the extent that city has been called [Nairobberry](#). Kenyans take in stride, even making a video game about it, called, appropriately enough, [Nairobberry](#).

History and Geopolitics

History



Figure 12 – Stone Age Tools from the [Kariandusi Museum](#) in Kenya
Credit: Xmd5a, [Creative Commons Attribution 4.0 International](#) license

[Hominids](#) first evolved in East Africa, thus people of [various stages of evolution](#) have been living in Kenya ever since the early [Pleistocene](#). The [history of Kenya](#) prior to the modern era includes the following general categories, if you want to dive into these details, follow the links:

- Life in Kenya during the [Pleistocene Epoch](#);

- The development farming and pastoralism during the [Neolithic Age](#);
- The arrival of Bantu speaking peoples during the [African Iron Age](#);
- The development of the [Swahili city states](#) during [Antiquity](#) and [Medieval](#) times; and
- The arrival of [Portuguese and Omani](#) merchants in the [Early Modern](#) period.

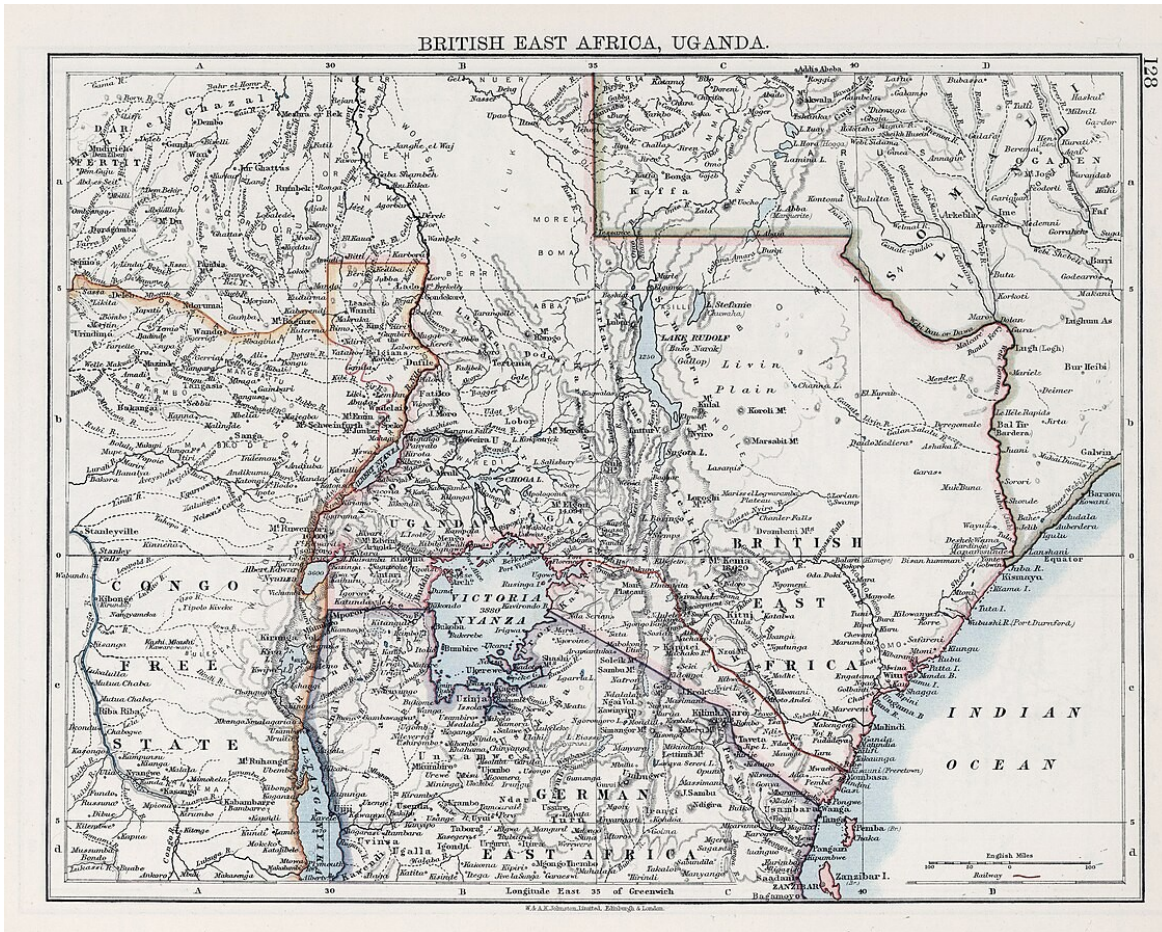


Figure 13 – British East Africa ca. 1906

[Credit: W. & A. K. Johnston, Limited, Edinburgh & London, public domain](#)

The history of modern Kenya began with the [British settlement of the country](#), which started in the late 19th Century. The arrival of the British was coincident with a [great famine in the country](#), a disaster that may have helped the British to establish their rule.

The British began the [modern development](#) of the country, building much of the transportation infrastructure. Also, many British settled in the [highland regions](#) of the country, establishing modern commercial farms. As part of the [British Empire](#), Kenyans participated in World Wars [One](#) and [Two](#).

However, most of the gains of the economic development accrued to the British, many of whom lived a life of comparative luxury, the so-called [Happy Valley Set](#). For the vast majority of the native population, there was far less. Consequently, there was a [movement for independence](#) from Britain after WWII. It

was not entirely peaceful, the [Mau Mau uprising](#) being particularly violent and killing upwards of 20,000 people.

In 1962 Kenya became independent from Britain. [Post-colonial Kenya](#) has had its share of problems, such as a [war in the northern provinces](#), authoritarian rule by [Jomo Kenyatta](#) and his successor [Daniel Moi](#); an [attempted overthrow](#) of the government in 1982; as well as massacres of rebellious people in [Garissa](#) (1980) and [Wagalla](#) (1984). The end of Daniel Moi's regime in 1991 has brought a [more peaceful](#) rule to the country; although there are always [allegations of election fraud](#) and corruption when the rulers cycle in and out of office.

Geopolitics – Living in East Africa



Figure 14 – Nairobi City Market

Credit: [Aeira-WME](#), [Creative Commons Attribution 4.0 International](#) license

Despite its many problems, [Kenya](#) is the most stable and prosperous country in East Africa. They have a functioning state and a [well trained military](#). Internally, their main problems include the suppression of crime, [the troubles inherent in the multi-ethnic](#) makeup of the country, and the endemic corruption that delays or stalls economic development.

Troubles among the various ethnic groups of Kenya, especially those in the [northern part of the country](#), are a constant source of other problems, such as [criminal activity](#). Banditry and other low-level conflict causes misery for ordinary people and suppresses economic activity. Getting this under control is a major challenge for the government.

It might be easier to tackle crime and inter-ethnic squabbles if the government were more honest. Transparency International ranks [Kenya at 121/180 in terms of corruption](#). Kenyans themselves are well aware of the [problem and protest it](#). As I have said before in other postings, the biggest problem with what we call corruption is the [misallocation of capital](#). Money that should be used to build infrastructure, or more importantly, develop the people of the country, ends up in someones bank account, usually far away from the home country where it is not available for the local economy. Misallocation of capital [due to corrupt practices](#) puts a tremendous strain on Kenya, indeed on any country. It is especially bad when a country, [like Kenya](#), is seeking to develop economically and improve their circumstances.

Externally, Kenya faces challenges from troubles among their neighbours. The worst is probably Somalia which is practically a [failed state](#). However, Somalia has established [peaceful diplomatic relations](#) with Kenya after [years of conflict](#).

Ethiopia has [regular internal rebellions](#) but their relationship with [Kenya is officially cordial](#). Meanwhile, Kenya continues to host [refugees from the many Ethiopian conflicts](#).

[South Sudan is also a failed state](#) and their troubles are also [creating refugees](#). Kenya's border with South Sudan [is also in dispute](#); a situation that is not currently resolved.

Uganda and Kenya are in a [trade dispute](#), peaceful for now. However, Uganda is [dealing with their own troubles](#) with the [Democratic Republic of Congo](#).

The best of Kenya's external relations are those [with Tanzania](#), which appear to be relatively stable. Recently, the two countries have agreed to [reduce trade barriers](#).

I'll wrap it up there. For Kenya's future, the troubles in neighbouring countries means dealing with refugees and possible military incursions from those countries. Kenyan have good reason to keep their military at a high level of training and readiness. Kenya is one of those countries where the people seem to get by despite the incompetence and corruption of their rulers. I take that as a reason to be optimistic for their future.

Standard Caveat

[J. Robert Oppenheimer on freedom and scientific inquiry](#)

The purpose of my weblog postings is to spark people's curiosity in geology. Don't entirely believe me until you've done your own research and checked the evidence. If I have sparked your curiosity in the subject of this posting, follow up with some of the links provided here. If you want to, go out into the field and examine some rocks on your own with the help of a good field guide. Follow the evidence and make up your own mind.

In science, the only authority is the evidence.