# 2.5. Rock and Mineral Resources of Ethiopia

- The occurrence of ***metallic minerals in Ethiopia*** is associated with the ***Precambrian rocks***.
- ***Although not in sufficient concentration and extent***, a great variety of such minerals occur in the ***basement rocks***. These rocks contain **most** of the ***metallic deposits***



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# 2.5.1. Brief Facts and Current State of Main Minerals in Ethiopia

- **Geological surveys** proved that Ethiopia has ***abundant mineral resources of metals*** **and** ***precious metals***, ***coal***, and ***industrial minerals***.

***Opal in Wello***



- The **exploitation** and **search** for **mineral deposits** in Ethiopia has been taking place for the past ***2,000*** years or so, and its early cultures were based partially on the mineral wealth of the day.

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- Such has been the case of ***gold production*** and ***utilization***, which has ***become part of Ethiopia's*** **history**, **tradition** and **folklore**.

- The **mining** and **working of iron** for the manufacture of ***tools***, ***utensils*** and ***weapons***, and the ***use of salt*** and ***salt-bar*** all these indicate to a ***fairly long mining tradition***.

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- However, presently mineral production from Ethiopia has been ***negligible (insignificant)*** by ***World standards***.

# Gold

- Gold has been mined in Ethiopia for quite long time, mainly from **Benishangul-Gumuz** (Metekel) and Adola.
- Operating mines produce gold from primary sources in such localities as **Dermi-dama, Sakoro** and **Lega-dembi**.
- Mechanized alluvial working is confined to the state operated gold field of ***Adola***.





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- ***Secondary gold deposits*** are common in the following localities: Adola, Murmur Basin, Shakiso, Awata Basin, Dawa Basin, Ghenale Basin, Ujama Basin, Makanisa (Guba and Wombera), Kaffa.
- In Gambella and Illuababora (Akobo River), in Sidama (Wondo), Borena (Negele-Yabelo area) and in Benishangul-Gumuz (Sherkole), west Wellega, Mengi-Tumat-Shangul areas to the Sudanese border, and the drainage of the Didessa and Birbir.

# Platinum

- The Yubdo area in **Wellega**, is the only active Ethiopian Platinum mine.
- Platinum occurrences have been reported from Delatti in Wellega, and the valley of Demi-Denissa and Bone Rivers as well as Tullu Mountain area in Sidama.



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# Tantalum

- Significant deposit of tantalum and niobium is found in **southern Ethiopia**.
- It occurs in Adola area where Kenticha Tantalum mine with resources of more than 17,000 metric tons of world class ore reserve is found.
- The sedimentary and volcanic rock activities are also resourceful.

- Extensive lignite deposits in Ethiopia are found in Nedjo (Wellega), and in small amounts in **Chilga** (Gonder) are found in the sedimentary formations laid in between Trapean lava.



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- However, important Lignite, one of the lowest ranked coal, is known to occur in many localities such as in the ***Beressa Valley*** and ***Ankober (North Shewa***), **Sululta** (nearAddis Ababa), Muger Valley (West Shewa), Aletu valley (near Nedjo), Kariso and Selmi Valleys (Debrelibanos), Zega wodem gorge (near Fiche), Didessa Valley (southwest of Nekemte), Kindo and Challe Valley (Omo confluence), Adola,Wuchalle (north of Dessie), Chukga area (on Gonder-Metema road), Dessie area (near Borkena River).
- These areas are promise to be a good prospect to meet some of the local industrial and domestic needs.

# Gemstones

- Gemstones, including amethyst, aquamarine, emerald, garnet, opal, peridot, sapphire, and tourmaline occur in many parts of Ethiopia, mainly in **Amhara** and **Oromia Regional States**.
- Quality ***Opal*** was first discovered by local people in **Wadla and Dalanta woredas**, North Wello in Amhara Regional State.



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# Potash

- The potash reserve in the ***Danakil (Dallol Depression)*** of the Afar region is believed to be significant.

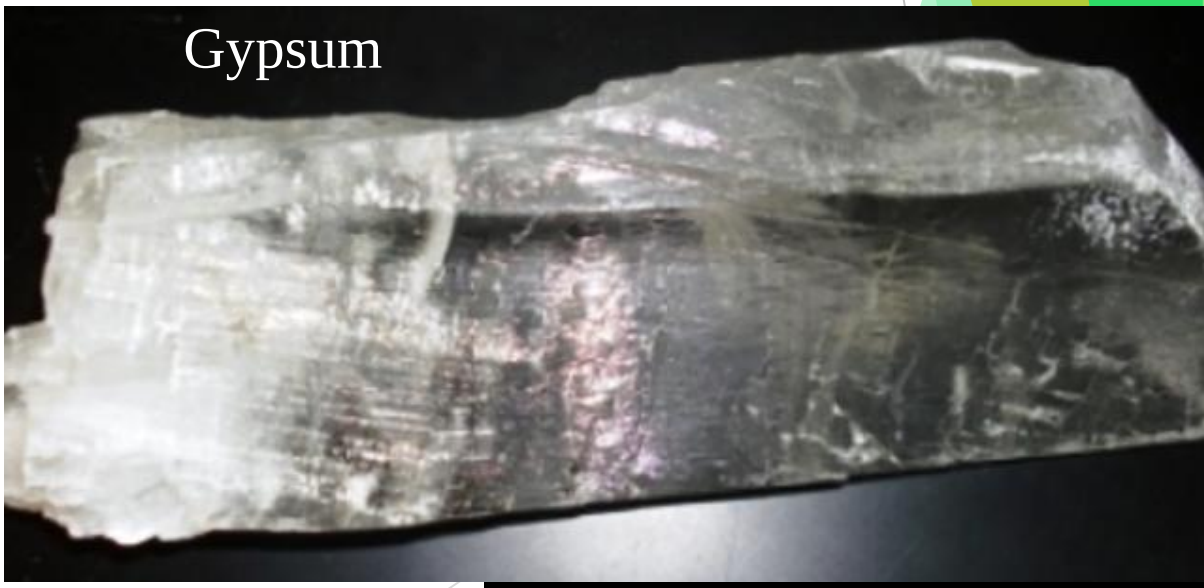





# Gypsum and Anhydrite

- A limited amount of gypsum is produced for domestic consumption in Ethiopia, mainly for the ***cement industry***, but ***very large deposits*** are known to occur in ***sedimentary formations of the Red Sea coastal area***, **Danakil** Depression, **Ogaden**, **Shewa**, **Gojjam**, **Tigray**, and **Hararghe**.

Total reserves are probably enormous because the thickness of the gypsum deposits is many hundreds of meters and the formation are known to extend laterally for hundreds of kilometers.


Gypsum

# Clay

- Ethiopia is endowed with industrial clay material. Alluvial clay deposits for bricks and tile, pottery and pipe industry occur in **Adola, Abay gorge**, and the **Rift Valley lakes region**.
- Ceramic clay for the production of glasses, plates, bricks is found at Ambo and Adola.
- ***Tabor ceramic industry*** in Hawassa gets most of its raw materials from local sources.

# Marble

- **Crystalline limestone** is widespread in the basement rocks of Ethiopia. Marble has been quarried in such localities as ***west of Mekelle*** and ***south of Adwa in Tigray***.
- In the east in Galetti, Soka, Ramis, Rochelle, Kumi and other valleys of Chercher Mountain in West Hararghe.

- In the northwestern also in areas built of Precambrian schist in Gondar, and the Dabus River and other neighboring river basins in Benishangul-Gumuz and Gojjam.



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# Construction stones

- Basalt, granite, limestone and sandstone are ***important building stones.***
- For the surfacing of roads and compaction, basalt, scoria and other volcanic rocks are extensively used.
- ***Mesozoic limestone*** is an important ***raw material for cement*** *and* ***chalk production.***
- The earlier cement works at Dire Dawa and the recent ones at Muger Valley, Abay gorge (Dejen), Tigray (Messebo) are using similar raw materials from these rock formations.

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# 2.5.2. Mineral Potential Sites of Ethiopia

- According to the ***Ethiopian geological survey***, the geologic formations that host most mineral potentials of Ethiopia includes **three major greenstone belts** and other formations.

These are:

1. **The Western & South-western-greenstone belt:**

- They contain various minerals: primary gold occurrences (Dul,Tulu-Kape, Oda-Godere, Akobo, Baruda, Bekuji-Motish and Kalaj);Yubdo Platinum, Base metals of Azali Akendeyu, Abetselo and Kata; Fakushu Molybdenite and the iron deposits of Bikilal, Chago, Gordana and Korre, Benshagul-Gumuz- Marble, Akobo and Asosa placer gold deposits and etc.

# 2. The Southern greenstone belt:

- **It** is known as the ***Adola belt***, which comprises the primary gold deposits and occurrences of Lega-dembi, Sakaro, Wellena, Kumudu, Megado-Serdo, Dawa Digati, Moyale and Ababa River;the columbo-tantalite of kenticha and Meleka, andthe Adola nickel deposit and other industrial minerals.

# 3. The Northern greenstone belt (Tigray):

- This belt comprises of the primary gold occurrences of Terakemti, Adi-Zeresenay, and Niragueue.
- The base metals of Terer, Tsehafiemba and other parts of Tigray, Placer gold occurrences of Tigray.

# *Review Questions*

**Answer the following questions briefly.**

1. What were the major geologic processes of the Precambrian and Paleozoic Eras in the Horn of Africa?
2. Discus the theories of continental drift and plate tectonics.
2. Explain the formation of the oldest sedimentary rocks in Ethiopia and the Horn.
3. Discuss the major geologic events of Ethiopia that took place during the Cenozoic Era.
4. Where are the major mineral potential sites of Ethiopia? Discuss each of them with the help of examples.