

Exploration projects focused on critical and high-tech mineral commodities in Africa

Presented by: Bernd Teigler

DERA's German Day Mining Indaba, Cape Town

6th of February 2018 14.00 – 17.30 h

- ❖ Introduction
- ❖ Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)
- ❖ Sediment-hosted Phosphate deposits in North Africa
- ❖ Graphite in Africa

DMT Group

Mining



Oil & Gas



Civil Engineering & Infrastructure



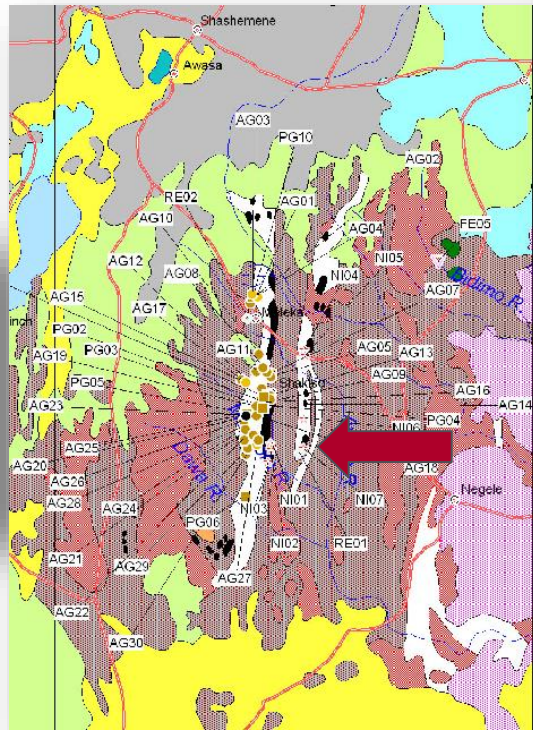
Plant Engineering & Process Engineering



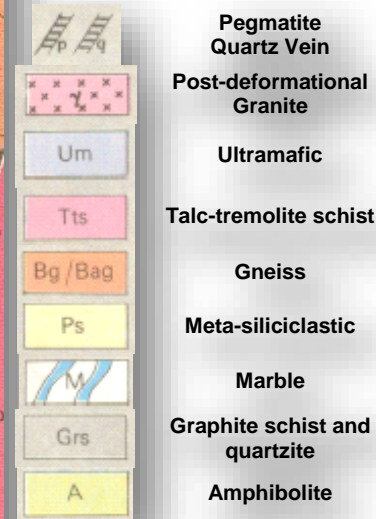
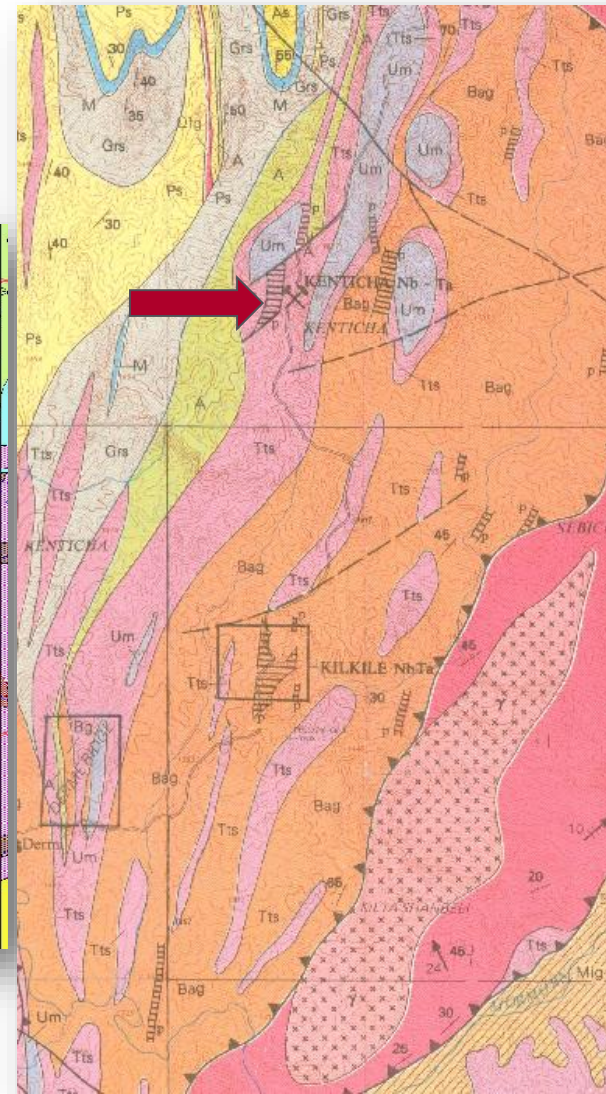
Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Location

Adola Belt



● Gold



Geological Maps
(Geological Survey,
Ministry of Mines and
Energy, Ethiopia)

Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Location

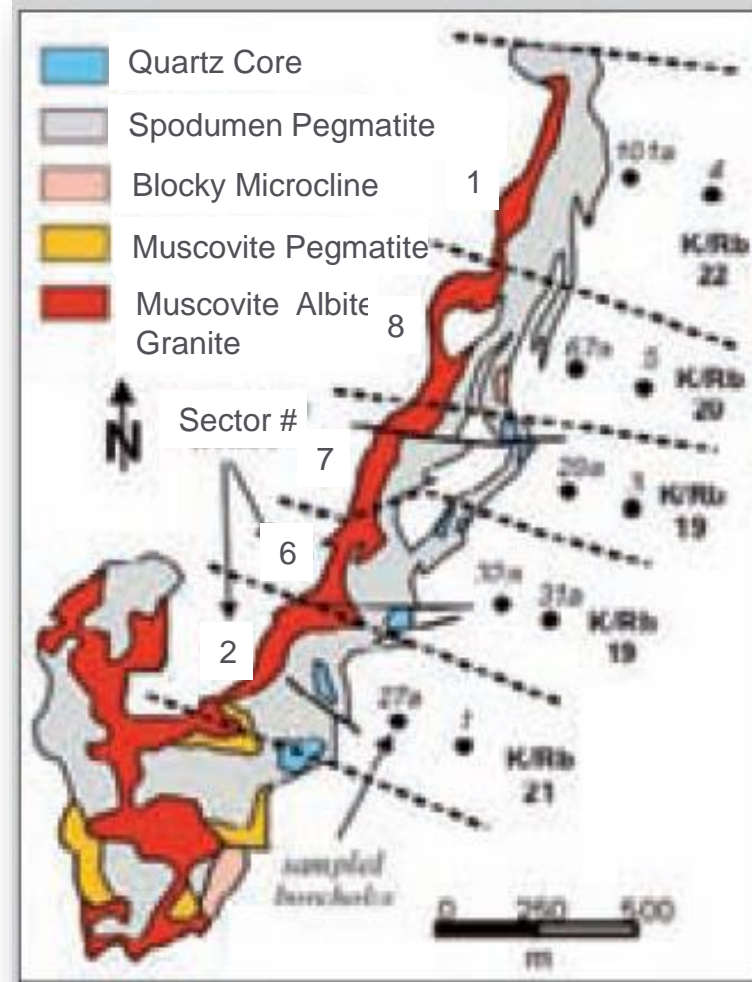
❖ **Strike: 2.5 Km sub-divided into 9 sectors**

❖ **Thickness: 15 - 90 m**

❖ **Dip: 15 – 35° to E**

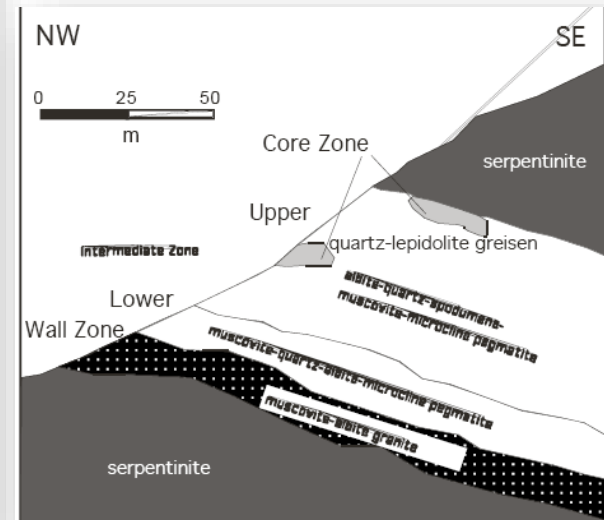
❖ **Grade: 160 g/tTa₂O₅ and 150 g/t Nb₂O₅**

Geology
(Mining Journal Supplement Ethiopia 2011)



Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

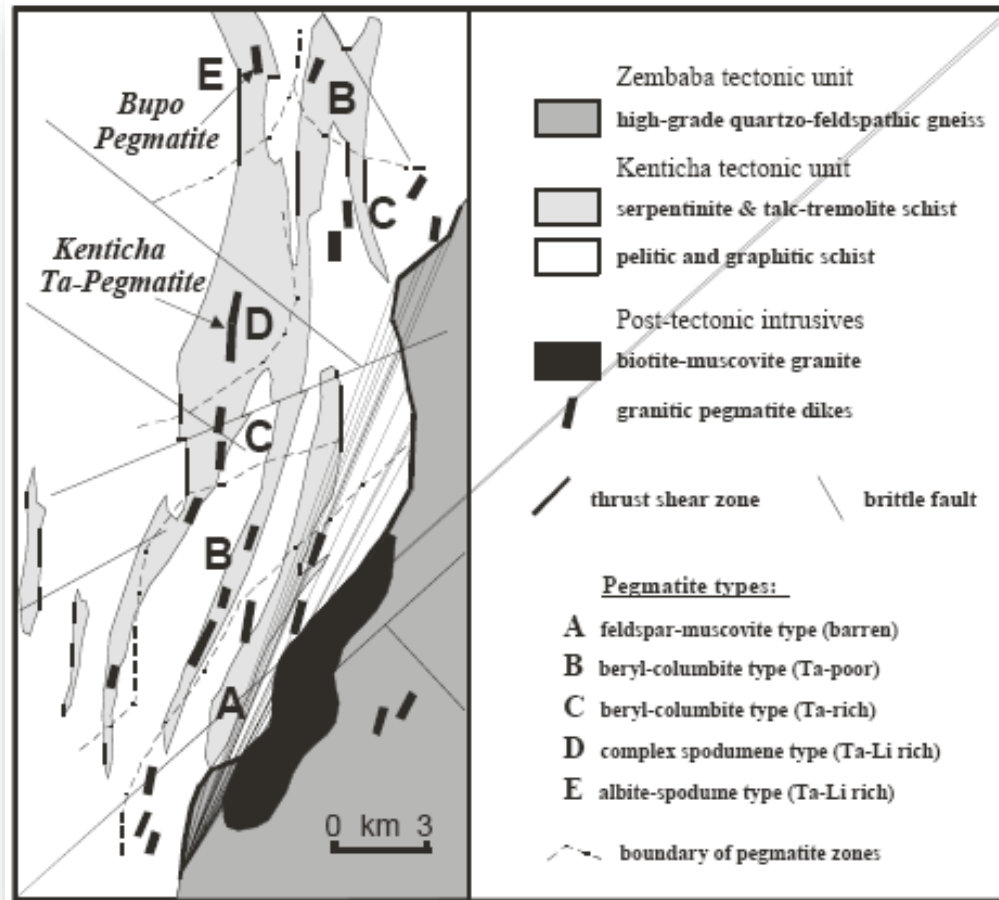
Kenticha Mine



Cross-section (Küster et al. 2007)

Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Other pegmatites



Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Other pegmatites



Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Other pegmatites



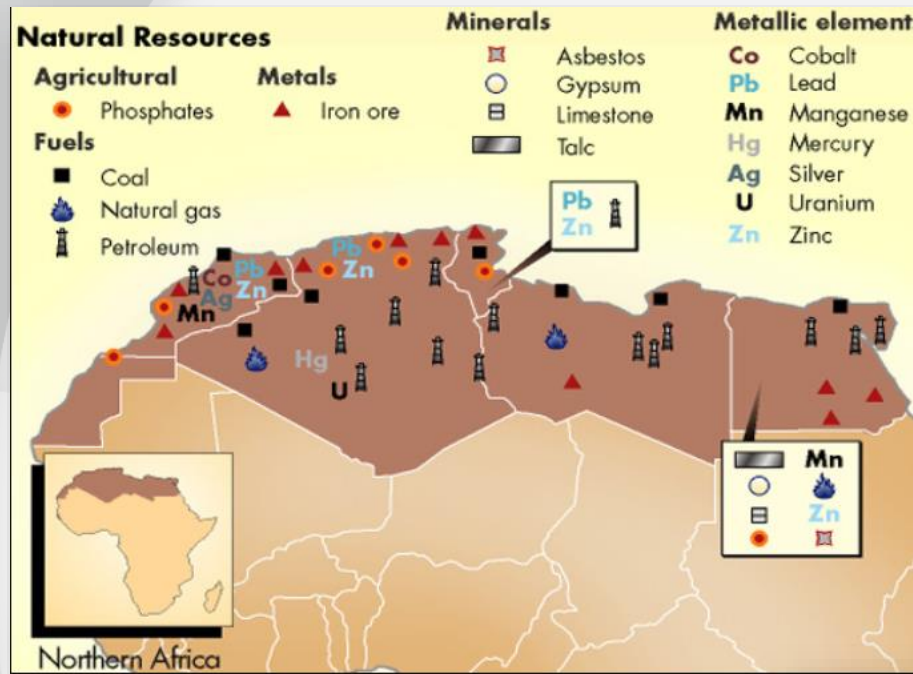
Pegmatite-hosted elements in East Africa (Ta, Nb, Li, Be)

Other pegmatites



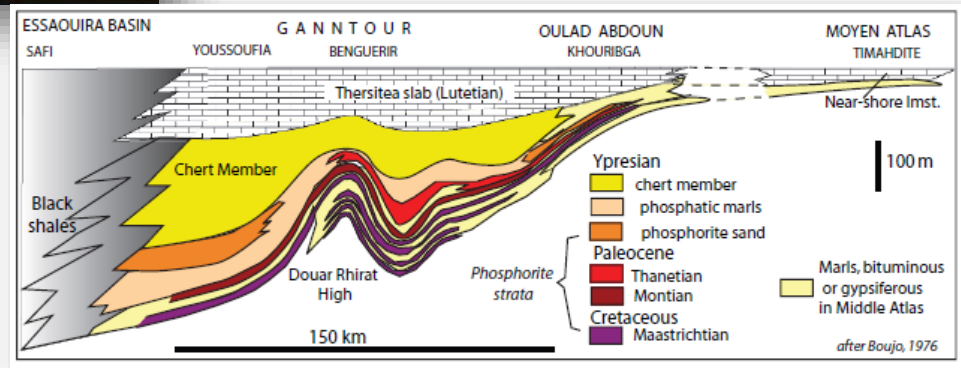
Sediment-hosted phosphate deposits North Africa

Location and Facies Changes



<http://alumn.us/africa-map-resources.html#>

Continental Evolution: The Geology of Morocco (2008)



Sediment-hosted phosphate deposits North Africa

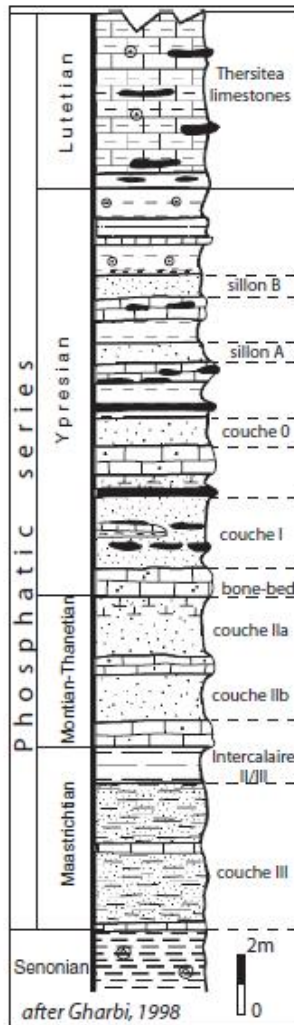
Comparison of Grades

Region	Feed Grade (% P ₂ O ₅)	Product Grade (% P ₂ O ₅)	Recovery of P ₂ O ₅ (%)	Loss of P ₂ O ₅ (%)
North America				
Southeast United States	10.9	30.4	79.0	21.0
Western United States	22.2	31.2	71.3	28.7
South America	9.6	33.8	58.6	41.4
North Africa	26.0	32.2	69.8	30.2
West Africa	27.1	33.3	40.5	59.5
Middle East	24.7	31.4	71.4	28.6

World Phosphate Rock Reserves
and Resources (2010)
[http://alumn.us/africa-map-
resources.html#](http://alumn.us/africa-map-resources.html#)

Sediment-hosted phosphate deposits North Africa

Stratigraphy Morocco



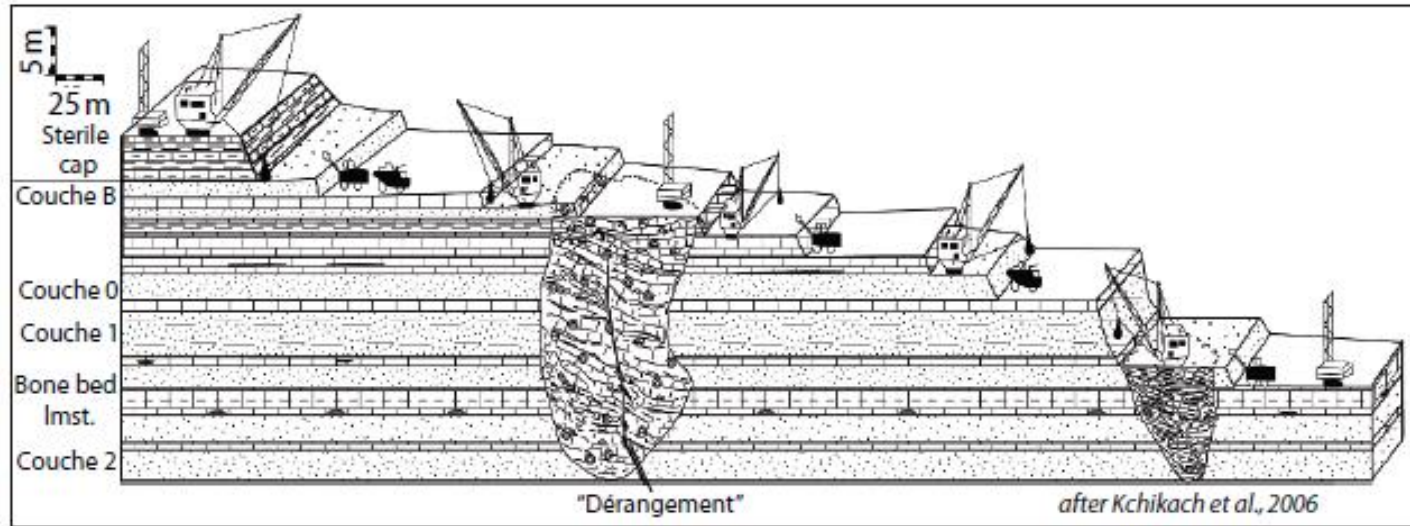
after A. Kchikach, unpubl.

- Marly-siliceous limestones (*Thersitea* slab)
- Siliceous marls with flints
- Discontinuous chert layers
- Uncemented phosphorite sand
- Phosphatic limestone
- Marls
- Phosphatic marls
- Indurated marls with gypsum

Continental Evolution: The Geology of Morocco (2008)

Sediment-hosted phosphate deposits North Africa

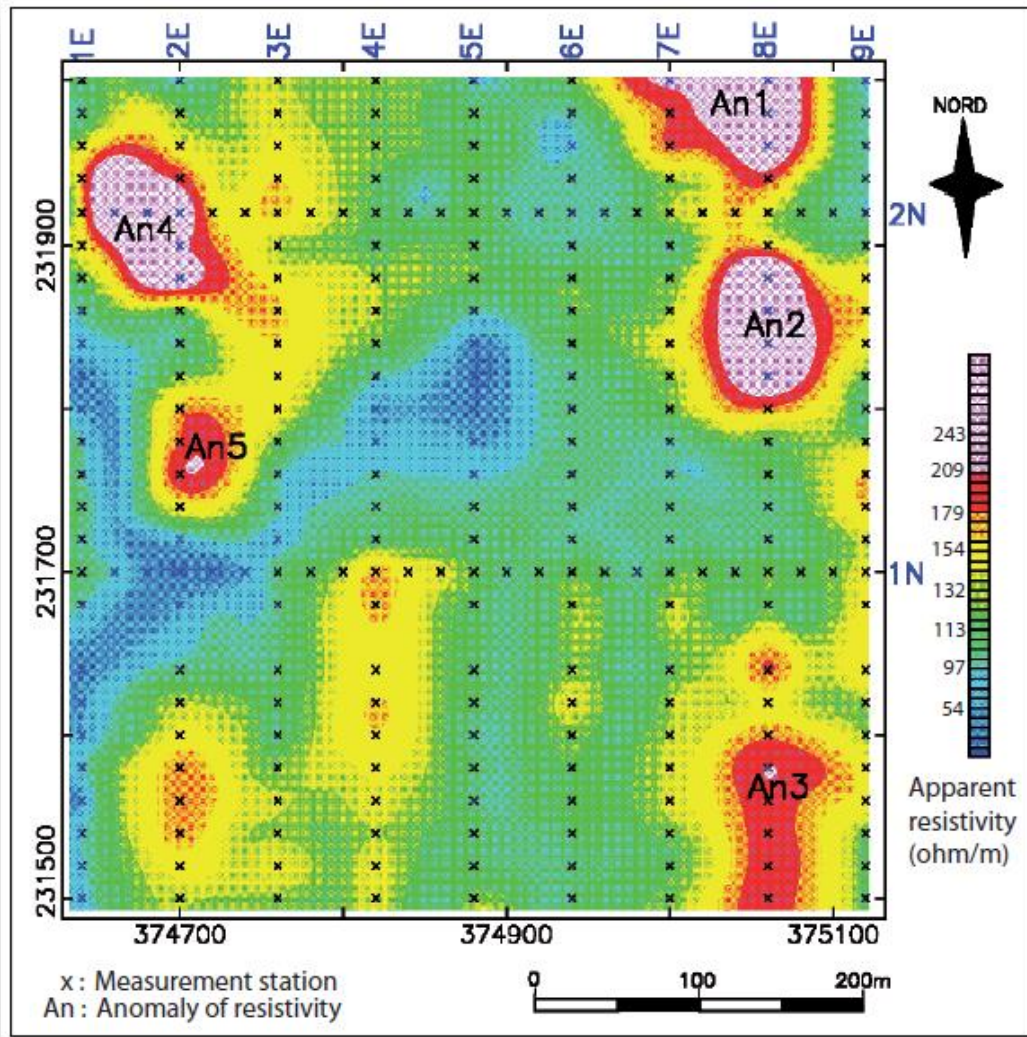
Mining



Continental Evolution: The
Geology of Morocco (2008)

Sediment-hosted phosphate deposits North Africa

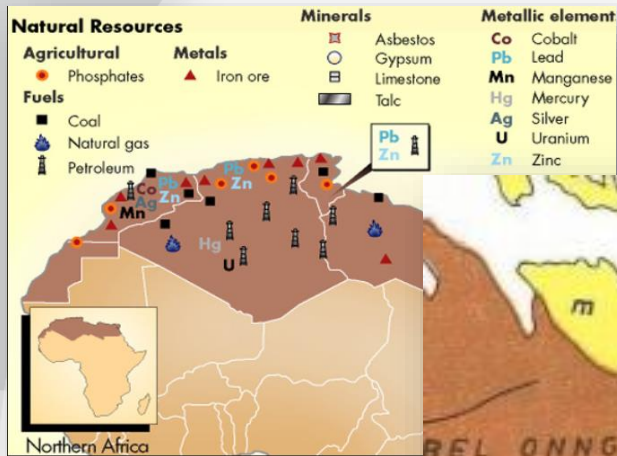
Geophysics



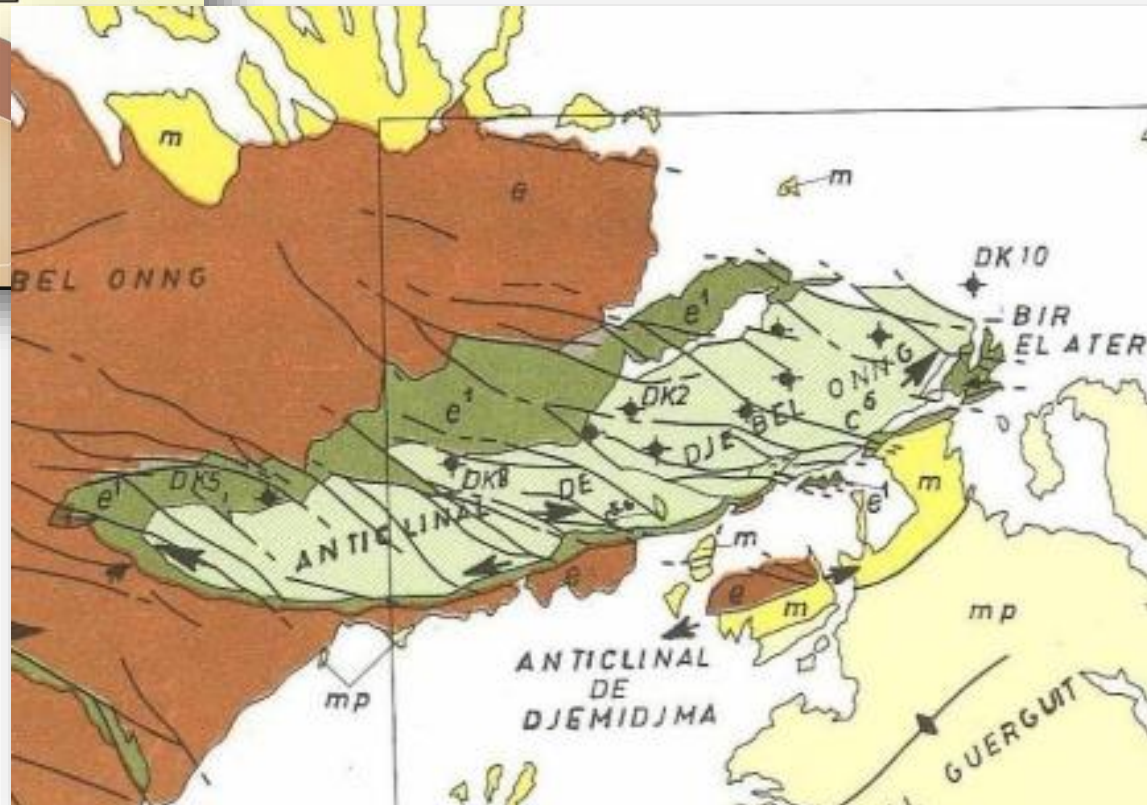
Continental Evolution: The Geology of Morocco (2008)

Sediment-hosted phosphate deposits North Africa

Location

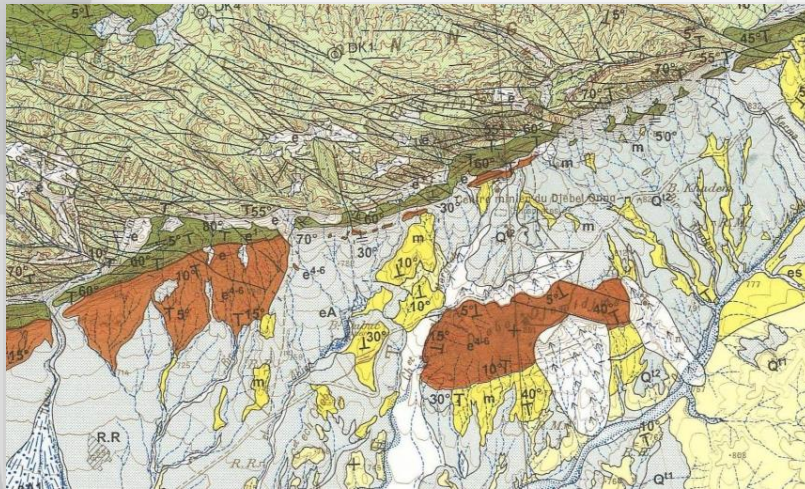


Carte Geologique de l'Algerie Bir el Ater (2016)

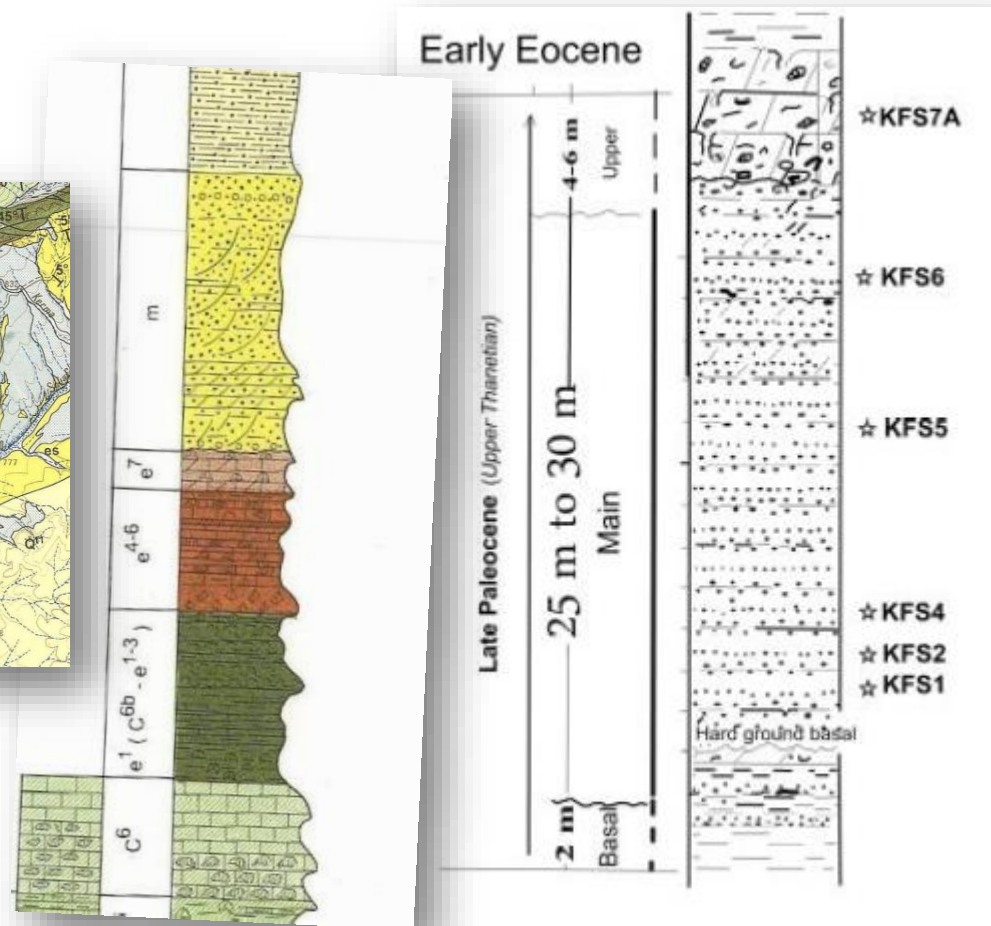


Sediment-hosted phosphate deposits North Africa

Location and Stratigraphy



Carte Geologique de l'Algerie Bir el Ater(2016)



Rabah Kechiched, Rabah Laouara, Olivier Bruguiere, Sihem Laouar-Salmia, Ouafi, Ameur-Zaimecheb & Atif Fofoud. Preliminary data of REE in Algerian phosphorites: a comparative study and paleo-redox insights (2016)

Sediment-hosted phosphate deposits North Africa

Location and Stratigraphy



Sediment-hosted phosphate deposits North Africa

Stratigraphy and Structure



Sediment-hosted phosphate deposits North Africa

Phosphate Bed



Graphite deposits in Africa



Web: CSA Global Pty Ltd. Report

Graphite deposits in Africa

Location Tanzania



<https://www.tanzaniainvest.com/mining/tanzania-to-be-one-of-largest-producer-of-graphite-in-the-world>

Graphite deposits in Africa

Grade

Flake graphite project resources summary

Entity	Country	Deposit Name	Mineral Resource (Mt)	TGC %	Contained graphite (Mt)
Lincoln Minerals	Australia	Kookaburra	2	15	0.3
Buxton Resources	Australia	Yalbra	4	16	0.6
Archer Exploration	Australia	Campoona, Wilco	9	9	0.8
Talga Resources	Sweden	Vittangi	10	25	2.5
Focus Graphite	Canada	Lac Knife	13	14	1.8
Triton Minerals	Mozambique	Ancuabe	15	5	0.8
Metals of Africa	Mozambique	Balama Central	16	10	1.7
Renascor Resources	Australia	Sivior	17	7	1.2
Hexagon Resources	Australia	McIntosh	17	5	0.8
Walkabout Resources	Tanzania	Lindi	30	11	3.3
Talga Resources	Sweden	Jalkunen, Raitajarvi	36	14	5.0
Kibaran Resources	Tanzania	Epanko, Merelani	40	10	3.9
Zenyatta Ventures	Canada	Albany	45	3	1.4
Graphex Mining	Tanzania	Shimba	54	6	3.0
Frontier Resources	Mozambique	Nipacue	56	7	3.9
Metals of Africa	Mozambique	Montepuez	62	10	6.3
Mason Graphite	Canada	Lac Guéret	83	17	14.3
Sovereign Metals	Malawi	Duwi	86	7	6.1
Northern Graphite	Canada	Bissett Creek	94	2	1.6
Ontario Graphite	Canada	Sheehan, McGuire	98	2	2.0
Magnezit	Russia	Soyuznoye	116	13	14.5
Energizer Resources	Madagascar	Molo	141	6	8.6
Alabama Graphite	US	Coosa	158	2	3.9
Graphite One	US	Graphite Creek	172	6	10.0
Magnis Resources	Tanzania	Nachu	174	5	9.4
Black Rock	Tanzania	Mahenge	203	8	15.8
Volt Resources	Tanzania	Namangale	214	5	10.9
Syrah Resources	Mozambique	Balama	1191	10	121.5
Triton Minerals	Mozambique	Nicanda Hill, Nicanda West	1487	11	157.8
Total			4.642	8.9	414

Web: CSA Global Pty Ltd. Report

Graphite deposits in Africa

Exploration



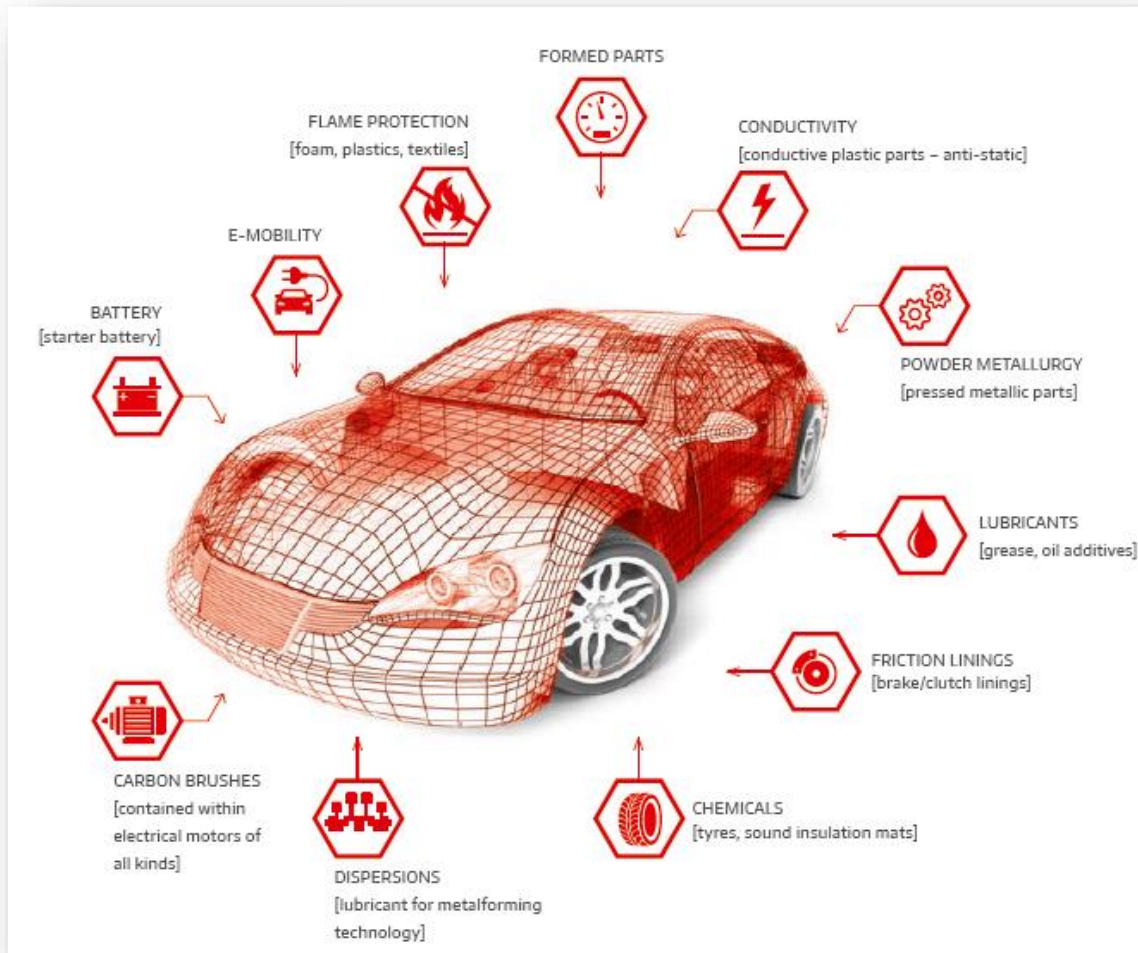
Graphite deposits in Africa

Resource Definition



Graphite deposits in Africa

Example of Uses



Web: AMG - Report

DMT GmbH & Co. KG, Germany
DMT- Kai Batla, South Africa

Questions?

**Thank you for your
attention!**

