The Project of Updating
Geological Map
of Sudan

at Scale 1:100.000

(2016-2017)

Republic Of The Sudan

Ministry of Minerals

Geological Research Authority of the Sudan (GRAS)

The project started in August 2015 by Sudanese staff in the Regional Geology Administration, which is responsible of geological mapping in order to support Geological & Mineral Exploration in the Sudan. The idea of the project is to map Sudan Geological features at scale 1:100:000 (last geological map was produced in 2004 at scale 1:2:500:000which is of limited value to the mining sector). Therefore the aim of this project is to improve,store, update(in term of information &correcting location) the Sudan geological information at an optimal scale of 1:100.000 which is very suitable for mineral exploration and other purposes.

Geo-database is built up for the project in order to unify the scale, projection coordinate system as well as to facilitate theStoring, Editing, Sorting, Updating, Analyzing, Retrieving, Integrating, Sharing and Displaying of the Geological information.

The Main features of the project of the updating Geological map of the Sudan

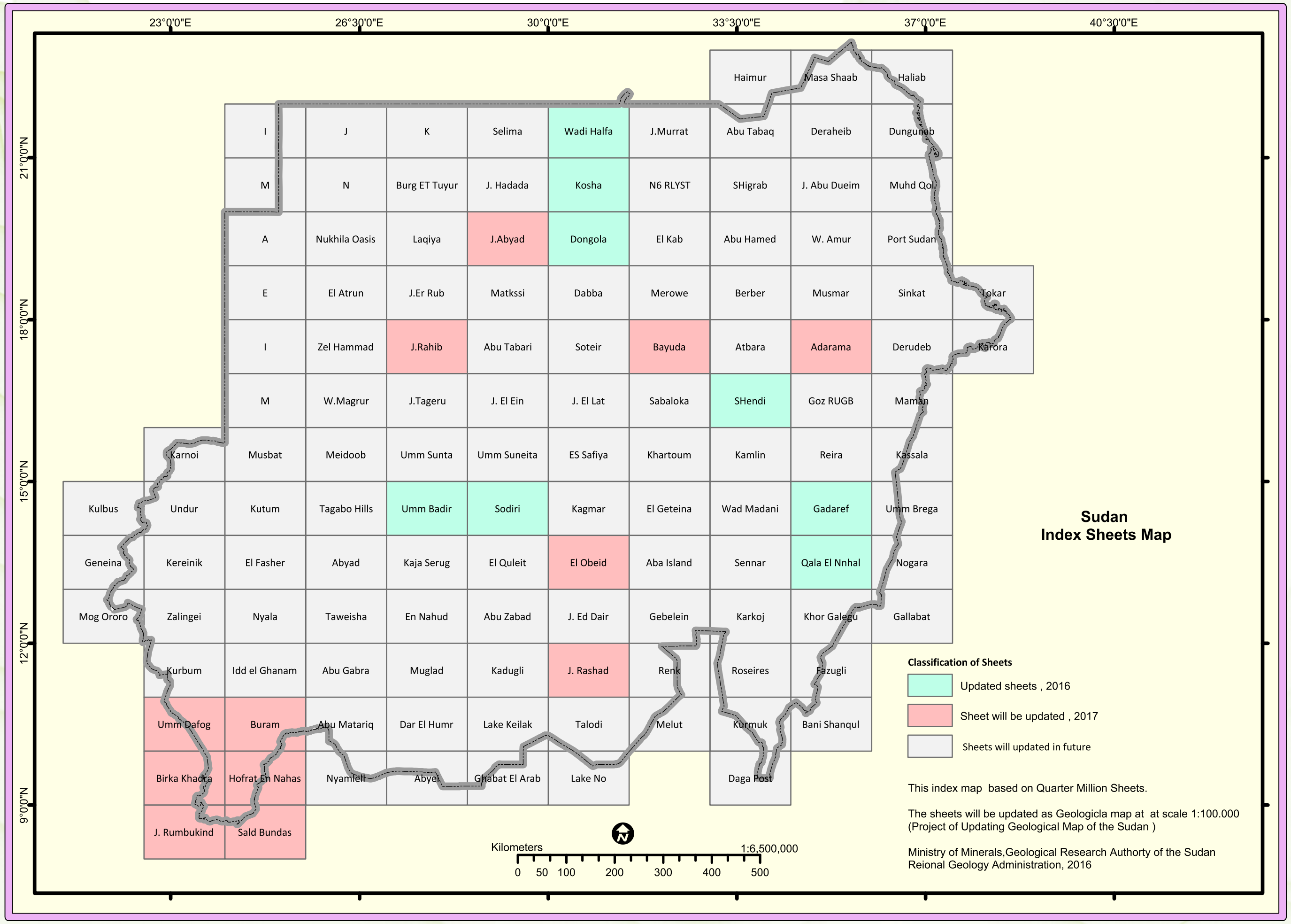
1- Sudan was divided into4 parts for group work and this as following:

- NW part
- NE part
- SE part
- SW part

2- Sudan is covered by129 Quarter Million scale sheets:

One quarter million sheet area is about 17.820.000 km2and the geological information is captured in geo-database at scale 1:100.000 but in order to visualize the information in one quarter million sheet, 1:200.000 scale was used after making the generalization techniques.

- 8 sheet were produced in 2016:wadi halfa, kosha, el gadaref, qala el nahal, sodari, ummbader, shendi, dongala (green color designated)
- 8 sheets J. Abyad, J. Rahib. El Obied, Rashad, Bayuda, Adramam Hofrat elnehas and SE.parts of sudan, el kab (red color, designated) will produced in 2017.



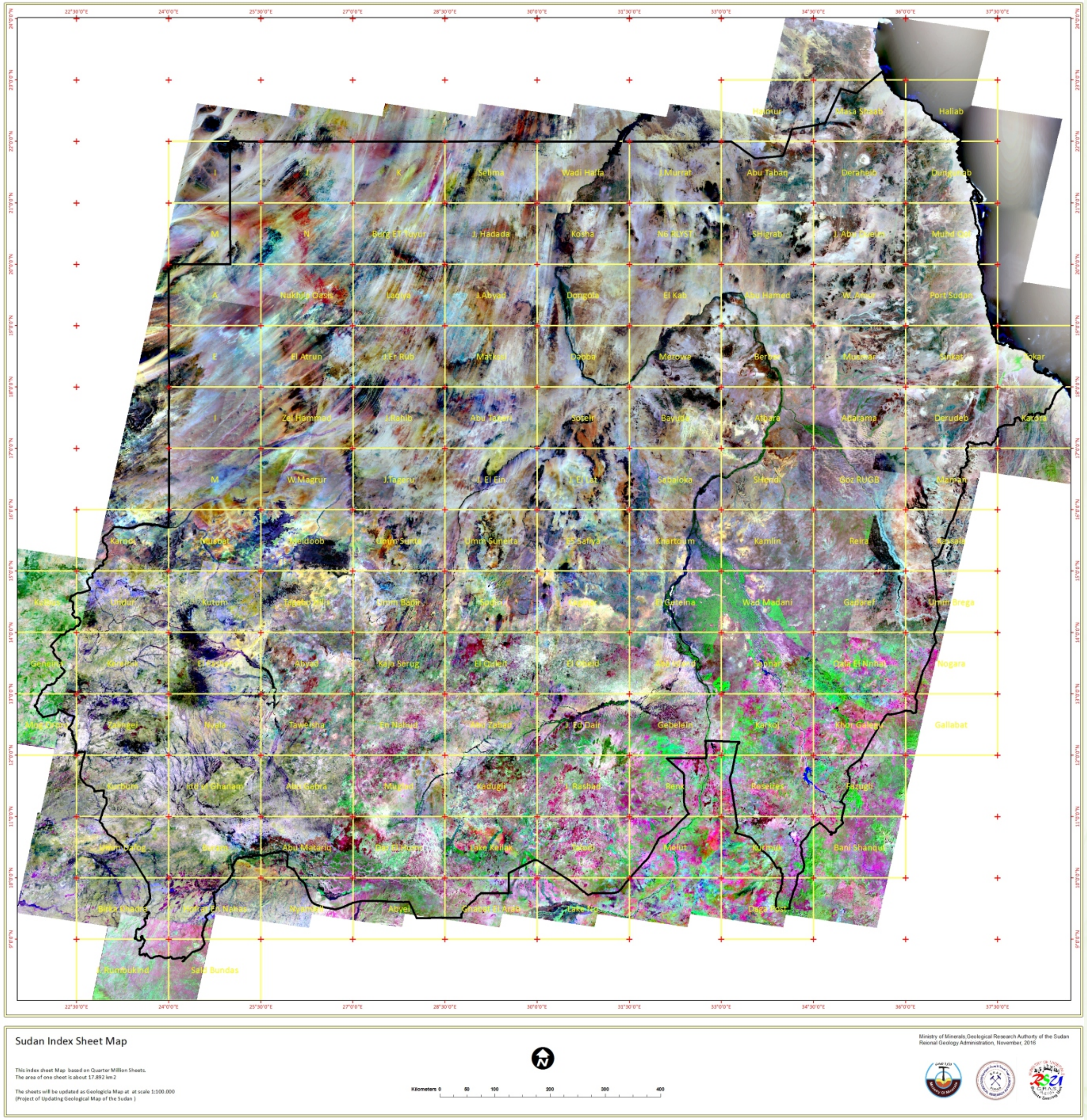
3- Digital interpretation is based on the following satellite images:

- landsat ETM+
- landsat 8
- Sentinel

4- Geological interpretation based on :

- Previous geological maps of Geological Research Authority of the Sudan (GRAS)
- Annul Regional Geology Administration Missions
- Technical Cooperation Projects (Russia, France, Germany, China, etc...)
- Available Geological information from mining companies
- The project of the updating geological map of Sudan will continue for the coming years to produce 8 quarter million sheets each year.

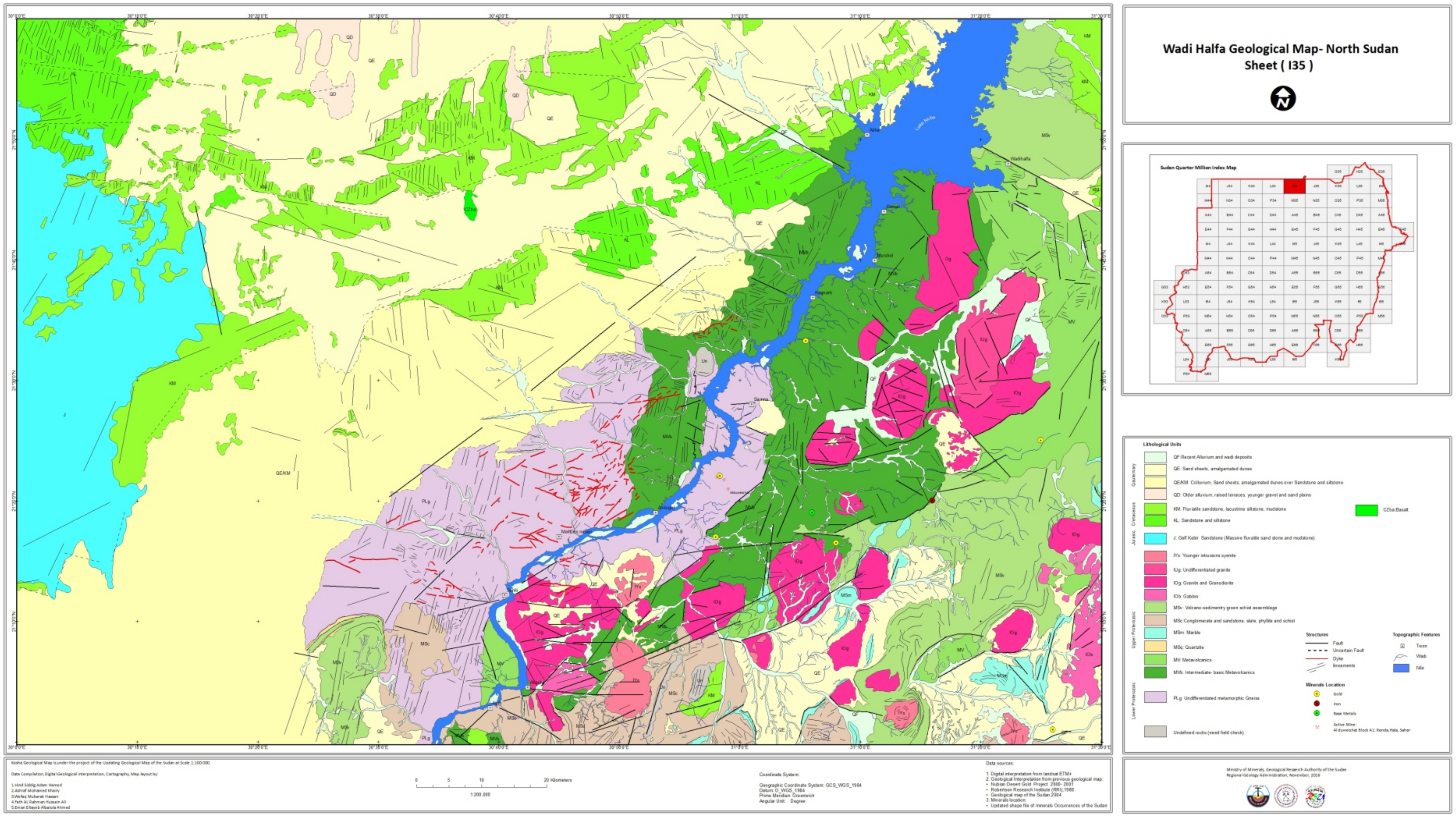
In 2016, the four working group sareproduced the following quarter million sheets at a scale 1:200.000



1 Wadi Halfa sheet - Northern state -NW part of the project

Geological Environments of Wadi Hafa sheet:

- **Lithology:** sedimentary rocks (Quaternary to Jurassic) Syenite, Granite, Granodiorite and Gabbro (upper Proterozoic) - volcano-sedimentry green schist assemblage & Meta-sediments, Meta - volcanic(upper Proterozoic) -Undifferentiated metamorphic Gneiss (Lower-Proterozoic)
- **Geological Structures:** main trend NE-SW, SE-NW- NS
- **Mineralization:** Gold, Iron, Base Metals
- **Industrial Rocks:** Marble, Granite



2 Kosha sheet - Northern state -NW part of the project

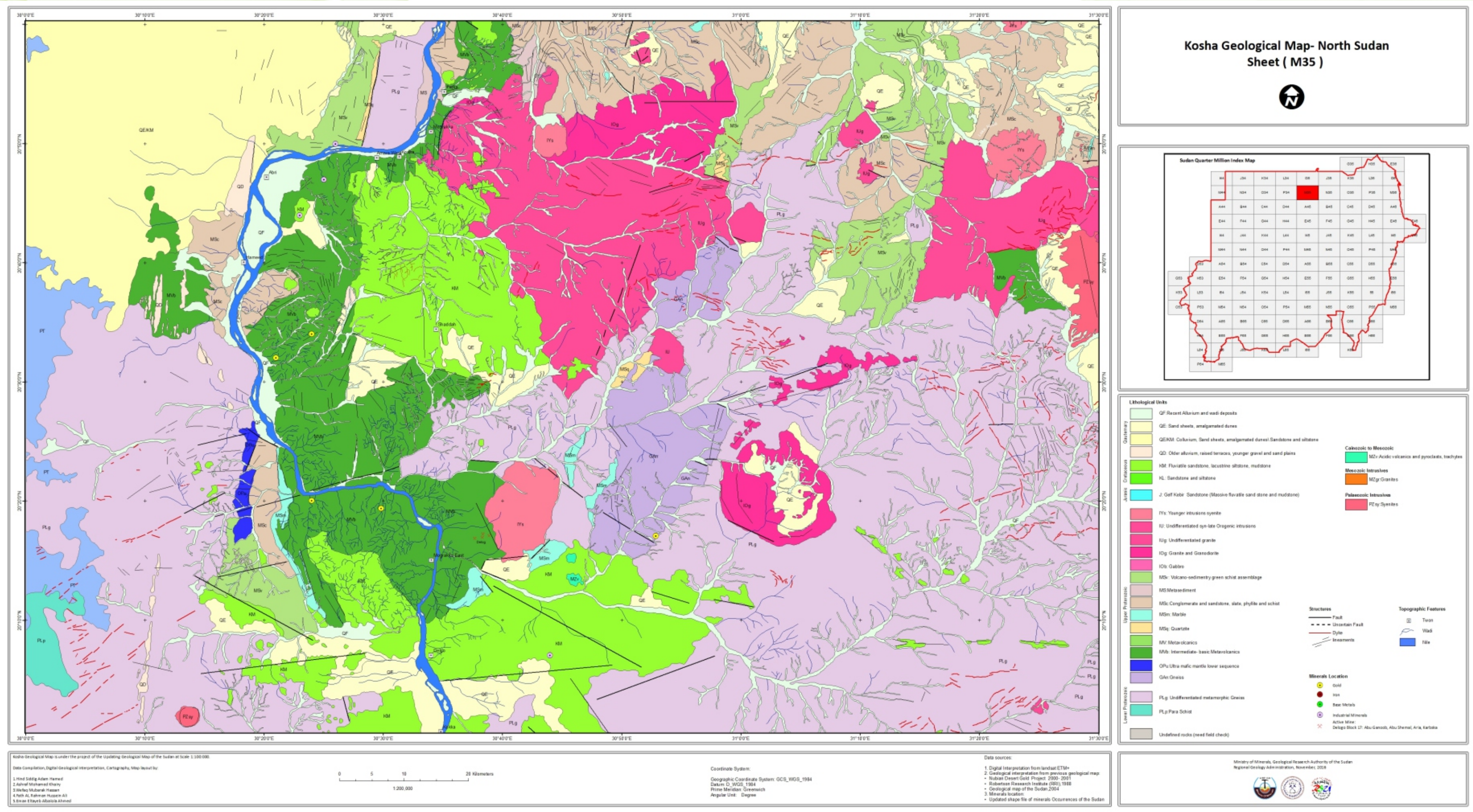
Geological Environments of Kosha sheet:

*** Lithology:** sedimentary rocks (Quaternary - Cretaceous to Jurassic) - acidic Volcanic Payroclast, Trachyte (Cenozoicto Mesozoic) -Granite (Mesozoic) - Syenite (Paleozoic) - Syenite, Granite, Granodiorite and Gabbro(upper Proterozoic) - volcano-sedimentry green schist assemblage & Meta-sediments, Meta - volcanic (upper Proterozoic) - Undifferentiated metamorphic Gneiss, Para Schist (Lower-Proterozoic)

*** Geological Structures:** main trend NE-SW, SE-NW- EW

*** Mineralization:** Gold, Iron, Base Metals, Industrial Minerals

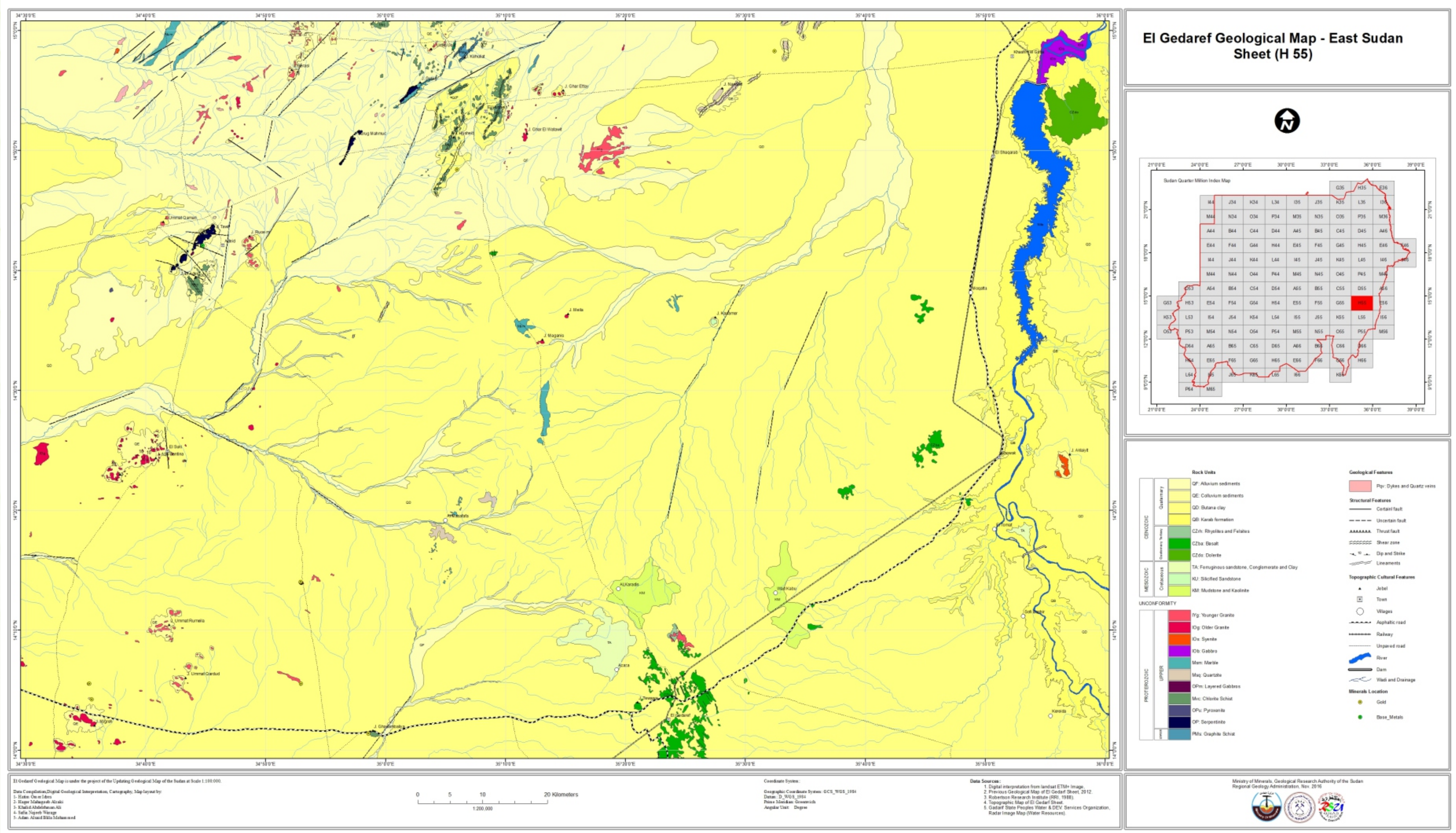
*** Industrial Rocks:** Marble, Granite



3 El Gadaref Sheet - El Gaderef state -SE part project

Geological Environments of El Gadaref sheet:

* **Lithology:** sedimentary rocks (Quaternary -Quaternary Tertiary- Cretaceous), Granite, Syenite, Gabbro, Marble, Quartzite, layerd Gabbro, chlorite Schist, Pytoxenite, Serpentinite, Graphite Schist(upper Proterozoic)
* **Geological Structures:** main trend NE-SW, NNW
* **Mineralization:** Gold, Zeolite, Base Metals
* **Industrial Rocks:** Marble, Granite



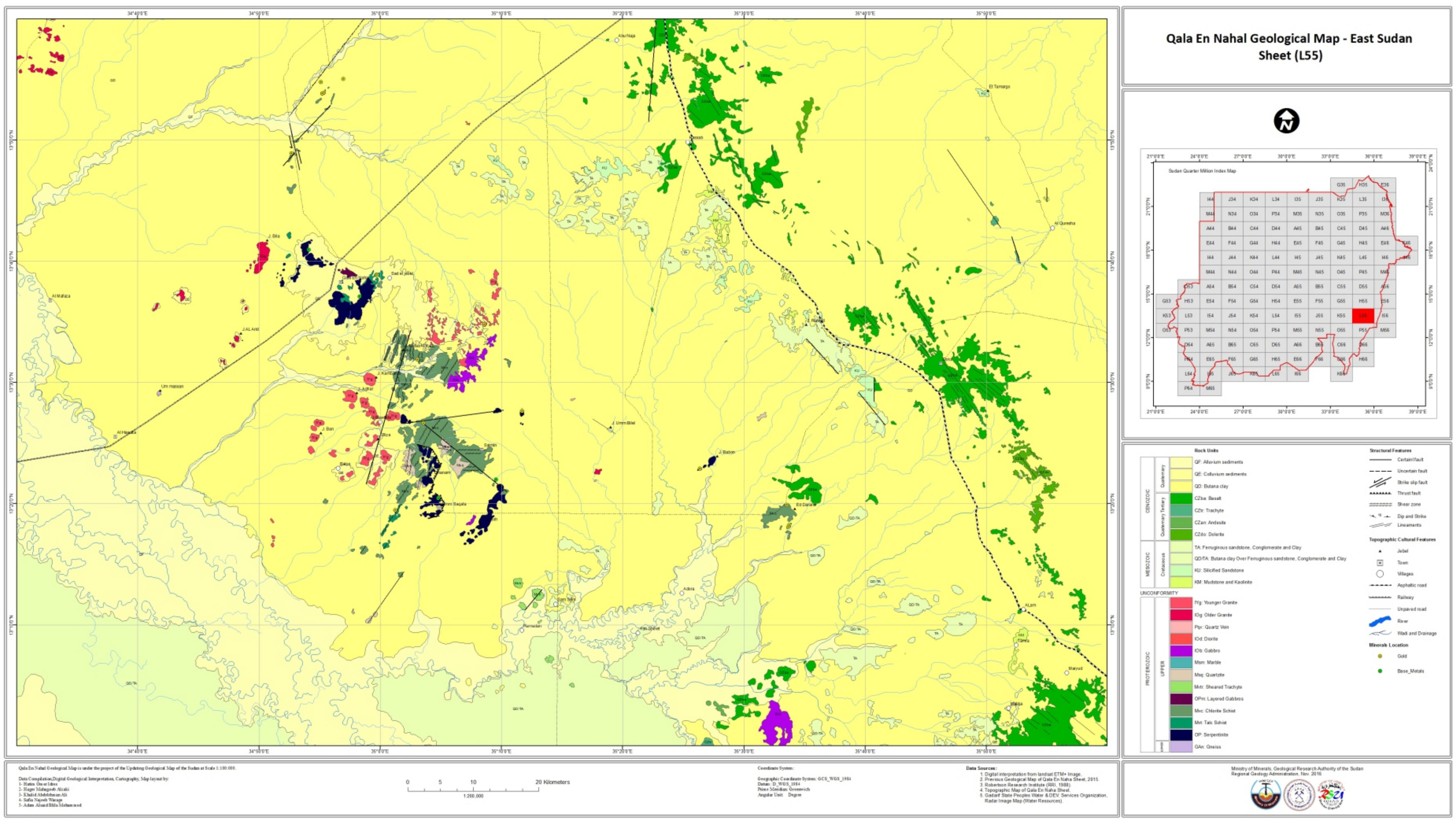
4 Qala El Nahal sheet - El Gaderef state -SE part project

Geological Environments of Qala El Nahal sheet:

*** Lithology:** sedimentary rocks (Quaternary)- Basalt, Trachyte, Andesite, Dolerite, Ferruginous Sandstone Silicified Sand Stone, Mud Stone, Kaolinite(Quaternary Tertiary- Cretaceous)- Granite, Quartz vein, Gabbro, Quartzite, Sheared Trachyte, layerd Gabbro, chlorite Schist, Talc Schist, Serpentinite (upper Proterozoic) - Gneiss (Lower-Proterozoic)

*** Geological Structures:** main trend NE-SW, SE-NW

*** Mineralization:** Gold, Zeolite, Base Metals (Copper, Nickel, Chrome,)



5 Sodari sheet - Kurdofan State- SW part of project

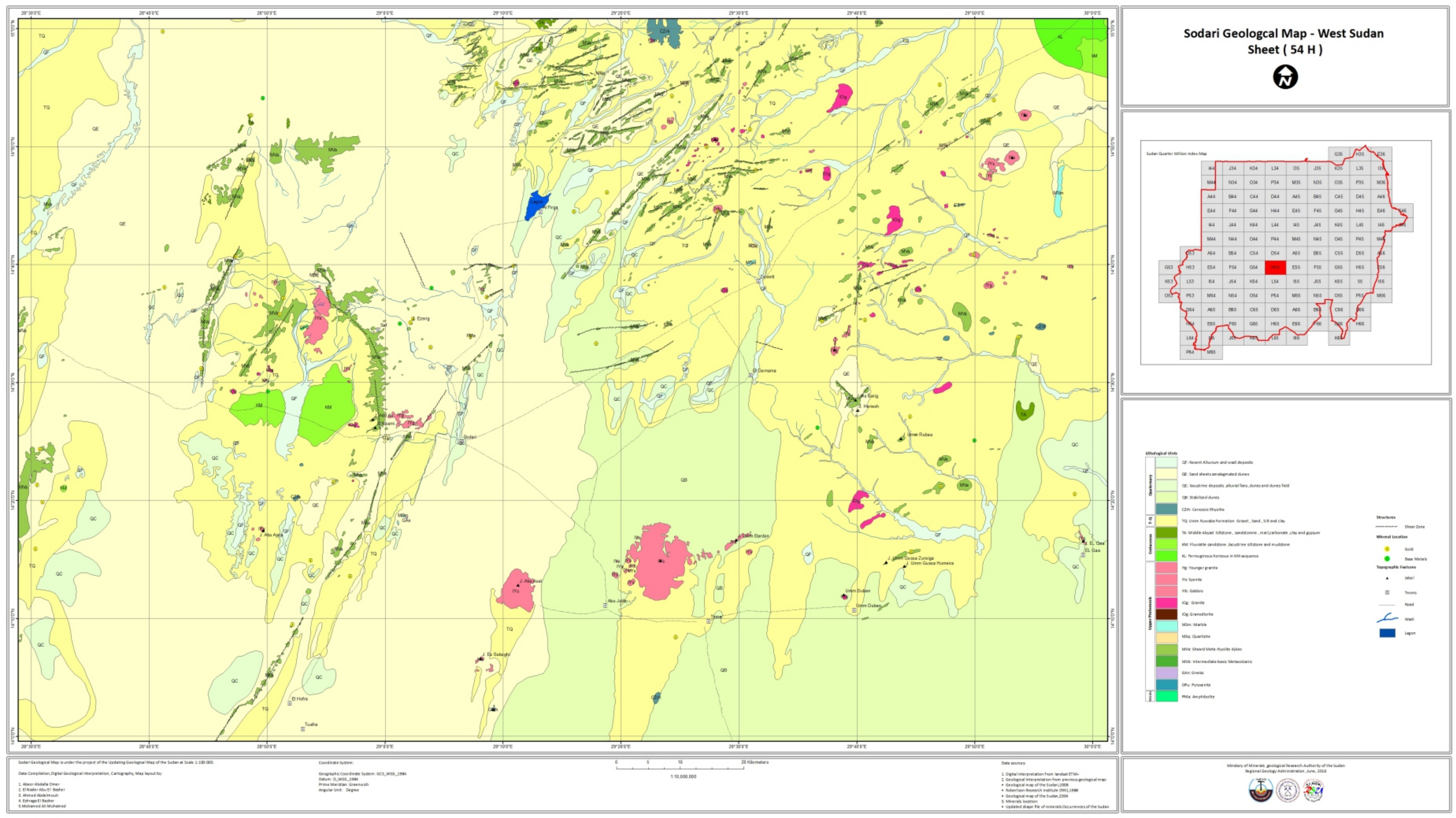
Geological Environments of Sodari sheet:

*** Lithology:** sedimentary rocks (Quaternary -Quaternary Tertiary- Cretaceous), Granite, Syenite, Gabbro, Granodiorite, Marble, Quartzite, Sheard Meta Rhyolite Dykes, Intermediate Meta- Volcanic,Gneiss, Pytoxenite,(upper Proterozoic) - Amphibolite (Middle Proterozoic)

*** Geological Structures:** main trend NE-SW, SE - NS

*** Mineralization:** Gold, Base Metals

*** Industrial Rocks:** Marble, Granite



6 Umm Bader sheet - Kurdofan State -SW part of project

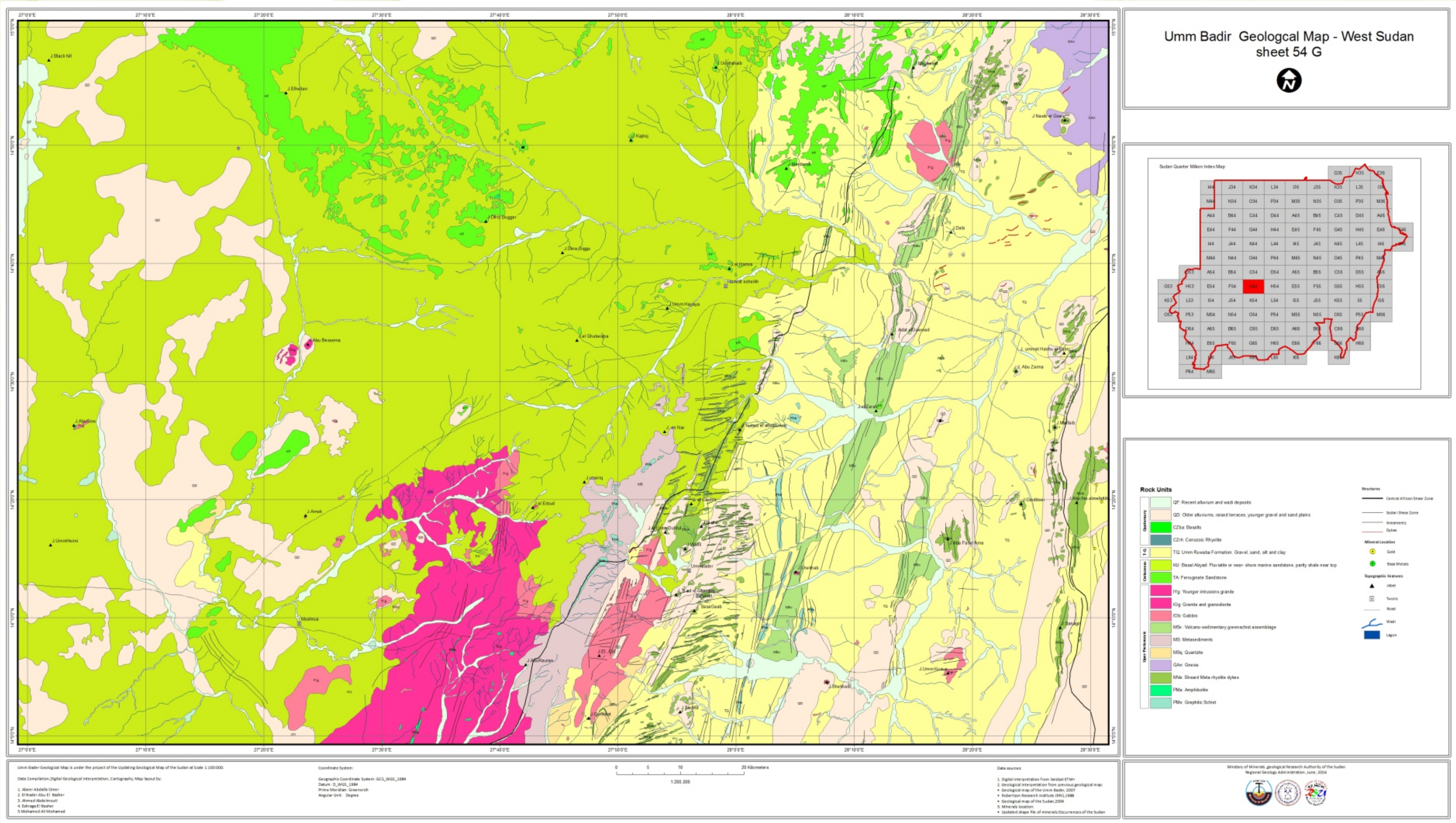
Geological Environments of Umm Bader sheet:

*** Lithology:** sedimentary rocks (Quaternary -Quaternary Tertiary- Cretaceous), Granite, Granodiorite, Gabbro,volcano-sedimentary, Meta-sediments, Quartzite, ,Gneiss, Amphibolite, Graphite Schist,(upper Proterozoic)

*** Geological Structures:** main trend NE-SW, NS

*** Mineralization:** Gold, Base Metals

*** Industrial Rocks:** Granite



7 Shendi sheet - River Nile State -NE part of the project

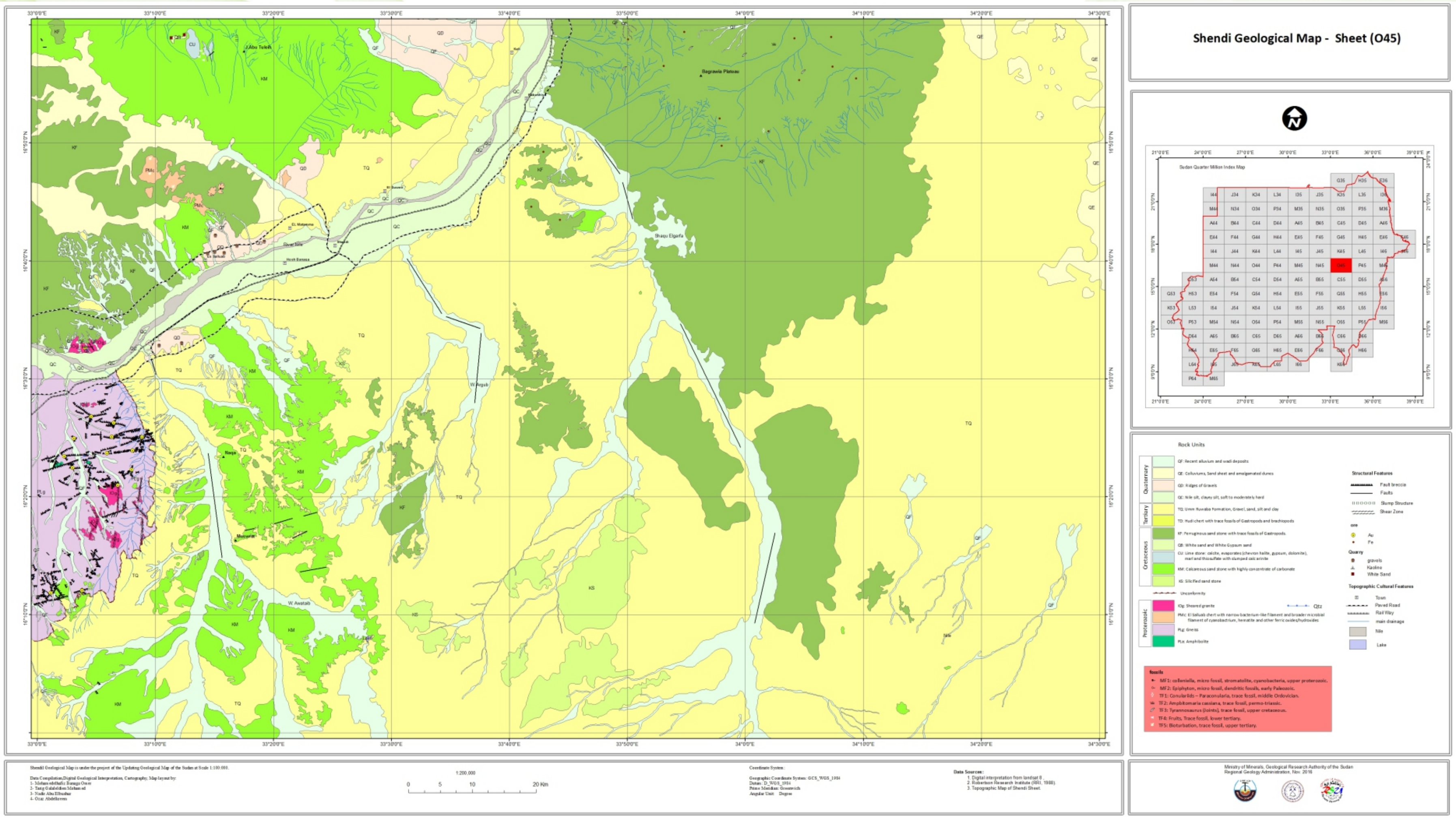
Geological Environments of Shendi sheet:

Lithology: sedimentary rocks (Quaternary to Cretaceous) Sheared Granite, EL Sallub Chert, Gneiss, Amphibolite (upper Proterozoic)

Geological Structures: main trend EW- (NW-SE)

Mineralization: Gold, Iron

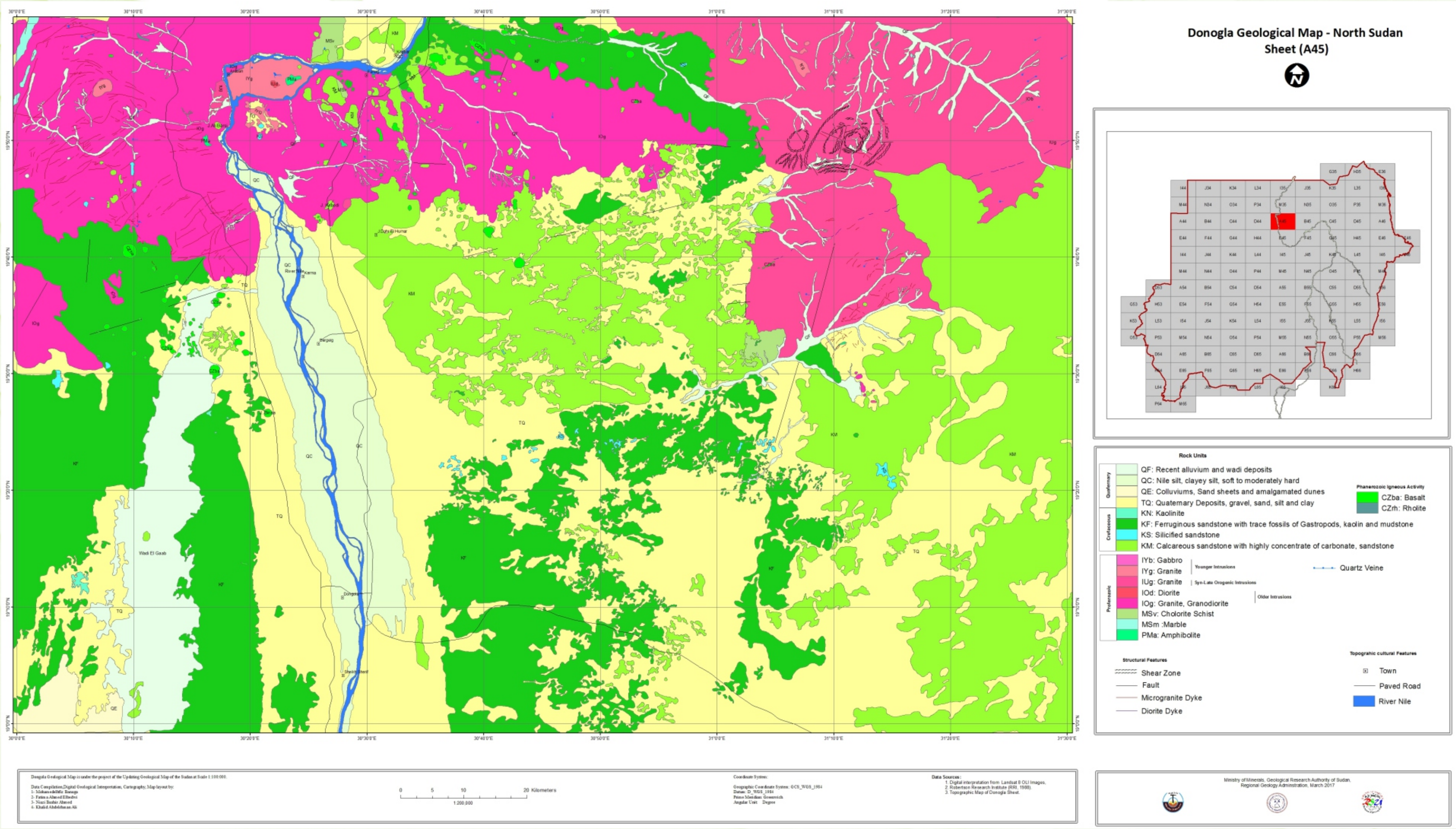
Industrial Rocks: Quartz Gravels, Sand stone, Granite, White Sand, Sand dunes

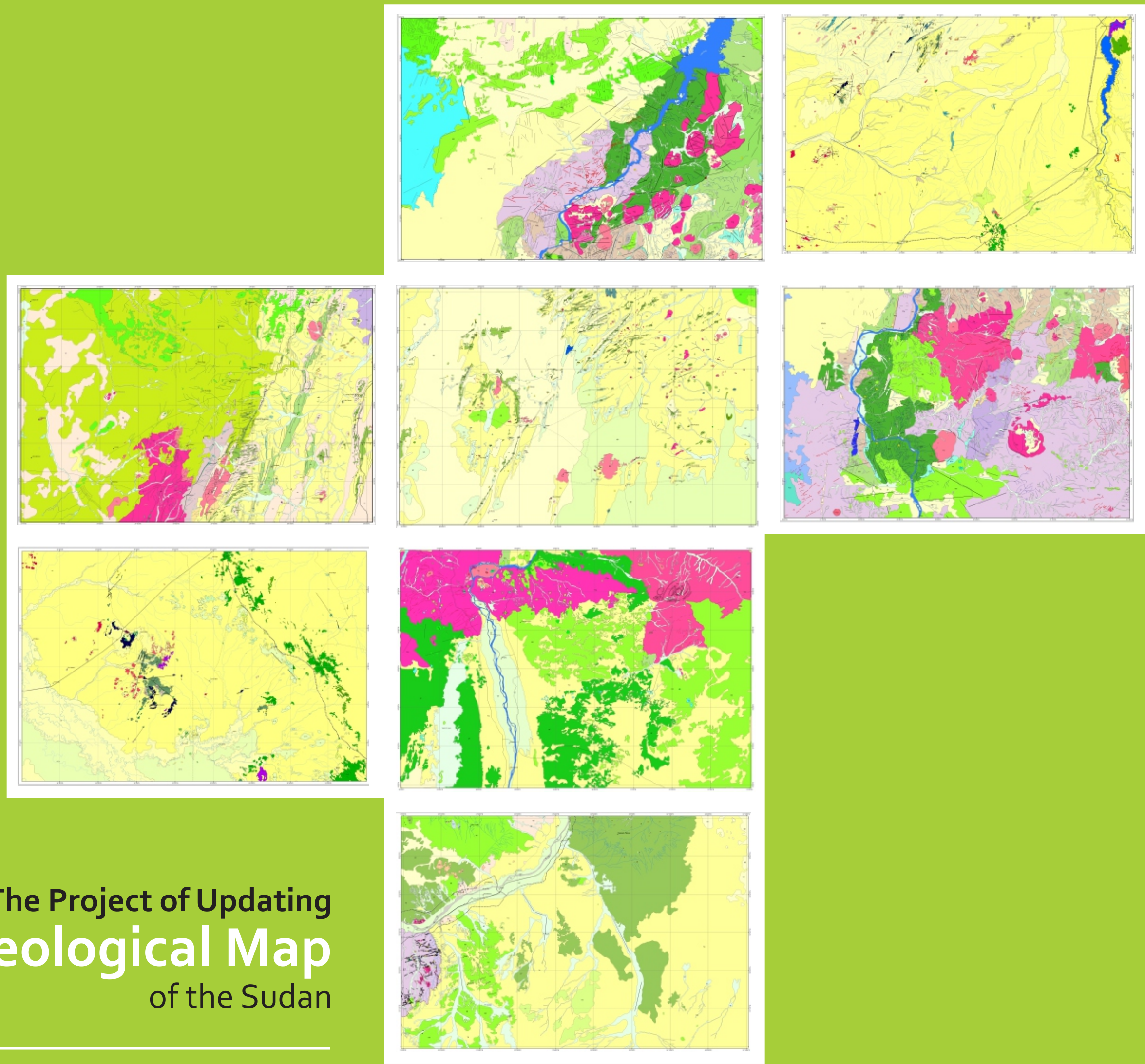


8 Dongla sheet -Northern State-NE part of the project

Geological Environments of Dongla sheet:

* **Lithology:** sedimentary rocks (Quaternary to Cretaceous) -Basalt, Rhyolite (Phanerozoic) Granite, Gabbro, Diorite, Granodiorite, cholorite schist, Marble, Amphibolite(upper Proterozoic)
* **Geological Structures:** main trend NS-EW-NNE
* **Mineralization:** Gold, Iron, Kaolin
* **Industrial Rocks:** Basalt, Quartz Gravels, Granite, Marble





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