

Geological Research Authority of the Sudan

GRAS



Republic Of The Sudan
Ministry of Minerals



Geological Research
Authority of the Sudan
(GRAS)

Introduction

The Geological Research Authority of the Sudan (GRAS) represents the State Geological Survey and is considered the guardian of all metals and minerals within the lands, rivers and the continental shelf of the Sudan. It comes under the umbrella of the Ministry of Minerals. It is financially and administratively independent and has its own Board of Directors and its Director General is directly responsible to the Minister.

The over-riding function of GRAS is to promote development of the mineral resources of the Sudan. This is generally achieved through the identification and systematic inventory of the available resources as a result of geological mapping, geophysical and geochemical exploration programmes, GRAS also engages in co-operation with investors to assist in and enhance the development of identified mineral prospects. In this latter



respect, GRAS undertakes exploration work in co-operation with international agencies. GRAS was until 1986 known as "The Geological and Mineral Resources Department (GMRD)" with other previously names such as: "The Government Geologist Office" till 1953, "The Geological Survey Department" until 1978. GRAS is the principal point of contact for investors in the mining sector along with the Ministry of Minerals.

2-Organization

GRAS organizes and administrates its different activities through the Board of Directors and a Director General under who are the following main and subsidiary specialized Administrations:

i. Integrated Geological Surveys

G. Admin.:

- * Regional Geological Admin.
- * Geophysics Admin.
- * Engineering Geology Admin.

ii. Projects Planning, Research and Documentation General

Administration:

- * Project Planning Admin.
- * Research Admin.
- * Library & Documentation Admin.

iii. Mineral Resources Gen.

Admin.:

- * Mineral Exploration Admin.
- * Mineral Statistics Admin.
- * Mines Design & Min. Processing Admin:
 - REE metals Admin
 - Agro-minerals Admin

iv. Labs, Warehouses, Surveying & Drawing Gen. Admin.:

- * Laboratories Admin.
- * Warehouses Admin.
- * Surveying and Drawing Admin.

v. Human and Financial Resources Gen. Admin.:

- * Human Resources Admin.
- * Services Admin.
- * Financial Resources Admin.

There are other smaller units that are affiliated directly to the Director General namely; the Secretariat for Mining Committee; Executive Office, Internal Auditor, .

A part from the headquarters of **GRAS** in Khartoum, there is also functioning regional

offices located in: Port Sudan, Atbara, EdDamazin, El Obeid, Nyala, El Fashir, Gedaref, Medani and Dongala, which individually submit their reports through their administration, to the Director General.

3- Objectives

It is the remit of **GRAS** to:

- Promote interest in mining and mineral exploration; and development of mineral potential of the Sudan through carrying out regional & detailed geological, geophysical and geochemical mapping of the country.
- Participate in & advise on the commercial exploitation, beneficiation, utilization and marketing of mineral resources of the country.
- Undertake research on all natural phenomena of geological nature.
- Carry out all activities advantageous or convenient for, or in connection with, the exercise of its functions.
- Disseminate information of the countries' mineral resources.
- Set out policies enforces the mining law and its regulations.
- Cooperate with similar institutions, local and foreign in the field of geological research and training.
- Assess and advises on mitigate measures in relation to geological hazards e.g. earthquakes.
- Collect and recover rents, fees, levies, tolls and charges payable under the mining legislation and any other revenues accruing to the organization.
- Provide advice and technical information to public bodies and the private sector.

4- Facilities:

GRAS can provide the following services through its own facilities.

a) The drilling unit has different types of rigs including:

Auger, Percussion, Rotary and Diamond coredrilling RC drilling. Drilling can be performed both on land and under shallow water depths.

The available machines can drill up to 200 m with diameters ranging from AQ to HQ and more for shallower depths; these facilities now directed by Sudamin Company.



b) The Geo-assessments necessary to undertake most aspects of ground geophysical investigations.

The administration owns: Proton Magnetometer (Geometrics and Scintrex), Lacoste & Romberg and CG5 Gravimeters,

Resistivity meters (Imaging and Sounding), EM, IP, VLF, and Seismic refraction Seismographs. The geophysics administration owns sophisticated computer software for field data processing.

c) The seismological network comprising of central and 10 peripheral stations

The network is aimed at mapping and monitoring active seismic zones in Sudan and the neighborhood and the exchange of such information with similar regional centers.

d) Surveying facilities include satellite navigators beside altimeters and other conventional survey equipments.

e) The specialized laboratories can carry out the following jobs:

- Thin sections and polished surfaces at the rate of 25 samples per shift.
- Crushing, sieving and pulverizing samples of different types and sizes.
- An ore dressing and mineral processing laboratory underway.

- Mineralogical, sedimentological, & petrographic, separation tests & studies are also performed.

" The Chemical Laboratory provides routine inorganic geochemical analysis.

" The laboratory has the following major items of equipments:

- Atomic Absorption spectrophotometer (Perkins & Elmer 3110, two GBC.AAS as well as Varian 220 fitted with a graphite furnace).

- XRF, Venus 200+ XRF, Axios- CS determinator- Spectrometers. The geotechnical laboratory test of uniaxial compressive strength, point load, tensile strength, tri-axial density, specific gravity, water absorption tests. Impact crushing, abrasion and soundness properties of aggregate is also determined beside any consultancy related to the geotechnical activities.

5- Activities

In spite of the fact that the first geological map of the Sudan (1:4,000,000) scale was published in 1947, systematic geological mapping of scale 1:250,000 started in 1955. Nearly 90% of the country is mapped at 1:250,000 while few areas are covered at scale of 1:100,000.

The mapping programmes were undertaken integrated with photo geological interpretation culminated in 1975, a revised version of the geological map of the Sudan (1:2,000,000 scale). The incorporation of the results and findings of joint projects with GRAS resulted in an updated version of the map in 1988 (1:1,000,000 scale).

* Major efforts in mineral exploration are directed towards precious, base and ferrous metals and industrial minerals, rare earths metals, together with Agro-minerals (Potassium & Phosphorus). **GRAS** was closely involved in the geotechnical studies for bridges, dams and reservoirs as well as researches in building materials for various end users. GRAS has a dedicated computer Center, equipped with a network of windows server 2012 license with two Compaq primary & backup servers. Seven graphic professional workstations, plotters, digitizers, scanners, printers and other different up to date technology. The software includes Arc/GIS 9.3, with other geophysical, geochemical and

some specialized in house developed programmes.

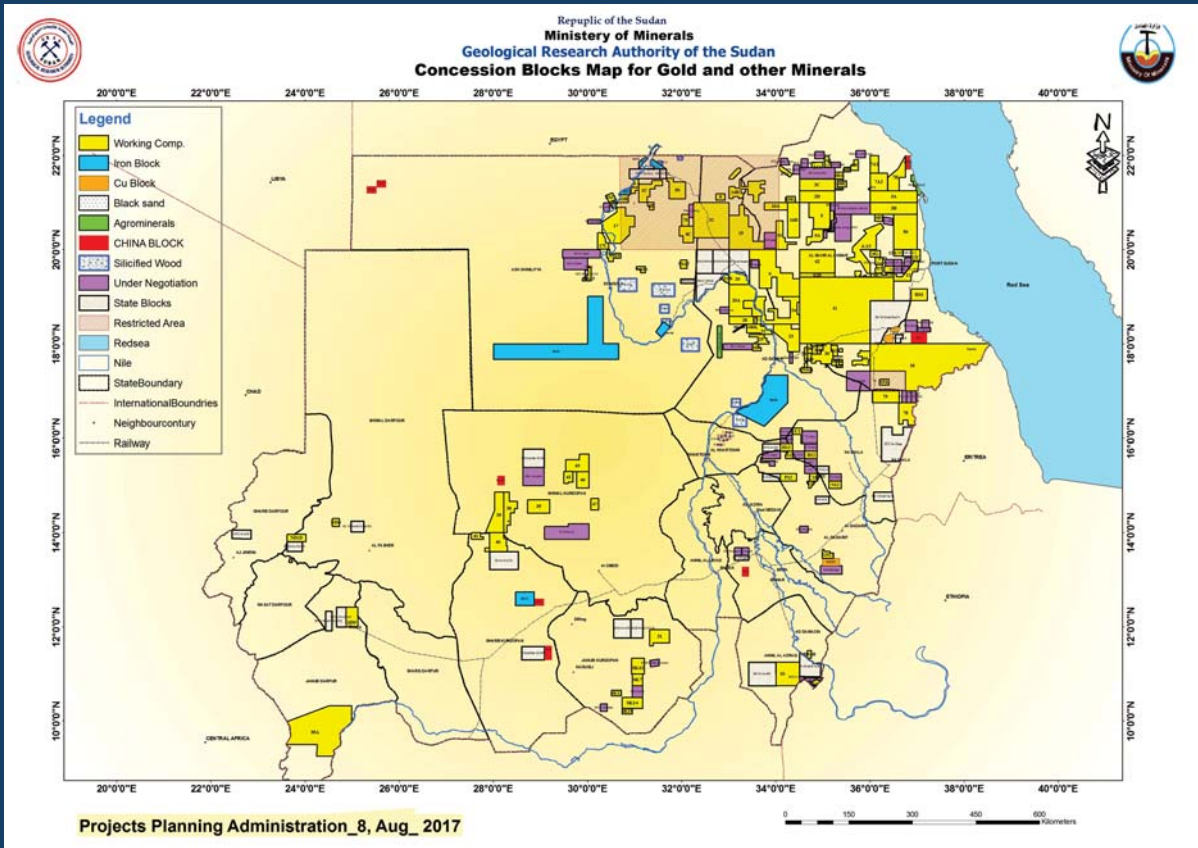
* New Remote sensing unit equipped with hardware and software for digital image processing and interpretation for different satellite images The center also caters for on job specialized training.

* **GRAS** Library retains reference books and a wide range of magazines and scientific journals. There are as well many original copies of academic theses on the geology and mineral resources of the Sudan. The library stores copies of GRAS publications (Bulletins, Memoirs and Maps) which are available for sale. Most publications are available for loan

to individuals and departments of GRAS through a card system and are subject and country indexed with over 10.000 titles being held. A computer database for recall and reference to title and retrieval system is available.

* **GRAS** started the establishment of a geological Museum with the intention of housing representative samples of minerals, rocks, fossils, meteorites... etc of special bearing to the geological history and mineral resources of the Sudan. The Museum also owns some interesting samples acquired from other parts of the world. It's intended to exchange samples with interested geological





P.O Box: 410 Khartoum
Tel: +249 (1) 83 777 939, +249 155 665 144
Fax: +249 (1) 83 775 205
www.minerals.gov.sd
info@minerals.gov.sd