

Republic of Iraq
Federal Board of Supreme Audit
Office of Technical Affairs and Studies
Specialized Performance Evaluation Department

Subject: Results of Specialized Audit and Control Works on State Policy in Natural Resources Utilization and Investment to Sustain National Economy

1- Overview of Evaluation Subject:

a- Scope of Evaluation Process

According to the aforementioned administrative order, Environmental Audit Team Specialized in Industrial Activities (EATSIA) has conducted specialized audit and control works on State's policy in natural resources utilization and investment to sustain national economy.

b- Problem of Evaluation Subject and its Impact on Community

The Preliminary study and field survey conducted by EATSIA's team during strategic planning phase showed that there is a weakness in policy of exploiting and investing natural mineral resources available within Iraqi lands and territorial waters (other than oil) to sustain national economy

- c- The Policy adopted by State in managing investment of Mineral Resources available within Iraqi territorial lands and waters represented in procedures adopted by Ministry of Industry and Minerals / Iraqi Geological Survey Commission in processes of investigation, surveying, mineral exploration and scientific research to develop Iraqi mineral ores and industrial rocks, improve their specifications to suit Iraqi industry requirements as well as activating industries based on Iraqi available minerals as a raw material in production to trigger industrial sector and optimally invest these minerals, beside facilitating investment procedures for these minerals by National Investment Commission and relevant administrative units in provinces.

2- Evaluation Methodology:

In order to identify the main causes of problem, the Audit team conducted during detailed audit phase the following evaluation:

a- Relevant Phenomena and Risk Analysis:

Affecting risks and negative phenomena were analyzed according to their significance in relation to main problem as described in Annex (1) in light of risk matrix and identification of sub-problems related thereto as shown below according to their priorities in evaluation.

- (1) Weak capabilities of Iraqi Geological Survey Commission to perform investigations and detections .
- (2) Inadequate legislations and laws to promote mineral investment reality in Iraq.
- (3) Multiple violations concerning mineral resources and stakeholders procedural weakness to reduce them.
- (4) Cessation of most national industries that depend on minerals available within Iraqi territorial lands and waters as raw material for production.

b- Evaluation Objective:

Evaluation sought mainly to assess performance of State policy in natural resources utilization and investment to sustain national economy through reviewing measures adopted by stakeholders in utilizing, investing, protecting and developing mineral resources available within Iraqi territorial lands and waters to sustain national economy.

C- Audit Questions:

- Q₁: What are the problems and obstacles facing Iraqi Geological Survey Commission to perform investigation and detection?
- Q₂: To what extent the legislation, laws and instructions related to mineral investment are appropriate to serve optimal exploitation of these minerals?
- Q₃: What are the procedures followed by stakeholders to reduce violations concerning mineral resources?
- Q₄: To what extent the national industries based on local minerals as raw material in production are available?

d- Audit Standards:

I- Iraqi constitution.

- II- Ministry of Industry and Minerals law No. (38) of 2011.
- III- Mineral investment regulation law No. (91) of 1988 (amended) and instructions promulgated thereof.
- IV- National Investment Commission law No. (13) of 2006, as amended by law No. (2) of 2010.
- V- Iraqi Geological Survey commission bylaw No. (2) of 2016.

3- Historical Background of Iraqi Geological Survey commission :

The Department of Geology was established within Ministry of Transportation and Economy hierarchy as the first geological configuration in Iraqi State in 1933. It was subsequently linked to Ministry of Construction in 1955 as Department of Minerals and Metal Industries which was therefore linked to Ministry of Industry and Minerals as Department of Geology and Mineral Survey.

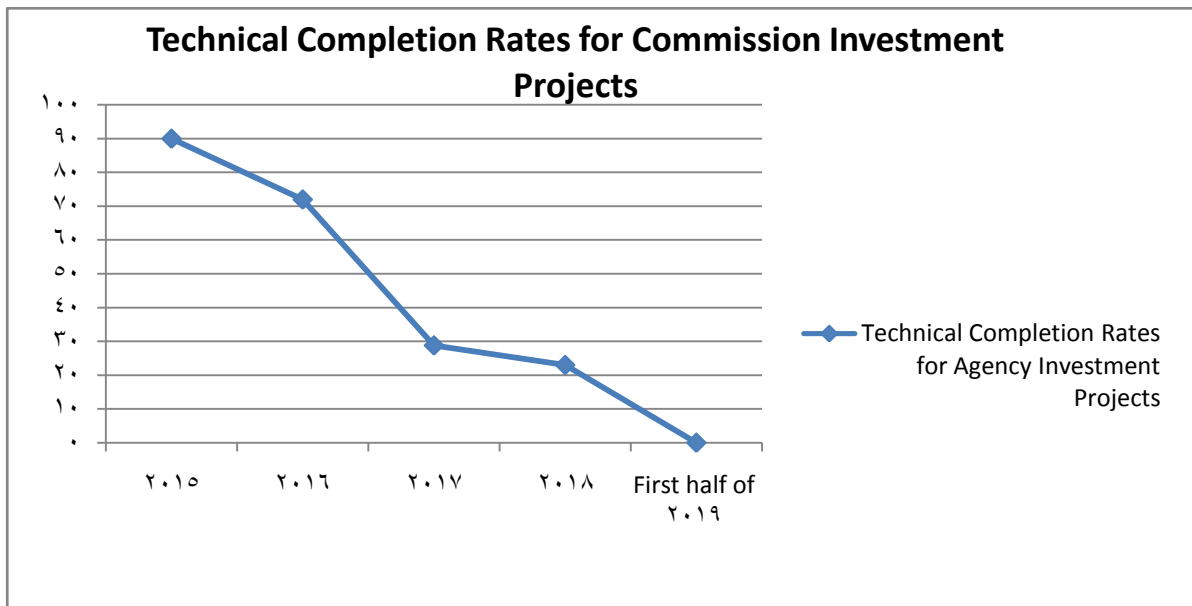
In 1966, the Directorate of Geological Survey and Mineral Department was established and linked to Ministry of Oil and Minerals. In 1974, General Directorate of Geological Survey and Mineral Investigation was established within the Ministry of Industry and Minerals hierarchy. It became, in 1987, General Establishment of Geological Survey and Mineral Investigation.

In 1998, it was transformed to State Company for Geological Survey and Mining, according to State companies law. In consequence, it operates as Iraqi Geological Survey in 2011 within Ministry of Industry and Minerals hierarchy.

4- Results:

The team conducted personal interviews and requested information from auditees. The following findings were recorded:

- a- Incompletion and cessation of most investment projects incorporated in plans of technical departments subordinated to Iraqi Geological Survey commission for years (2015, 2016, 2017, 2018, and the first quarter of 2019) despite those projects importance in mineral investigation, exploring and extracting as well as researches for mineral ores development appropriate to industries in Iraq to sustain national economy because unavailability of financial specialties sufficient for these projects, as indicated in the following diagram which shows linear regression of technical achievement of these projects since 2015 and till now:-



The table below shows projects that have not been implemented due to lack of funding for those projects, despite being included in the investment plans for 2016, 2017 and 2018.

S	Project Name	Implementation Planned Date
1	Project to investigate sand in Basra / west of Alzubair	Within 2016 plan
2	Project to investigate calcareous sediment in Zerbata	Within 2017 plan
3	Project to investigate muds in Zerbata	Within 2017 plan
4	Project to investigate sand & Gravel in Safwan, Basrah	Within 2018 plan
5	Project to investigate clays in old formations in Muthanna, north of Busia district.	Within 2018 plan

The table below shows ratio of decrease in financial allocations availability compared to actual requirements estimated within those projects planning phase.

Year	Actual Requirement of Projects Financial Allocations (Planned) Million Dinars	Actual Allocation within Investment Budget Million Dinars	Percentage of Decrease in Financial Allocations Availability Compared to Actual Requirements %
2015	2000	1257	37
2016	2000	812	59
2017	8000	100	99
2018	4000	524	89
First half of 2019	2100	0	100

b- Ministry of Industry and Minerals and stakeholders have not yet made necessary amendment to mineral investment regulation law No. (91) of 1988, in compliance with legal restrictions stipulated in Iraqi Constitution in force, as the Federal Court indicated in its resolution No. (10/2013) that paragraphs (13, 15, 16) of the above-mentioned law with regard to restricting and fixing violations and imposing legal procedures against violators are contrary to Iraqi Constitution because the current constitution granted powers to conduct investigations and the courts to the judges exclusively unlike before 2005 where the laws may grant penal powers to the administrative employees as in the mineral investment regulation law referred above.

Such position resulted in many problems and obstacles to Iraqi Geological Survey Commission work in monitoring the violators and taking legal action. The answer of audit team shows in their letter no.(1644) on 12, April, 2019 on the original copy of information request no.(2/4/19/2) submitted on 15, April, 2019, that the suspension of these provisions by the Federal Court and the failure of the Ministry to take the necessary actions to amendment of the mineral investment law led to an increase in mineral resources abuses, which is contrary to the compelling reasons that obligated enacting mineral investment regulation law, which included emphasizing application of scientific methods and rational control by ensuring the best mineral investment processes through natural resources optimal exploitation and preservation, environmental protection, ensuring quality and securing State's rights to natural mineral resources against them.

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Significant problems and constraints are explained as follows:

1- There were many violations concerning quarries and mines, which lead to loss of financial revenues to support national economy, unfair use of these resources, failure to apply sustainable development requirements to ensure mineral resources sustainability for future generations, in addition to weak procedures taken by stakeholders to reduce these violations in order to preserve mineral resources as Iraqi Geological Survey identified

(383) violations. This figure does not represent true number of violations as there were many violations not notified to Audit team by administrative units in provinces, including violations since more than five years. The table below shows locations, numbers and types of those violations for 2015, 2016, 2017 and 2018:

Year	Province	Violations Numbers	Violations Types
2015	Baghdad	1	Brick Clays
	Holy Karbala	35	Sand-Gravel
	Diyala	16	Gravel (building & filling) & clays
	Muthanna	1	Brick Clays
	Maysan	88	Building gravel, dust, clays
	Honorable Najaf	1	Limestone
	Kirkuk	10	Sand-Gravel
	Dhi Qar	4	Clay, filling dust
	Basra	6	Dust
	Wasit	8	Gravel and clays
2016	Baghdad	2	Brick Clays
	Holy Karbala	1	Sand-Gravel
	Diyala	4	Brick Clays
	Maysan	23	Brick Clays, filling dust
	Kirkuk	1	Sand-Gravel
	Basra	1	Dust
	Wasit	5	gravel, clays
2017	Diyala	3	Brick Clays
	Maysan	16	Brick Clays, filling dust, building gravel
	Kirkuk	3	Sand-Gravel
	Wasit	37	gravel, clays, dust
	Basra	2	Dust
	Diwaniya	2	Brick Clays
2018	Diyala	6	Building gravel and clays
	Maysan	6	Brick Clays, filling dust, building gravel
	Kirkuk	1	Sand-Gravel
	Basra	6	Filling dust

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- (2) Investors who violate instructions stipulated by the above-mentioned mineral investment regulation law refrained from paying fines imposed upon them. This leads to waste of public funds, in addition to lack of deterrent to reduce violations concerning those resources.
- (3) Complexity of procedures for collecting amounts owed by transgressors for violations approved by stakeholders, since it takes a long time during which transgressor has exhausted the material extracted from quarry and concealed evidence proving violation before the court. Consequently, punishments lose

their significance in forming a deterrent for transgressors to reduce waste of mineral resources.

c- Combustion of very large quantities of sulfur metal at Mishraq Sulphur State Company site as a result of a fire which broke out at the company's site on 26 June 2019 due to failure of stakeholders to comply with recommendations and warnings of teams subordinated to Directorate of Civil Defense / Ministry of Interior and contained in directorate periodic statements of the company's site on (15/3/2017,17/10/2018,10/1/2019,7/5/2019) to avoid fire breaking out at company site, Directorate of Civil Defense reports indicated the following:

- (1) Presence of apparent storage of very hazardous sulfur foam in large quantities estimated at approximately 2 million tons, residues of that material and pure sulfur covering a large area of company site due to absence of regular stores.
- (2) Presence of dense weeds and grasses covering most areas of site.
- (3) Failure to make safety and security measures available by company represented in furnishing vehicles and fire extinguishers suitable for work and assigning employees to follow-up civil defense affairs in company.

This resulted in significant material losses that damage national economy, in addition to significant environmental pollution resulting from fire and human losses among Directorate of Civil Defense teams.

d- Non-commitment of the majority of quarry investors in most provinces, particularly Baghdad and Holy Karbala to provide employees with geological technical specialties (science of geology & mines engineering) in the quarry to monitor work progress within quarry according to stipulations of mineral investment law, so as to ensure quarry good investment and production of materials conforming to specifications approved by the commission. They did not send quarterly technical reports, which include information about quarry, e.g., quantities extracted monthly, geological and productive changes that occurred in quarry contrary to paragraph (2, 6), article nine of mineral investment regulation law No. (91) of 1988 as amended, in spite of agency circulars addressed to provinces in this regard, which leads to failure to apply scientific and regulatory procedures in

mineral resources optimal utilization, natural resources preservation, environmental protection and quality assurance.

E- Failure of most provinces, particularly Holy Karbala and Basra, to adhere to deadline specified within mineral investment regulation law to complete contracting procedures between province and investors despite confirmation of Iraqi Geological Survey commission to provinces therein with letters no.(1722,4002) in 6/4/2017 and 14/10/2018)respectively , as the commission indicated delay in completion of investment contracts by province after investor access to commission approval, as well as delay of Province Property in completing investors transactions, which leads to investors reluctance to properly invest in mineral resources in those provinces properly.

F- In some provinces such as (Diyala, Salahuldeen, Ninaw and Alanbar), security situation instability leads to investors reluctance to invest in mineral resources available within their territories, as well as inability of teams subordinated to Iraqi Geological Survey Commission to play their supervisory role in maintaining mineral resources in some provinces for lack of appropriate roads leading to quarries in security terms, causing increased violations concerning mineral resources within these areas.

g- Lack of investing many mineral resources although some of them were discovered more than (60) years ago, as those minerals enter into many industries and therefore would develop Iraqi industrial sector, sustain national economy and reduce unemployment by creating job opportunities within those factories. The following table shows locations and discovery date of these resources:

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S	Material Name	Site	Exploration Date	S	Material Name	Site	Exploration Date
1	Limestone	Honorable Najaf	1954	21	Limestone	Muthanna	1983
2	Limestone	Honorable Najaf	1955	22	Limestone	Anbar	1985
3	Limestone	Holy Karbala	1967	23	Silica sand/Stained glass	Honorable Najaf	1985
4	Limestone	Diwaniya	1970	24	Silica sand	Anbar	1986
5	Limestone	Ninewa	1970	25	Sodium sulfate	Saladin	1987
6	Sodium carbonate	Muthanna	1970	26	Magnesia refractory bricks	Anbar	1987
7	Limestone	Muthanna	1971	27	Phosphate	Anbar / Wadi Al-Heri	1988
8	Limestone	Ninewa	1972	28	Phosphate	Anbar / Wadi Swab	1988
9	Limestone	Anbar	1973	29	Magnesia refractory bricks	Muthanna	1988
10	Limestone	Anbar	1975	30	Free sulfur	Nineveh	1989
11	Limestone	Honorable Najaf	1976	31	Sodium carbonate	Anbar	1990
12	Gypsum rocks	Ninewa	1976	32	Free sulfur	Nineveh	1992
13	Limestone	Anbar	1977	33	Red Clays	Anbar	1992
14	Gypsum rocks	Wasit	1977	34	Kaolinitic red clays	Anbar	1992
15	Gypsum rocks	Ninewa	1979	35	Silica sand	Anbar	1993
16	Gypsum rocks	Saladin / Ain Al-Nakhila	1980	36	Silica sand	Anbar	1994
17	Gypsum rocks	Saladin / Suleiman Beck	1980	37	Kaolinitic red clays	Wasit	1995
18	Gypsum rocks	Anbar / Milan	1980	38	Silica sand/Feldspar	Honorable Najaf	2000
19	Gypsum rocks	Anbar / Haditha	1980	39	Free sulfur	Nineveh	2001
20	Calcium carbonate	Anbar	1982	40	Limestone	Holy Karbala	2010

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These minerals are inputs to many industries as shown in the following table:

S	Material Name	Beneficiary Industry
1	Phosphate	It is utilized in chemical industries particularly extraction of phosphorus element, production of phosphoric acid utilized in mining, military, medical and food industries Manufacture of fertilizers and detergents
2	Free sulfur	Preparation of sulfuric acid (H_2SO_4) which is important in most industries Fertilizer industry Dyes, paints and matches production Petroleum industry (oil refining operations) Pharmaceutical industry
3	Limestone	Basis material for cement manufacturing Raw material for lime production Optimizer for soil type
4	Silica sand (Stained glass/ Feldspar)	Basis material for glass industries (household, glass fiber, medical applications) Casting molds Manufacturing filters for water filtering systems Manufacture of rubber, plastic and paints
5	Red Clays	Ceramic manufacturing Construction of radioactive waste conservation locations Manufacture of paper, rubber and alum material
6	Sodium carbonate	Manufacturing glass, detergents and paper Wastewater treatment Medical Industries (manufacturing dental anesthesia solution)
7	Calcium carbonate	Cement preparation In pharmaceutical industry (manufacture of excipient, which is an additive to medicines to enhance their effectiveness) - manufacture of antacids, and body strengthening with calcium.
8	Sodium sulfate	Paper and detergent manufacturing water treatment
9	Magnesia refractory bricks	Lining cement kilns because of its resistance to very high temperatures
10	Gypsum rocks	Construction and decoration industry

h- Most of local industries discontinued production which depends mainly on minerals available in the Iraqi territorial lands and waters in its fabrication, e.g., State Phosphate Company, Mishraq Sulphur State Company and Glass Industries State Company, which will sustain national economy through investing unexploited minerals in those industries and maintaining foreign currency inside the State as Iraq is currently importing large quantities of products which can be produced inside Iraq for availability of specific factories, production lines and raw materials, such as glass industries, manufacture of fertilizers, paper, detergents, dyes and chemical acids that are inputs in most industries and other fields.

The above-mentioned discussion shows Ministry of Industry and Minerals inability to achieve the objective set out within paragraph (IV), article (3) stipulated in Ministry of Industry and Minerals law No. (38) of 2011 particular to increasing mineral (non-oil) resources extraction and manufacturing sector contribution to Iraqi gross national product (GNP).

i - Lack of support to Central Laboratories Department, Iraqi Geological Survey Commission, although this department is important in conducting various analyzes and examinations for rocks, soil and minerals for projects of both agency and other sectors, as well as developing and processing mineral ores to suit industries inside Iraq that needs many necessary requirements. Significant constraints facing department operation are as follows:

- (1) Lack of financial allocations that are necessary for conducting studies of research and development.
- (2) Absence of a sponsor to support market research and studies prepared by the department, as well as difficulty for the department to obtain global discreet scientific sources.
- (3) Failure to carry out a number of outstanding examinations due to malfunction or lack of equipment. The following table shows those examinations and date of their interruptions:

S	Examination Name	Cessation Date	Reason
1	Tri-axial	2016	Out of order
2	Uranium	2017	Unavailability of measurement solution
3	Soften & refine samples	2012	Disruption
4	Consolidation	2010	Disruption
5	Thermal differentiation	2013	Disruption
6	Measure degree of examination	2014	Lack of machine
7	Vacuum filtration	2016	Disruption
8	Model mill machine	2013	Lack of machine
9	Sensitive balance device	2018	Lack of machine
10	Electric heater device	2015	Disruption

In addition, the department needs many laboratory equipment for metallurgical examinations for their unavailability and obsolescence of devices which operate those tests and lack of spare items thereof.

j- Lack of adequate resources to optimally perform Information Department tasks at Iraqi Geological Survey Commission represented in information collection and digitization, maps prepared by the commission should be documented, processed and stored in accordance with global Geographic Information System (GIS) to allow their required utilization as well as management of Geology and Minerals National Information Network, which includes all information particular to minerals explored within Iraqi territory. Significant constraints facing department operation are as follows:

- (1) Lack of financial allocations necessary to complete department projects, despite their importance in building an electronic system for digital management, publication, marketing and storage of data prepared by commission and develop its operation as shown in the following table:

S	Project Name	Planned Implementation date
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1	Building a web system to manage, disseminate and market digital data / Phase II	2015
2	Implementing a central storage system (data center) for Iraqi Geological Survey commission	2018
3	Activating networking system of commission's headquarters with its offices	2018
4	Establishing internal communication network for Iraqi Geological Survey commission using optical port technology.	2019

(2) Failure to equip the department with computers, supplies and equipment for printing modern maps that keep pace with global development in geographic information system (GIS) which occurred since 2014. Moreover, computer software and applications for department operation have not been updated since 9 years, which negatively affected functions of department as it relies mainly on electronic software and information systems in managing and marketing information and geological maps particular to commission operation.

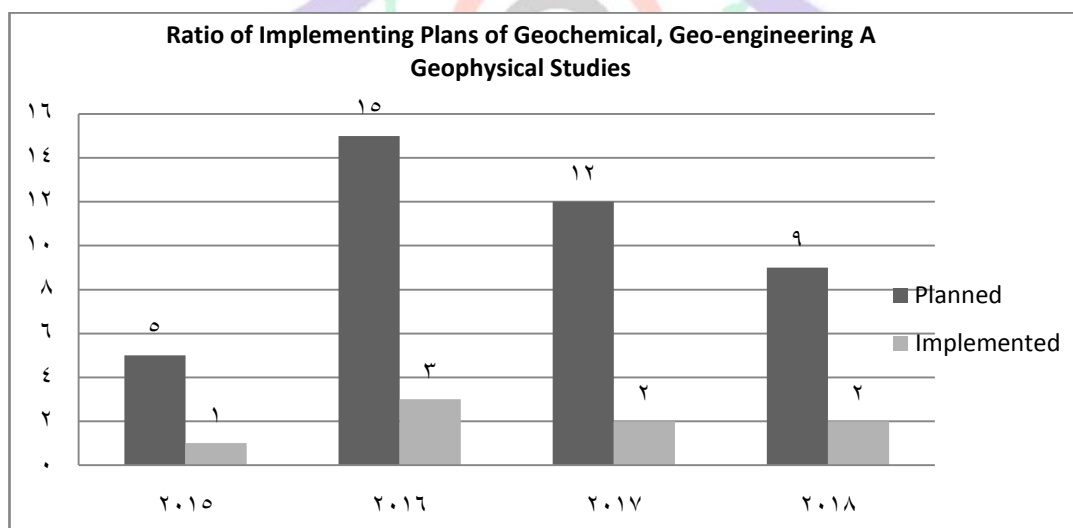
(3) Lack of sufficient awareness concerning e-governance importance and role in managing institutions among the majority of commission's officials.

k- Lack of a legal mechanism for selling and receiving price through modern electronic shopping for commission scientific and research products of maps, books and geological information at global level, although it is necessary to globally market those products because they are important to inform external entities with regard to Iraqi geological nature and mineral resources which are investable by those entities in addition to sustaining national economy through selling those information products.

l- Non-renewal of quality management certificate (ISO9001) particular to performance quality improvement since 2014 for Iraqi Geological Survey commission although the commission addressed Ministry of Industry and Minerals - Office of Industrial Development and Organization and Technical Office for the purpose of qualifying the agency to obtain quality management system (ISO9001-2015). But

neither the ministry has taken appropriate measures in this regard, nor the agency has renewed environmental quality management systems (ISO14001) since 2014 or health and safety management system 2007: ISO OHSAS (Occupational Health and Safety Assessment Series) 18001, since 2007.

- m- Failure to carry out most of the Agency's geochemical, geo-engineering and geophysical studies planned for 2015, 2016, 2017, 2018 and 2019, as completion rates for those years were 20%, 20%, 17% and 22%, respectively, despite those studies importance in identifying elements in rock deposits & mineral ores and estimating ions of elements in water to embark on mineral exploration stages through identification of mineral sensors and spotting estimated (geological) reserve of these minerals. Number of studies planned to be completed compared to actual accomplishment for 2015, 2016, 2017 and 2018 are shown in the following table:



- n- Failure of governmental stakeholders to benefit from researches, studies and experiments prepared by Iraqi Geological Survey Commission, scientific and research institutions subordinated to Ministry of Higher Education and Scientific Research, e.g., Department of Earth Science, Faculty of Science, Baghdad University, to name just a few, despite such research importance in developing mineral ores available in Iraqi territory and benefitting thereof in industrial fields such as crystal glass and aggregates (grinding gravel), paper manufacturing, producing silicon and nano-composites, medical compounds and other as well as research on the utilization of some

minerals in environmental fields such as filtering water sources from oil pollution and lead residues, using environmental friendly materials in construction. Researches and studies prepared by both the agency and University of Baghdad amounted to 66 and 14 researches, respectively. They can be utilized in establishing many industries which would sustain national economy and reduce unemployment by providing jobs within those factories.

o- Ministry of Planning neither prepared database concerning Iraqi mineral resources locations, quantities and rates of exploitation, nor collected statistics on percentage of financial returns from investment of minerals to Iraqi gross national income, despite those statistics and studies importance in preparing ministry plans which will drive developing Iraqi mineral investment sector to sustain national economy and provide job opportunities through investment projects in this sector and maintain for currency inside the country.

1. Conclusions

a- Incompletion and cessation of most investment projects incorporated in plans of technical departments subordinated to Iraqi Geological Survey Commission for years (2015, 2016, 2017, 2018, and the first quarter of 2019) despite those projects importance in mineral investigation, exploring and extracting as well as researches for mineral ores development appropriate to industries in Iraq to sustain national economy because unavailability of financial specialties sufficient for these projects.

b- Ministry of Industry and Minerals and stakeholders have not yet made necessary amendment to mineral investment regulation law No. (91) of 1988, in compliance with legal restrictions stipulated in Iraqi Constitution in force, as the Federal Court indicated in its resolution No. (10/2013) that paragraphs (13, 15, 16) of the above-mentioned law with regard to restricting and fixing violations and imposing legal procedures against violators are contrary to Iraqi Constitution. Such position resulted in many problems and obstacles to Iraqi Geological Survey Commission work in monitoring violators and taking

legal action. This is contrary to the compelling reasons that obligated enacting mineral investment regulation law, which included emphasizing application of scientific methods and rational control by ensuring the best mineral investment processes through natural resources optimal exploitation and preservation, environmental protection, ensuring quality and securing State's rights to natural mineral resources .

c- There were many violations concerning quarries and mines, which lead to loss of financial revenues to support national economy, unfair use of these resources, failure to apply sustainable development requirements to ensure mineral resources sustainability for future generations, in addition to weak procedures taken by stakeholders to reduce these violations in order to preserve mineral resources as Iraqi Geological Survey identified (383) violations. This figure does not represent true number of violations as there were many violations not notified to Audit team by administrative units in provinces.

d- Complexity of procedures for collecting amounts due in violator custody and documented in decisions of committees for restricting and fixing violations that received governors' approval by stakeholders, as they take a long time during which violator has exhausted material extracted from quarry and concealed evidence of violation before the court. Thus, penalties stipulated by mineral investment regulation law / part five lose their significance in forming a deterrent to violators to reduce waste of mineral resources, as well as reluctance of investors violating instructions stipulated by the above-mentioned mineral investment regulation law. to pay fines imposed on them, which leads to a waste of public finance in addition to lack of a deterrent to reduce violations concerning those resources.

- e- Combustion of very large quantities of sulfur metal at Mishraq Sulphur State Company site as a result of a fire which broke out at the company's site on 26 June 2019 due to failure of stakeholders to comply with recommendations and warnings of teams subordinated to Directorate of Civil Defense / Ministry of Interior and contained in directorate periodic examinations of the company's site, which led to significant material losses affecting national economy, in addition to significant environmental pollution resulting from that fire, and human losses within ranks of Directorate of Civil Defense teams.
- f - Failure of most provinces, particularly Holy Karbala and Basra, to adhere to deadline specified within mineral investment regulation law to complete contracting procedures between province and investors despite confirmation of Iraqi Geological Survey commission to provinces therein, as the commission indicated delay in completion of investment contracts by province after investor access to commission approval, as well as delay of Province Property in completing investors transactions, which leads to investors reluctance to properly invest in mineral resources in those provinces.
- g- In some provinces, security situation instability leads to investors reluctance to invest in mineral resources available within their territories, as well as inability of teams subordinated to Iraqi Geological Survey Commission to play their supervisory role in maintaining mineral resources in some provinces for lack of appropriate roads leading to quarries in security terms, causing increased violations concerning mineral resources within these areas.
- h- Lack of investing many mineral resources although some of them were discovered more than (60) years ago, as those minerals enter into many industries and therefore would develop Iraqi industrial sector, sustain national economy and reduce unemployment by creating job opportunities within those factories, beside cessation of most local industries from

production depending mainly on those minerals. The above-mentioned discussion shows Ministry of Industry and Minerals inability to achieve the objective set out in paragraph four of article (3) stipulated at Ministry of Industry and Minerals law No. (38) of 2011 particular to increasing mineral (non-oil) resources extraction and manufacturing sector contribution to Iraqi gross national product (GNP).

- i- Lack of support provided to central laboratories department at Iraqi Geological Survey commission despite department importance in conducting various analyses and tests of rocks, soils and minerals for project purposes of commission and other sectors, as well as mineral ores development and processing to suit industries within Iraq.
- j- Unavailability of sufficient resources to optimally perform the tasks of Information Department at Iraqi Geological Survey Commission represented in collecting and digitizing information and maps prepared by the commission, their documentation, processing and storing in accordance with global Geographic Information System (GIS) to allow them to be utilized as required, in addition to managing national geological and mineral information network, which includes all information particular to minerals explored within Iraqi territory, as well as non-renewal of quality management certificate (ISO9001) for performance quality improvement since 2014 for Iraqi Geological Survey commission.
- k- Failure of government stakeholders to benefit from research, studies and experiments prepared by Iraqi Geological Survey Commission as well as scientific and research institutions subordinated to Ministry of Higher Education & Scientific Research, e.g., Department of Earth Science at College of

Science, Baghdad University, to name just a few, despite these researches importance in developing mineral materials available in Iraqi territory and their utilization in industrial fields.

- 1- Ministry of Planning has not prepared database on Iraqi mineral resources locations, quantities and exploitation ratios, as well as lack of statistics on proportions of financial returns from minerals investment to gross national income in Iraq, despite importance of these statistics and studies in the Ministry's preparation of plans which drive to developing Iraqi mineral investment sector to sustain national economy and provide employment through investment projects in this sector and maintain foreign currency within the country.

2- Recommendations

- a- Providing Iraqi Geological Survey Commission with the necessary resources for the purpose of completing projects particular to mineral investigation, exploring and extracting, as well as research for mineral ores development as being significant in supporting Iraqi mineral investment sector.
- b- Amending mineral investment regulation law No. (91) of 1988 in accordance with Iraqi constitution in force, taking necessary measures to reduce violations concerning mineral resources and emphasizing that administrative units in provinces should monitor these violations, as well as obliging stakeholders in provinces to periods stipulated by law for completing contracting procedures between province and investors to achieve compelling reasons for which the above-mentioned law was enacted.
- c- Forming an investigative committee by Ministry of Industry to identify reasons why management of Mishraq Sulphur State Company did not comply with recommendations of Civil Defense Directorate - Ministry

of Interior, which obliged company management to provide safety, security and civil defense requirements at company's site, which led to breaking out a fire.

d. Forming a technical committee from Ministry of Industry, National Investment commission , Ministry of Planning and the stakeholders to prepare executable work plan to invest the minerals resources available in Iraqi territory and rework of plants and factories belonging to the Ministry of Industry that are largely dependent on these minerals.



Annex (1) Main Matrix

Main problem	Unwanted events and situation	probability	impact	estimated risk	response	Risk area	remaining risk	priority
State policy in Utilization and investment of the natural resources to sustain the national economy	Failure to exploit and invest mineral resources in an ideal way to support the national economy	9	9	81	30	operative	51	1
	Failure to exploit oil in petrochemical industries to support the national economy	8	8	64	30	operative	34	2
	Failure to exploit natural gas to support the national economy	8	8	64	50	operative	14	3
	Lack of use regional water in the production of clean energy	7	7	49	60	operative	11	4



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