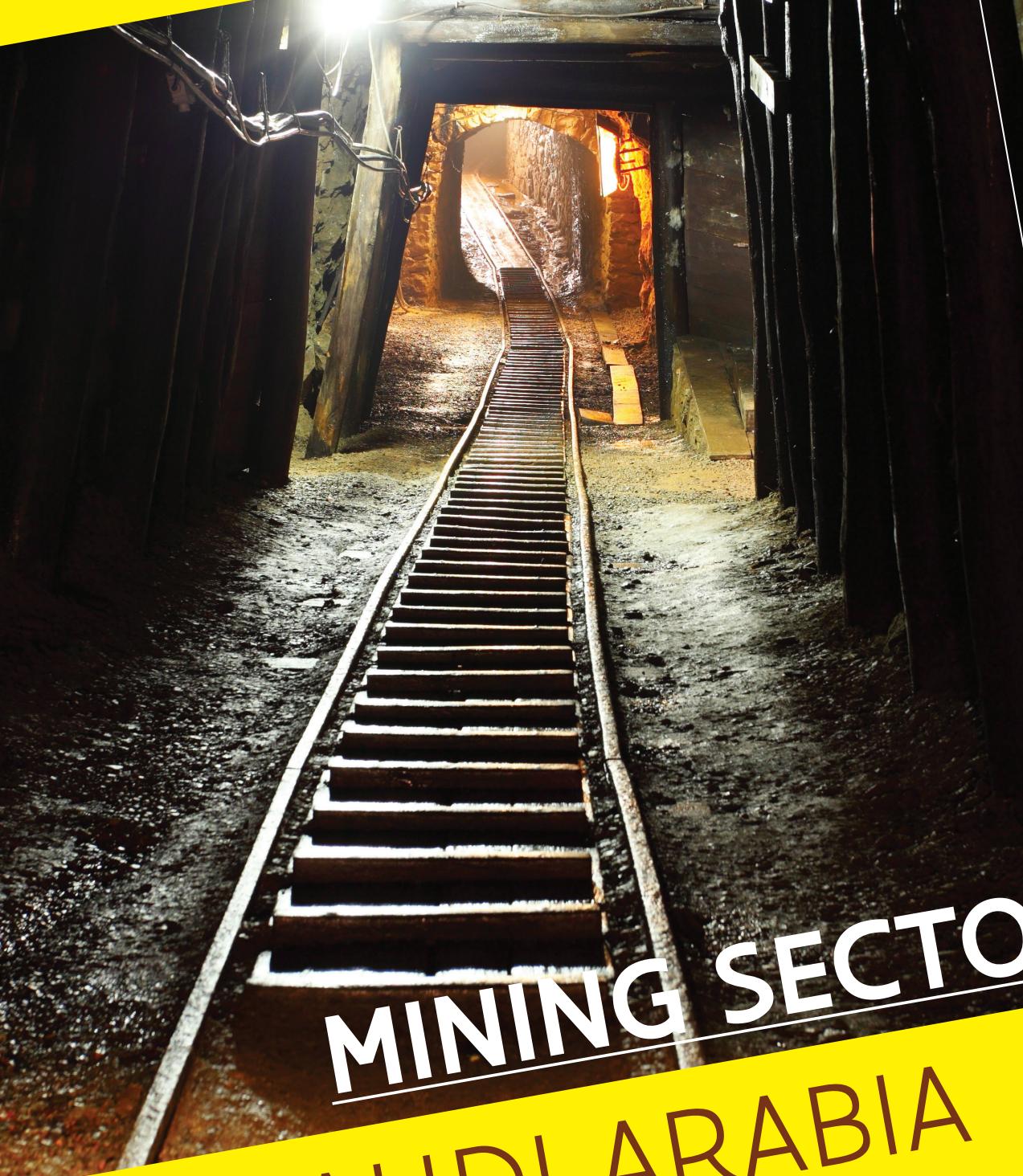




Flanders
State of the Art



MINING SECTOR
IN SAUDI ARABIA

FLANDERS INVESTMENT & TRADE MARKET SURVEY

Mining sector in Saudi Arabia

April 2017

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The Kingdom of Saudi Arabia, with a population of some 31 million, has an area of 2.1 million km², equivalent to about one-quarter of the land area of the USA. The government of the Kingdom has proclaimed the mining sector as a development priority and has set ambitious growth targets in their quest to actualize the 2030 Saudi Vision and 2020 National Transformation Program (NTP), that have been designed to reduce the dependency on hydrocarbons and accelerate economic growth through diversification and offset the impact of falling oil prices.

Saudi Arabia possesses more mineral resources than any other country in the Gulf region. The Kingdom has discovered more than 40 commercially important minerals across the country, including significant deposits of phosphate, bauxite, tantalum, gold, silver, zinc, copper, magnesite, and kaolin. With some of the world's largest reserves of phosphate and tantalum, and up to 20 Moz of gold in known deposits, Saudi Arabia is becoming a significant market for mineral extraction and processing. The central and northern parts of the country contain large amounts of bauxite, in addition to deposits of silver, zinc, copper, magnesite, and kaolin. The region's construction industry created a demand for Saudi iron ore, limestone, feldspar, silica, gypsum, marble, and dolomite. Over 40 types of mineral deposits have been identified so far in the Kingdom, with at least 15 industrial minerals with potential for extraction.

In fact, Saudi Arabia hopes to transform its nascent mining industry into the "third pillar" of the Saudi economy after oil and petrochemicals. To reach this goal, the Saudi government's strategy includes:

- establishing industries for extracting and processing the minerals
- developing the transportation infrastructure to make the minerals accessible for processing
- streamlining procedures for the export of minerals and mineral-derived products

1. INTRODUCTION

As a consequence of Saudi Vision 2030, structural reforms are planned in the mining sector, including private sector investments, building a database of the Kingdom's resources, reviewing licensing procedures, investing in infrastructure, developing funding methods and forming international partnerships to ensure that the sector's annual contribution to GDP reaches SAR97 billion (€ 23.7 billion) by 2020.

The 2020 plan also focuses on effective programs to reduce dependency on oil revenue, support future projects of the country, achieve maximum efficiency for ministries and departments and combat corruption. The plan aims at creating more jobs for Saudis, providing a positive urban atmosphere to realize the country's higher goals, and developing health and municipal sectors through privatization.

Saudi Arabia has discovered 2,400 sites with 48 commercially important minerals. The domestic availability of these minerals presents a huge opportunity for future growth.

The Kingdom has the following resource base:

- 2.2 billion tons of world-class phosphate resources
- Abundant resources of precious and base metals, this includes 15 million ounces of gold
- Ample resources of industrial minerals, such as high-quality silica, gypsum, limestone, kaolin, and magnetite

The industrial minerals create large upside for the industry, because of the following reasons:

- Rapid development of mines for large-scale deposits. In the last five years, the country has identified 21 new gold deposits and four other significant copper deposits
- The Kingdom has an opportunity to increase its resource extraction rate, by ramping up production (extraction rate 2–3 times of the current level) to meet the global benchmarks.
- Saudi Arabia benefits from high level of domestic demand, unlike many other mineral producers, where population growth is creating huge demand for real estate, which, in turn, is creating demand for mineral products. Steel and cement are the most coveted, because of this natural demand from the real-estate sector. Additionally, granite, stone, marble, and ceramic products are having high demand. Currently oil & gas and potential solar energy in the future act as a major competitive advantage, especially for aluminum and phosphate. Energy is also an important factor in mining value chains for copper, steel, and zinc.
- The mines and the downstream sectors serving the local market enhance the competitiveness in the resource market.

The current contribution of mining to the GDP is 2.5% (15bn SAR) and is expected to rise in case investments grow and opportunities are exploited. The domestic market is expected to witness a rising demand on local products of metal ores, which are forecast to grow up to 7.5% in upcoming years.

GEOGRAPHICAL DEVELOPMENT

While the Kingdom is pushing the development of the mining sector as a way to diversify revenue streams, it is also promoting mining as a means of increasing employment opportunities and developing regions of the country. Gold, phosphates and bauxite are found in Saudi Arabia's western and northern regions, which are far less developed than the east and coastal areas. The government has demonstrated a clear desire to diversify the industrial base of the country, while also committing to policies that ensure social harmony and economic equity within the Kingdom's provinces. The development of the mining sector also meets the dual role of fulfilling this commitment by extending financial resources, infrastructure and job creation initiatives to rural and less developed regions.



KEY METALS & MINERALS PRODUCTION VOLUME – 2013

Metal (Volume: Thousand Metric Tons)	
Copper	3,000
Gold	4,158
Silver	5,500
Zinc	18,000
Minerals (Volume: Thousand Metric Tons)	
Barytes	35,000
Feldspar	175,000
Gypsum	2,500,000

Source: Jeddah Chamber of Commerce

Within the new Economic Cities program, the € 7.5 billion Prince Abdulaziz bin Musaed Economic City at Ha'il in the northern region, is to be developed in order to exploit local mineral deposits and build new industries to add value to the extracted ores.

2. NEW MINING CODE

A new Mining Code has been enacted and a number of other legislative changes have been made during the past few years with the objective of increasing foreign investor interest in Saudi Arabia generally. The government has adopted the new mining code in 2004 that aimed to make private sector's investment in mining industry easier and more profitable.

2.1 LICENCE CATEGORIES: EXPLORATION AND EXPLOITATION

Currently, seven types of mining licences exist and allow licensees (who may hold multiple licences) to undertake, broadly speaking, activities related to non-exploitation/exploration and exploitation. Of importance to foreign participants, all non-Saudi applicants for licences under the Mining Code, except those applying for reconnaissance licences, must establish domicile in the KSA. The establishment of domicile is demonstrated by, among other things, a permanent address in the KSA and the presence of a licensee's delegate or agent within the KSA.

A natural or corporate person may obtain more than one license.

Non-Exploitation

The "non-exploitation" grouping includes licences for:

- a) Reconnaissance – to survey and investigate a licence area for a period of two years (renewal possible for a single additional two-year period subject to certain requirements) and granting a non-exclusive right to examine the licence area for minerals and samples collection.
- b) Exploration – to engage in detailed scientific and technical activities with the aim of discovering natural deposits of metallic or non-metallic ores in addition to the exclusive right to explore for all minerals specified in the licence in an area not exceeding 100 sq km for a period not exceeding five years (renewal possible for a period not exceeding five years subject to certain requirements).
- c) Material Collection – to collect materials (limited to specimens, decorative work or materials for similar purposes) specified in the licence, without the use of power tools and equipment, on a non-exclusive basis.

With respect to the "exploration licence" category specifically, it should be noted that if such a licence holder proves the presence of exploitable minerals, and assuming all other obligations under the Mining Code are met, an automatic right exists to obtain an "exploitation" licence within the effective period of the exploration licence and within the exploration licence area. Obligations of exploration licences include, among others, minimum exploration activity expenditure (varying between Saudi Riyals (SR) 750 and SR 7,500 per km² a year), notifying the Ministry of the location of field teams, submitting half-yearly reports on the progress of work and a comprehensive report on the expiry of the licence, and delivery to the Ministry of technical records, samples and any drill cores obtained from the licence area upon the termination or expiry of the licence.

Exploitation

The "exploitation" category of licences includes four kinds of licences that are differentiated by (i) type of mineral permitted to be extracted, (ii) duration of licence, and (iii) size of licence area:

- a) Exploitation Mining – specified class 3 minerals; initial duration of up to 30 years (renewal possible for up to 30 years subject to certain requirements); licence area not to exceed 50 km².
- b) Raw Materials Quarry – specified class 1 and 2 minerals; initial duration of up to 30 years (renewal possible for up to 30 years subject to certain requirements); licence area not to exceed 50 km².
- c) Small Mine – specified class 1 and 2 minerals; initial duration of up to 20 years (renewal possible for up to 30 years subject to certain requirements); licence area not to exceed one km².
- d) Building Materials Quarry – specified class 1 minerals; initial duration of up to five years; licence area not to exceed 0.25 km².

Critically, the various exploitation licences confer upon holders an exclusive right to extract minerals, as per the licence terms. If a licensee discovers any minerals not covered by the terms of a licence, the licensee may apply to the Ministry in writing within 90 days from the date of such discovery for an exploitation licence for these additional minerals.

An exploitation license, however, is not permitted to commence any development or mining activities in the licensed area unless a feasibility study has been submitted in acceptable form to the Ministry. Such study must include information regarding capital and operating costs of the project, expected rate of return on investment and proposed mining methods to be used. In addition to the feasibility study, an exploitation licence holder (with the exception of building materials quarry licences) must, during the term of the licence, furnish the Ministry with an environmental study prepared by a specialist. Such study must include a rehabilitation plan specifying how the licensee, at the end of the licence term and at the licensee's expense, will rehabilitate the exploited area.

Furthermore, the proverbial "use it or lose it" obligation applies, such that if an exploitation licence relates to more than one mineral, a licensee must exploit all minerals stipulated in the licence. Failure to do so may result in notification from the Ministry requiring exploitation thereof. If the circumstances relating to such notification are not cured within 90 days, the Ministry may then terminate the licence with respect to the subject mineral and grant an exploitation licence for that particular mineral to another applicant in a manner that will not substantially interfere with the operations of the original licensee.

Although the scope of the following provision and its application retroactively is as yet untested, the Mining Code does stipulate that the KSA shall have priority in purchasing from any licensee the quantity of mineral production it requires, on the conditions and at the prevailing prices for such minerals, unless a licensee has prior commitments to sell such production to a third party. Therefore, to mitigate potential risks associated with the application of this right, off-take arrangements should be considered by exploitation licensees well in advance. In addition, the Ministry has the ability, and has in practice exercised such prerogative in certain instances, to specifically mandate within the terms of an exploitation licence that the extracted minerals be

sold to specified domestic buyers applying set pricing formulas. A natural or corporate person may obtain more than one license.

Significant recent changes in Saudi Arabia's mining law have created the conditions to allow greater access for foreign companies looking to invest in the Kingdom's mining sector. Previously, some investors faced prolonged procedures that led them to change their mind. The new law also allows companies to work either with Ma'aden or through joint ventures with local companies.

It is important to consider that much of the foregoing discussion of mining licences is a description of the black letter of the Mining Code and Regulations. However, in practice, the Ministry retains a significant amount of discretionary power over the scope of licences and the process of licensing, and particularly so in its ability to incorporate specific terms and obligations into a mining licence. Therefore, to have a definitive understanding of the nature of the obligations to which a licensee may be subject, particular attention must be paid to the detailed terms of each individually issued licence, as many are bespoke. With respect to exploitation licences for example, it is not uncommon to see terms such as requiring the licensee to preserve local water sources and the environment and to protect wildlife, to execute specific agreed upon work plans within a specified time period, and to give local service providers preferences in contracting. These caveats are not unique to the KSA and simply highlight the importance of being actively engaged with the Ministry, and specifically the Deputy Ministry for Mineral Resources, to proactively negotiate and work collaboratively to agree to licences on commercially reasonable terms.

2.2 COMPETITIVE BIDDING AND TRANSFER OF LICENCES

In certain limited circumstances, licences are granted on a competitive basis:

- (i) where the Ministry delineates a licence area as one requiring competitive bidding for the award of an exploitation licence in the form of a public tender process, and
- (ii) where more than one applicant applies for a licence over the same area. In such cases, the winning applicant is determined on the basis of evaluating factors such as the respective technical and financial competence of the applicants, the proposed technical work program and commitment to the training and employment of Saudi nationals, with each of the respective criteria being given a weighting as set out in the Regulations.

After having been granted an exploration or exploitation licence, a licence holder may transfer such licence to another party who possesses the technical and financial capability and adequate experience to fulfil the obligations of the licence and who would also be qualified to obtain a similar licence under the terms of the Mining Code. For such a transfer of licence to be effective, a written request in the prescribed form, along with the payment of a transfer fee, must be made to the Ministry. It should be noted that although the process is clear, the test of being qualified to "obtain a similar licence" can be applied stringently by the Ministry, and the ability to transfer the licence should not be treated as a foregone conclusion.

2.3 FEES AND TAXES

The mineral resources licensing process in the KSA entails paying certain fees relating to matters such as licence application submission, licence issuance, renewal and extension, and licence transfer, and such fees vary in amount between the different types of licences. In addition, unless relating to privately owned land that is exempt, exploitation licences are charged a yearly surface rental fee of SR 10,000 per km².

Licensees are subject to (i) KSA income tax, or (ii) if income tax is not applicable, a severance fee representing 25% of annual net income or the equivalent of the income tax, whichever is lower, with any applicable Zakat being deducted from this amount. The current applicable income tax rate for mining activities in the KSA is 20% and an additional withholding tax of 5% is applied against distributions to shareholders outside of the KSA.

Saudi Arabia's Energy Minister recently stated that the Kingdom planned to issue new licenses covering exploration for minerals and to build more industrial cities. He stated that the new Mining code aims at simplifying private sector investment in the mining industry and enhancing its profitability, through measures like:

- no requirement to pay mineral royalties
- reduction of corporate tax liability to 20%
- in accordance with the Saudi Foreign Investment Act, mining companies may be entitled to tax-free importation of equipment and machinery

Article 8 in this law does not allow mining in the following areas and lands:

- Lands occupied by holy places and those officially designated as historical or archaeological sites.
- Lands where cities, streets, airports, railways, pipelines, public roads, or any other means of transportation have been established,
- or lands designated for approved water projects, public facilities, military installations or agricultural projects. If however it appears that subsurface minerals within the lands described in this paragraph can be extracted from mines or quarries located outside these lands, this prohibition may be lifted by a resolution of the Council of Ministers, upon a request by the Minister after agreement with the competent authorities.
- Lands, maritime areas, pastures and forests which are excluded or removed from the application of this Law by a resolution of the Council of Ministers.

3. SAUDI ARABIAN MINING COMPANY (MA'ADEN)

The Saudi Arabian Mining Company ([Ma'aden](#)) was established in 1997 by the government as a catalyst for private investment in and development of the mining sector. Through strategic partnerships with international and domestic firms, Ma'aden has aggressively explored and developed Saudi Arabia's mineral resources over the last 18 years. It mines and processes the Kingdom's gold, phosphate, and bauxite deposits aluminum, in addition to other metals and minerals on a smaller scale.

The Saudi Government began to privatize Ma'aden in 2004, dividing it into separate companies for its precious metals, industrial minerals, infrastructure, phosphate, and aluminum interests.

In 2008, Ma'aden offered a widely subscribed initial public offering which raised € 23.2 billion, equivalent to half of the company's value at the time. With its new capital and public stake, Ma'aden has continued to develop the Saudi mining sector with several large projects. Ma'aden has been rated as one of the best world-class companies on various operational, projects, training and skill development and financial parameters with its asset base recording 14-fold increase; that exceeded € 21.10 billion in total.

While building industrial cities, creating jobs and enabling communities to prosper across the Kingdom, Ma'aden has reached significant milestones that now place the Saudi mining sector firmly on the global map. Today, Ma'aden is not only the largest multi-commodity mining and metals company in the Middle East, but in recent years it has delivered one of the fastest growth rates of any mining company of the globe. It has proved that Saudi Arabia's wealth can also be found beyond oil or petrochemicals, in a new "third industrial pillar" of mining.

To help deliver the Kingdom's mining potential, Ma'aden has established joint ventures with companies that are global leaders in their sectors – Sabic in petrochemicals, Alcoa in aluminum, Mosaic in phosphate and Barrick in precious and base metals. Each of these partners brings leading edge expertise and technology to the Saudi mining sector, as well as global marketing capabilities.

Although it has already delivered some tremendous results, Ma'aden has its eyes focused firmly on the future. Through expansion projects and further diversification of its minerals businesses, Maaden plans to continue its growth, but to do so it must deal with some very real challenges. Because mining is a new industry in the Kingdom, Ma'aden is facing a lack of trained workforce, particularly in remote regions where it tends to operate.

To meet this challenge, Ma'aden and its partners have established the Saudi Mining Polytechnic in Arar, the first institute in the Kingdom to offer academic and on-the-job training for up to 500 students per year to become fully qualified miners and operators. This is part of Ma'aden's strategy to focus on communities by hiring locally and spending locally.

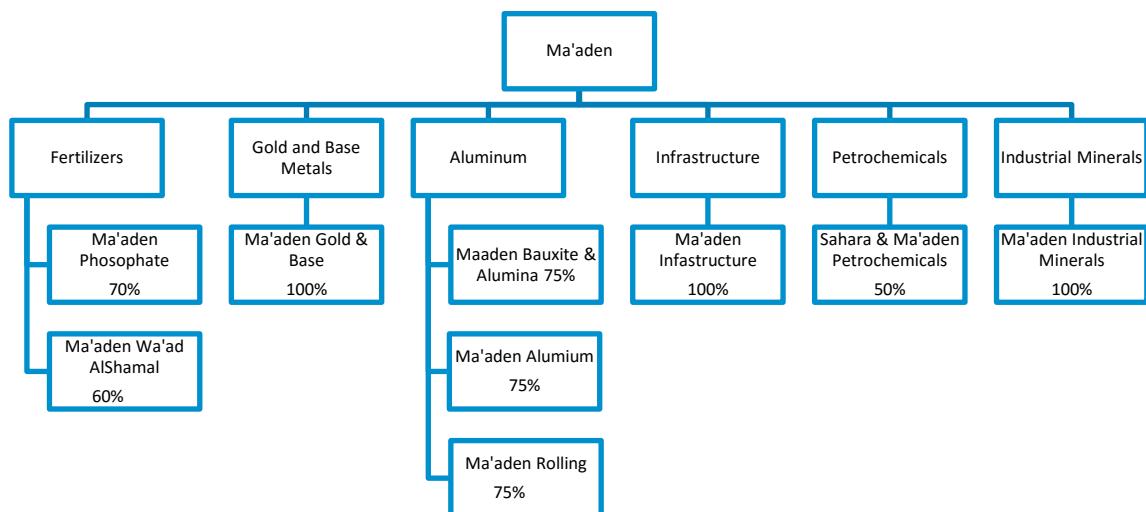
Nearly two thirds of Ma'aden's mine employees come from surrounding towns and villages, while Saudization of its entire workforce has reached 65 percent in total. Developing local small and medium sized businesses near its facilities is a key focus at Ma'aden; and last year 78 percent of the company's purchasing budget was spent on local Saudi goods and services.

In 2015 the company achieved its highest production levels to date in a number of segments, including phosphates, where production exceeded 2.6m tonnes of phosphate fertilizer, up from 2.4m tonnes in 2014; aluminum, with sales reaching 836,000 tonnes, compared to 663,000 in 2014; and gold, where production increased from 154,000 oz to 164,000 oz. Even so, the company's net profit for the year was down 55% at SR605m (€ 150m) due to lower global commodity prices.

In January 2016 the company highlighted a number of important milestones from the previous year that pointed towards future growth. These included the successful trial production at Ad Duwayhi mine – Ma'aden's largest gold mine – and the start of trial production at the Kingdom's largest copper mine, Jabal Sayid, which is being developed in partnership with Canada's Barrick Gold.

Ma'aden currently has four key business areas:

- Gold and Base Metals
- Phosphate
- Aluminum
- Industrial Minerals



Source: Ma'aden

GOLD AND BASE METALS

Ma'aden Gold and Base Metals Company, a wholly owned subsidiary of Ma'aden, operates five gold mines in Saudi Arabia, which have produced more than a 4m oz of gold since 1988 and 164,000 oz in 2015 alone. Two additional gold mines are currently under development in line with the company's stated goal to produce 500,000 oz of gold annually by the end of this year. The two mines it plans to open next are both open cast. In 2011 an Australian-Saudi joint venture, Ausenco, won a contract worth € 140m to develop As Suq, which is around 365 km north-east of Jeddah, and Ad Duwayhi, which is located 450 km south-west of Riyadh. In October 2015 Ma'aden announced the start of trial production at Ad Duwayhi, located in Makkah Province. The mine is estimated to have 1.9m oz in reserves and, once operating at full capacity, it is expected to produce a total of 180,000 oz of gold per year, which would be one-third of Ma'aden's total production. Commercial production started in April 2016.

More gold mines are expected to come on-line in the next few years, thanks to a new € 148m pipeline, which allows for the piping of treated waste-water from Taif city to the mine sites, thereby enabling the development of new mining projects without depleting precious local water supplies. The open-pit operation includes a conventional gold extraction process plant with crushing and milling facilities, gravity concentration and smelting facilities to produce gold doré on site, before transport to Jeddah.

PHOSPHATES

Another important area of development in the mining sector is phosphates. The industry currently revolves around a Ma'aden subsidiary called the Ma'aden Phosphate Company (MPC), which is a joint venture between Ma'aden and Saudi Basic Industries Corporation (SABIC) that was formed in 2007 and operates the Al Jalamiid mine in the north, as well as within Ras Al Khair Industrial City, which is located 90 km north of Jubail on the Gulf coast.

Ras Al Khair Industrial City is run by the Royal Commission of Jubail, which falls under the broader Royal Commission of Jubail and Yanbu. The facility includes plants producing phosphoric and sulphuric acids, as well as an ammonia facility, with a second coming on-line this year, and a phosphate plant that can produce 3m tonnes of fertilizer per year. In 2015 MPC produced 2.6m tonnes of fertilizer. Ras Al Khair is supported by key infrastructure including a 1,400 kilometer railway connecting to the main mines in the country, a major port supporting exporting operations, one of the world's largest desalination and power plants and a fully functioning village for workers.

One project that could serve this goal is the facility being built in Waad Al Shamal, 20 km from Turaif. The project is being developed as a partnership between MPC, which owns 60%; SABIC, with 15%; and US-based Mosaic Company, with 25%. With its seven plants and ancillary facilities, Ma'aden says it is on course to become one of the world's largest phosphate production facilities. Indeed, the facility could more than double the Kingdom's total phosphate production capacity when it comes on-stream in late 2016.

In January 2016 the Ma'aden Waad Al Shamal Phosphate Company obtained four long-term loans totaling some SR4bn (€ 989m) from the Saudi Industrial Development Fund for the construction of the second ammonia facility to integrate associated infrastructure to the existing diammonium phosphate plants in Ras Al Khair and to finance the construction of a sulphuric acid plant and power plant in Waad Al Shamal city, as well as to fund the construction of a phosphoric acid plant and a phosphate concentrate plant to be based in Waad Al Shamal.

ALUMINUM & COPPER

Aluminum is a recent addition to the Kingdom's mining assets. Ma'aden is developing, designing, constructing and operating the aluminum complex at Ras Al-Khair, which is considered one of the world's largest fully integrated aluminum complex. The complex includes an aluminum smelter with a production capacity of 740 kmt per annum, as well as a rolling mill with a starting capacity of 380kmt per annum to produce Aluminum Can Stock, and construction sheet applications.

	Initial Capacity (metric tons per year)
Bauxite Mine	4,000,000
Alumina Refinery	1,800,000
Aluminum Smelter	740,000
Rolling Mills	380,000

Ma'aden in the coming few years, will provide primary aluminum to downstream industries in the form of ingots, billets, sheets and molten metal, which develop and facilitate aluminum downstream industries in the Kingdom of Saudi Arabia, thereby supporting the national economy and creating new job opportunities.

According to Ma'aden, 2014 was the year the company successfully completed its mine-to-market value chain. In May 2014 the first bauxite was produced in the company's Al Ba'itha mine that located in north eastern Saudi Arabia. The following month Saudi Arabia's first-ever can sheet coil was produced at Ma'aden's Ras Al Khair rolling mill, with the company's smelter reaching full production in July 2015.

In January 2016 Ma'aden began initial production of copper at its joint venture with Barrick Gold at Jabal Sayid, 120 km south of Medina. Barrick acquired the asset in 2011 after it bought copper mining firm Equinox for € 5bn, with Ma'aden coming on board after agreeing in July 2014 to buy 50% of the project for € 194.70m. The mine's production capacity is eventually expected to reach 51,000 tonnes of copper in concentrate per year, with the lifespan of the mine forecast to be around 15 years based on current reported reserves.

In Feb 2017, the firm claims its aluminum facility, a € 10.2bn joint venture with US firm Alcoa, is the world's largest and most efficient integrated aluminum processing complex, able to produce the world's most economical aluminum, with a smelter production capacity of 740,000 tonnes per year.

INDUSTRIAL MINERALS

Ma'aden also mines three non-fuel, non-metal and non-gem materials – namely, low-grade bauxite, which is used in the production of cement; kaolin, one of the world's most versatile clays; and caustic calcined magnesia – through a wholly owned subsidiary, Ma'aden Industrial Minerals Company, which was established in 2011 is also looking into refractory clays, kyanite, graphite, precipitated calcium carbonate products, potash and iron ore. From almost 50 identified minerals, there are at least 15 industrial minerals which could become commercially viable, with 1,273 sites of precious metals identified and 1,171 sites of non-precious. Minerals discovered include phosphate; bauxite, bentonite, copper, dolomite, expandable clay, feldspar and nepheline syenite, garnet, gold, zinc, granite, graphite, gypsum, tantalum, high grade silica sand, kaolinitic clays, limestone, magnesium, marble, olivine, pozzolan, rock wool, silver and zeolites.

4. INVESTMENT OPPORTUNITIES IN MINING SECTOR

The Ministry of Energy, Industry and Mineral Resources announced its willingness to launch more investment licenses in the mining sector for the purpose of developing the domain and increasing its contribution to € 23.2 billion by 2020 amid rising interest of foreign investors in exploiting opportunities.

The Ministry is also implementing a strategy that enhances investment opportunities in the mining sector, provides an appealing investment environment, develops skills of Saudi labor force, protects promising mining zones and improves technical information and data related to mining investments. A combination of government support to investors, low cost energy for output processing and ongoing development of transport infrastructure, place Saudi Arabia as an attractive mining destination. In view of the Kingdom's strategy to integrate mining ventures with downstream value added processing, a growing range of opportunities are likely to open up to companies and organisations able to provide relevant technology, equipment and expertise.

There is a particular requirement for environmental protection techniques and consultancy as well as training and upskilling to fill supply chain gaps across the mining lifecycle.

Investment opportunities exist also for companies specialized in all aspects of the mining industry, including geological, geophysical and geochemical work.

Potential opportunities in Mining sector can be found in the following aspects:

- Mineral production concessions
- Mineral exploration
- Mine software
- Mining processing technologies
- Mining equipment
- Engineering services
- Dump body and transportation technologies
- Mine safety
- Environmental equipment and consulting
- Mining education and training services
- Mining research and university collaboration

SUB-SECTOR BEST PROSPECTS

Saudi Arabia requires mineral processing technology, equipment and proven expertise to develop mineral-based manufacturing. The Saudi mining industry is in need of consulting engineering companies and related equipment manufacturer's/suppliers as well. Industrial Minerals targeted for mining include:

- Feldspar and feldspathic sand
- High purity quartz that has potential for further upgrading to produce fused quartz
- Cultured quartz, silicon and polysilicon
- White mineral fillers such as talc, silica, wollastonite, and magnesite
- Limestone, with upgrading to produce ground calcium carbonate (GCC) and products such as lime, hydrated lime, and dolime
- Basalt, with upgrading to products such as basalt fiber, composite materials, and tiles

NATIONAL INDUSTRIAL CLUSTERS DEVELOPMENT PROGRAM

To further exploit the natural mineral resources of the Kingdom, the Government's National Industrial Clusters Development Program ("NICDP") has identified the following opportunities:

- a multi-purpose aluminium rolling mill for products such as wire, rod, foil and packaging;
- an aluminium foundry to produce power train, wheel and other castings;
- mini-mills capable of producing high-quality steel sheets for automotive, marine, household appliance and other sectors; and
- metal processing facilities for forging, machining, stamping, heat treating and plating.

These projects could benefit from foreign investment and numerous support opportunities available from the government, including tax and customs exemptions. Moreover, the products of these projects could be used for further industrial development in Saudi Arabia, for instance in a proposed "automotive cluster" that the Government is seeking to establish.

ANNOUNCED AND ONGOING MINING PROJECTS

Project Name	Description	Completion Date	Consultants
Umm Waal Phosphate Mine. Maaden, Mosaic & Sabic	Development of a phosphate mining deposit including the construction of 10 plants to produce 16 million t/y of phosphate concentrate, sulphuric acid, phosphoric acid, calcium monophosphate, and calcium diphosphate	Q4 2017	<ul style="list-style-type: none">• Fluor Arabia Ltd• PMC• Jacobs• Zamel and Turbag Consulting Engineers Company - FEED
Modern Mining Holding/Petrobras - CPC Plant	The JV of Modern Mining Holding Company and Petrobras plans to develop a Calcined Petroleum Coke plant in the Eastern Province, Jubail Industrial City 2, Saudi Arabia. The 700,000 t/y CPC plant will be built in Jubail Industrial City or Ras al Khair Mineral Industrial City and will cover an area of 400,000 sq.m. The CPC produced will be dedicated to the aluminum industry. Petrobras would provide the green coke raw material for the plant	In Q2 2017, ITB for the EPC contract is expected to be issued	JV of Modern Mining Holding Company and Petroleo Brasileiro S.A.

OTHER ACTIVE MINING PROJECTS IN THE KINGDOM

- Khnaiguiyah Mining Company, a joint venture company between Alara Resources Limited and United Arabian Mining Company LLC, operates a zinc-copper mine in Khnaiguiyah. The mine is estimated to be able to produce 1.4 million tonnes of zinc concentrate and 210,000 tonnes of copper concentrate over its 13 year mine life.
- KEFI Minerals plc and Abdul Rahman Saad Al-Rashid & Sons Company Limited formed G&M to explore for gold and associated metals in the Arabian-Nubian Shield. Their flagship project in the Kingdom is the Jibal Qutman project, which is estimated to hold some 733,045 ounces of gold.

5. SAUDI MINING COMPANIES

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United Arabian Mining Company LLC	Riyadh	11-225-1201 11-225-1240	www.manajem.com/home.html info@manajem.com	Mr. Mohammed A. Al Hatlani, CEO Mr. Nasr Ali Suleiman Al Agel, CFO
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