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mineral
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With an aim to mine
unearth concealed and deep-
seated mineral deposits, the
government will establish a
National Centre for Mineral
Targeting (NCMT), which will
work in collaboration with
academia, industry and other

the explorative expenditure
will be reimbursed on a nor-
mative cut basis.
The government has also
made two laws to serve as pillars
of support to the mining sector.
These are:

scribed threshold values, to the
private sector by auction or com-
petitive bidding.
Vision for 2030
The Department of Science
and Technology (DST) has

energy, and smart phones.
They can also play an important
role in the government's low-car-
bon plans by playing an impor-
tant role in manufacturing of

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EMPLOYMENT NEWS

DATE- 27 AUG - 02 SEP. 2016

CAREER IN MINING

DIG UP THE TREASURES OF THE EARTH

Dr. Manisha Agaarwal

Mineral industry in India is quite large and well-developed. Coal, limestone, iron ore, and uranium are some of the minerals that go a long way in determining India's economic growth and to meet its growing energy demands. India has the sixth largest iron ore reserve in the world and the fourth largest iron ore producer in the world. Our country also has the eighth largest bauxite ore reserve in the world, and is the fifth largest bauxite ore producer in the world. We have 302 billion tonnes of coal reserves, and more than 3,000 operational mines across the country (excluding mining areas for mining areas for minor minerals, crude petroleum, atomic minerals, and natural gas).

It is expected that the demand for various metals and minerals will grow substantially over the next 15 years. The rapid growth in the power and cement industries is good news for our metals and mining sector. As per Mines & Minerals Development and Regulation (Amendment) Act, 2015, all mining leases for major minerals will be granted for the period of 50 years. This move is expected to push up the growth of the mining sector considerably.

Sashi Mukundan, Chairman of the Confederation of Indian Industry (CII) National Committee on Hydrocarbons, also said that the new policy announcements by the

High Paying Jobs in the Mining Industry

Some of the well-paid jobs in the Mining Industry are:



government will help unlock an investment of Rs 2.5 lakh crore to Rs 3 lakh crore in the oil and gas sector by 2022. He said that this investment will be used in exploration of domestic gas and oil reserves, development of discovered reserves, and enhance oil recovery schemes and technology.

Naturally, there is tremendous scope of employment and career growth in the mining sector for the existing workforce as well as the new entrants.

Mining Engineer

A mining engineer ensures that the mines and its related surface and underground operations remain safe and efficient. They are expected to have technical knowledge and management skills to be involved at all stages of a mining project, and to assess the impact these structures have on their surrounding environment. From assessing the viability of developing a mine at a new site to planning the mine's structure, to managing

and overseeing mining production processes - to the final closure of the mine and rehabilitating the place - mining engineers are involved with everything.

Mining engineers can find a lot of jobs in India and abroad in mining consultancy, oil & gas production, mineral processing, tunneling and quarrying. Usually, mining engineers have long work hours. If you get a chance to work at an on-site job overseas, you will probably have to spend three months there, followed by a leave for two weeks. The work is not physically demanding but most engineers work in challenging conditions on site.

Besides a degree in Mining Engineering, those who hold a degree in Mining and Mineral Engineering, Mine and Quarry Engineering, Civil Engineering, Minerals Surveying or Geology can also make a career in this field.

Minerals Surveyor

Minerals Surveyors assess risk and commercial potential of a prospective mine or quarry, map its mineral deposits, and predict the impact it will have on environment. They prepare initial surveys to determine the economic viability of mining at a particular site, support planning applications, and help in

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CAREER IN MINING...

Continued from page 1

negotiating legal contracts and the rights to work in a mine. They also help in managing and developing the site, and map and record how much mineral is being extracted from it. Once the site has yielded the mineral to the optimum level, surveyors often work with mining engineers and planning & development surveyors to restore the land.

Peat workings, onshore oil & gas installations, mine water treatment plants, mineral processing plants, methane extraction sites, landfill and waste management sites, waste transfer sections, waste incinerators, recycling centres, brick-works, and concrete and cement works often employ Minerals Surveyors to ensure safety on-site. Working hours are usually normal but you may have to start early or leave late, or work on weekends at times to meet deadlines.

Graduates in Civil Engineering, Mine Engineering, Earth Sciences, Economics, Geography and Geology may enter the field. A reasonable level of fitness and mobility is also required as the nature of work is physically demanding. You may have to climb down into excavated areas or mines during site inspection, travel a lot depending on location of the site, and may have to work on dirty surface workings or dark, damp and cramped underground mines in all weathers.

It is necessary to observe safety rules in mines and wear hard hats, protective clothing and carry equipments as required. Do note that mining equipments can be quite noisy. Many companies prefer candidates with a driving license so that they can move from site to site easily.

Metallurgist

Metallurgists are involved with extrac-

ancillary plants and industries that produce asphalt, concrete products, ready-mixed concrete, cement, lime, glass and refractory sands, bricks and tiles, and other specialised products.

Besides long working hours, quarry managers may also have to handle emergency calls in times of crisis. They work in office as well as on site to make sure that quarries remain profitable. For those who manage several quarries, frequent travelling may be required.

A Degree or Diploma in Mining Engineering or Technology, Minerals Engineering or Surveying, Environmental Sciences or Engineering, Materials Science, Physics, Geophysics, Geology or Mining Geology, Earth Sciences, and Chemistry or Industrial Chemistry can lead you to this job.

Hydrogeologist

Mining or quarrying industry may hire hydrogeologists for management of groundwater. Hydrogeologists study distribution, flow and quality of underground water, interpret technical data from maps and historical documents to develop a conceptual model, may be involved in sampling and measurement of the environment to make sure that the operations conform to the model, and use modelling techniques to predict future trends and impacts of mining on the flow and quality of underground water.

Though the work of a hydrogeologist is mostly office or laboratory based, it does require site visits and field work too - often to remote and hard-to-reach areas. A post-graduate degree in Hydrogeology, Geochemistry, Engineering, Geology or Environmental Science helps you get better job opportunities in the field.

Materials Engineer or Materials Scientist

Materials Engineers or Scientists

physicists or field seismologists to assess the physical aspects of the Earth using a range of methods such as magnetic, electrical, seismic and gravitational measurements. They play a vital role in the oil and gas industries to find out what lies beneath the earth's surface and build-up of hydrocarbons based on the data on seismic waves.

Geophysicists may have to work at sea too, where a working day lasts for almost 12 hours. These sea trips can be as short as one day or may last up to four or even six weeks. However, most of them work in laboratories and offices in safe and comfortable working conditions. Graduates who hold a degree in Engineering, Geology, Geophysics, Geosciences, Mathematics, Physics or Applied Sciences may join this job. Diploma holders in these fields may apply for technician-level jobs in the field.

Health and Safety Inspector

Mining is a hazardous occupation. Though it accounts for only 1% jobs in the world, it bears the cross of 7% fatal accidents at workplace. Constant vigilance and sustained use of safe, fit-for-purpose and quality materials and methods is absolutely necessary in the field. Health and safety inspectors in mines or landfill sites work to keep people safe and healthy at their workplace and control the risks properly. They ensure that the employees comply with health & safety laws, rules and regulations and remain protected from ill health, injury or accidental deaths.

The job involves both indoor and outdoor work. In cases of serious accidents or events, health and safety inspectors may have to work in noisy, dirty, stressful and even dangerous conditions. A degree in Engineering, Medicine or Environmental Health can lead to this job. A candidate is expected to be physically fit and agile to be able to climb heights and work across

Mudlogger

Mudloggers monitor and record drilling activity of the well sites during the extraction of oil or gas, making it possible to make informed decisions on their placement and efficiency. The kind of things they monitor are speed of drilling rotation, rate of penetration, cutting rate, mid-flow rate, pit levels, and oil and gas shows. To create mud logs, they use a range of laboratory techniques and equipments including ultraviolet fluorescence, binocular microscope, and thin section analysis.

Most mudloggers work 12 hours a day, 7 days a week on the rig continuously for four weeks, followed by a two weeks' break at home. They usually work in restricted locations and weather conditions may be bad in such areas. An increasing number of rigs worldwide have separate facilities for women these days.

A degree in Geology, Physics, Applied Physics, Chemistry, GeoChemistry, Mathematics, Applied Mathematics, Mineral, Mining or Petroleum Engineering, or Geophysics or Geotechnology can lead you to this job.

Major Institutes offering Mining Engineering Courses in India

- Bhaga Mining (Government Polytechnic), Bhaga
- Birla Institute of Technology, Sindr
- Indian Institute of Engineering Science and Technology, (IEST) Shibpur
- Indian Institute of Technology (BHU), Varanasi
- Indian Institute of Technology (formerly known as Indian School of Mines (ISM)), Dhanbad
- Indian Institute of Technology (IIT), Kharagpur
- JNTUH College of Engineering, Manthani, Jawaharlal Nehru Technological University, Hyderabad
- National Institute of Technology (NIT),

er candidates with a driving license so that they can move from site to site easily.

Metallurgist

Metallurgists are involved with extraction and processing of various metals and alloys. Mining industry generally employs Chemical Metallurgists or Extraction Metallurgists who are involved in extraction of useable metals from ores, and monitor and test them for corrosion, find ways to make metals stronger and more adaptable, and test them to ensure that they meet quality and safety standards.

A degree in Chemical Engineering, Materials Science or Engineering, and Metallurgy can lead you to this job. Those who have a degree in Applied Sciences, Manufacturing Engineering, and Mechanical Engineering may also apply for these jobs. Diploma holders in these disciplines may be employed at lower levels as technicians.

Quarry Manager

Quarry Managers make sure that operations in quarries, pits and open-cast sites remain smooth, efficient and safe. They can get employed in quarries that produce rocks and stones of all types, brick and ball clay, slate, sand and gravel, china clay, coal and minerals, as well as in their

Materials Engineer or Materials Scientist

Materials Engineers or Scientists research about properties and behaviours of different substances - from raw materials to finished products. They work in different industries to improve the cost-effectiveness, durability and performance of a product and processes involved in producing it. They often work with industrial minerals, metals, ceramics, chemicals, composites, glass, plastics, polymers, and even rubber and textiles.

It is mainly an office-based or laboratory-based job, and requires high-level of adaptability because rapid technological advances the field is seeing these days. Besides Materials Engineering, Science or Technology, a degree in Minerals or Mining Engineering, Chemical Engineering, Mechanical Engineering, Structural Engineering, Polymer Science or Technology, Ceramics and Glass, Chemistry, Applied Chemistry, Physics, Applied Physics, Metallurgy and Geology can open up jobs for you in this field.

Geophysicist or Field Seismologist

Mining companies, government bodies and environmental agencies hire geo-

in Engineering, Medicine or Environmental Health can lead to this job. A candidate is expected to be physically fit and agile to be able to climb heights and work across uneven surfaces and obstacles if required.

Petroleum Engineer

Petroleum Engineers are involved in the evaluation of oil and gas fields, their development and product. They try to recover maximum hydrocarbons at minimum cost, while keeping environmental impact to the minimum. They might work as geologists who analyse sub-surface structures to find hydrocarbons, as reservoir engineers who use computer simulations to assess risks and make forecasts on potential of a reservoir, help in proper well placement, and improve oil and natural gas recovery techniques.

Most companies offer flexible working patterns but the work day may stretch up to 12 hours at sea. Typically, two weeks at sea is followed by two weeks break on shore. Besides Petroleum Engineering, Chemical, Mechanical, Aeronautical or Civil Engineering may also open up opportunities for you in this field. Other degrees that may lead you to this job are Astrophysics, Earth Sciences and Mathematics.

- JNTUH College of Engineering, Manthani, Jawaharlal Nehru Technological University, Hyderabad
- National Institute of Technology (NIT), Karnataka
- National Institute of Technology (NIT), Raipur
- National Institute of Technology (NIT), Rourkela
- University College of Engineering, Kakatiya University
- Visvesvaraya National Institute of Technology (VNIT), Nagpur

Job Outlook in India

India produces 88 minerals - 4 of them are fuel-related, 10 are metallic, 50 are non-metallic, and 24 are minor minerals. It is a success story in waiting for decades.

According to a report by the McKinsey Company presented at the CII Global Mining Summit, 2014, the Indian mining sector has a potential to create 60 lakh new jobs and contribute 4,700 crore US dollars to India's GDP by 2025.

It is time to gear up for the industry and take the plunge at the right time!

(The author is a columnist. email manishaagaarwal7@gmail.com)