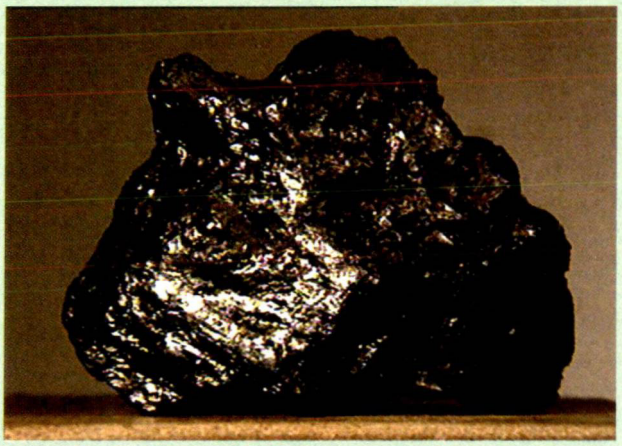
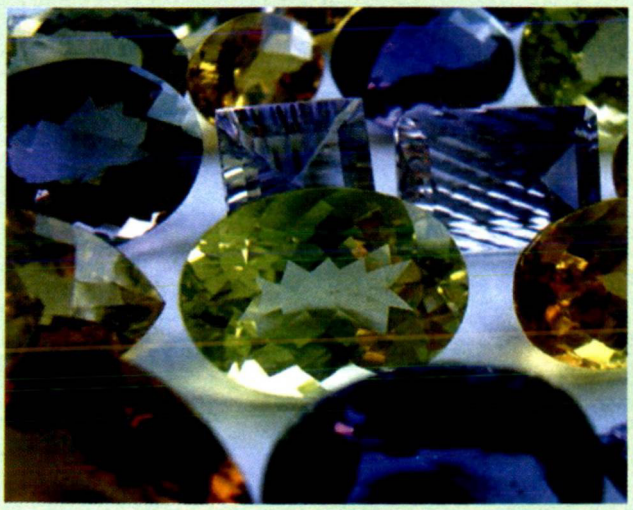
Sustainable Mineral Resources Management

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Introduction







The Geological Survey and Mines Bureau (GSMB) is the youngest member (born in March 18, 1993) of a Geological family lineage that goes back to 1903 when methodical geological activities of the country began as the "Ceylon Mineral Survey" under the Directorship of Dr. Ananda Kentish Coomaraswamy. During a period of three years he discovered most of the minerals known today in addition to an assessment of geological structure around Kandy and Balangoda.

Minerals are naturally occurring substances having a definite chemical composition and atomic structure. About 2,000 minerals are known.

They are extracted, processed and utilised for economic benefits of the Mankind. The availability of the mineral wealth and the level of its exploitation have a direct bearing on the economic and social development of a country.

Unlike agricultural resources, minerals are exhaustible and non-¬renewable, a vital criterion that sets apart the Mineral Sector and its attendant Mineral based Industries from other industries whose raw materials are renewable. Minerals are an integral part of our day to day needs and whilst playing a dominant role in commerce, determine the country's economic standing.

Recognizing this unique aspect, the GSMB in its role as the country's sole regulator of the Mineral Sector, places much emphasis on sustainable mineral management.

Mineral Resources

Ancient history records Sri Lanka as a legendary source of gems. About 300 BC it became famous for its steel. Records show that steel was produced then by furnaces blown by the monsoon winds. The furnaces were dug into the crests of hills, and the wind was diverted into the air vents by long trenches. The wind flow allowed higher temperatures than those which were possible with bellows-driven furnaces, resulting in better-quality iron. This production method is arguably the world's first record of energy-saving and entirely environment-friendly steel manufacturing process! Steel made in Sri Lanka were traded extensively within the region and in the Islamic world and much sought after as the raw material for the famed Damascus sword. Clearly, although the scale of operation and consequent production capacities met the then demand, this method is no longer commercially viable today due mainly to reduction of raw material sources due to population increase.

Prominent minerals of Sri Lanka

Hence with the iron ores out of consideration, for the time being, Industrial Minerals have become Sri Lanka's mineral wealth. The prominent minerals are; dolomite, limestone, apatite, mineral sands, graphite, vein quartz, kaolin, glass sand, feldspar, mica, river sand and various gneisses and granites used as dimension stone and aggregate.



kaolin



limestone



feldspar



mica

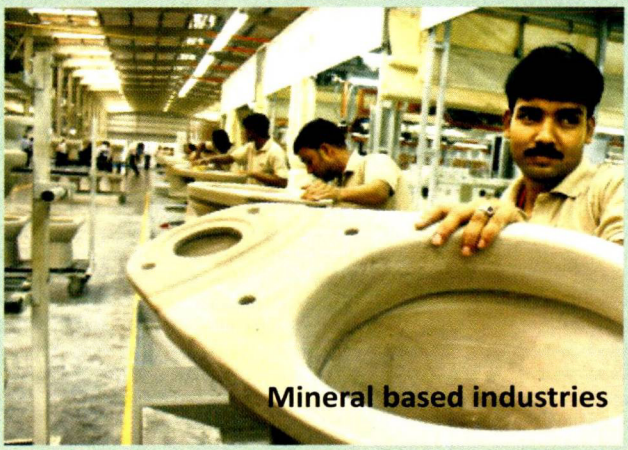


glass sand

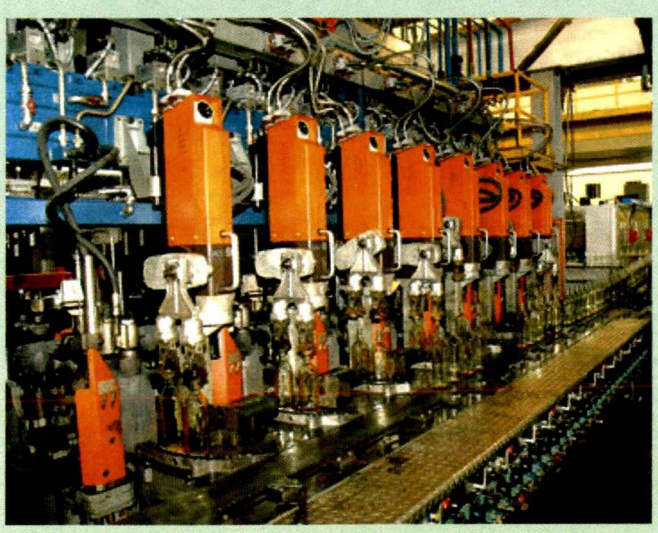
The industries

Except for the graphite mining industry which is now nearly 200 years old, a continuous venture that still exports high grade graphite sans product development, most of the mineral based industries such as cement, ceramics, glass and fertilizer commenced between early sixties and seventies. Of these, cement industry has a large local presence whilst, ceramics that produces tableware, tiles, refractory items and sanitary ware have a respected global recognition for its tableware and tiles. Other exports are dimension stone as various end-user products such as floor tiles, wall claddings, paving stones and flags. But mineral sands exported since mid sixties and mica since mid seventies are yet to achieve product development prior to export. The Government would welcome export oriented product development ventures for these mineral commodities.





Mineral based industries



Over the years, the mining activities for mineral raw materials have had no major adverse impacts on the environment, but with recent expansion in the construction industry, have, now begun to place significant constraints both on the country's environment and limited mineral resources.

Currently, the construction industry is growing at a rate of over 14% annually. This has placed heavy demand on limestone and cement clay for cement manufacture, other construction material such as aggregate, river sand, brick and tile clay and lime. The problems caused due to excessive sand mining is illustrative of the complex interplay of economic and social factors i.e., livelihoods of people, depletion of natural resources and sustainability.

The scale of the impact of mining projects on local ecosystems and communities is increasing in response to greater market demand.

The scenario is that of a candle burning on both ends with the construction industry poised to gain further momentum for many more years into the future to be sourced by resources that are manifestly nonrenewable. The GSMB as the regulating authority is now witnessing an increase of mining activities and the demand being quite high, the required increase of production appears to be sourced without much regard to the environment.

Sustainability

In discussing the topic 'Sustainability' of nonrenewable mineral resources, it is apt to recall a famous Inuit saying, to quote, "We do not inherit the earth from our fathers, we borrow it from our children". It is also relevant to recall a saying of a former Director of the Geological Survey Department, immediate predecessor to GSMB, Dr. M.M.J.W.Herath, the prolific writer on Sri Lanka's mineral resources, to quote, "Minerals pervade our lives and determine our country's progress. ... Also, in terms of its potential to sustain a long term socio-economic development".

Thus, recognizing the severity and importance of the paramount need to sustain a nonrenewable resource, the GSMB has adopted a secure strategy. It follows globally accepted proven pathways that are now based on resource availability, recycling, human ingenuity and creativity.

Any available resource could either be recyclable or non-recyclable. For example, fossil fuels being consumable are completely non-recyclable, whilst almost all metals are recyclable. It guarantees longer sustainability assuring benefits for future generations. Although some permanent losses would occur, they can be countered by aforementioned human ingenuity and creativity. A good example in the past is the replacement of copper wires in communication applications by optic fibres made of silica, a material much more abundant on earth than copper.

Taking into account that Sri Lankan mineral sector is driven mainly by industrial minerals and metals are yet to come into play, they fall into the category of consumables as fossil fuels that cannot be recycled, it needs to be accepted that sustained resource depletion would occur. As the resources concerned are nonmetals such as graphite, dolomite, limestone, apatite, mineral sands, vein quartz, kaolin, feldspar, brick and tile clays, mica and construction materials that cannot be recycled, the veritable resource depletion needs to be addressed and countered.

As of now the remedial measures adopted focuses on methodical mining and well regulated mining practices that involve providing professional courses in blasting for mine workers. Minimizing of resource losses at the mine, during transport and by the end-user particularly for construction materials are another aspect.

In the case of commodities such as apatite, mineral sands, mica, graphite and vein quartz, in addition to providing advice on good mining practices, mine workers are encouraged to ensure maximum extraction of ore down to the lowest commercially viable cutoff grade from the mine. Thereafter, further encouragement is given and regulatory provisions established recently to support the manufacture of value added products both for local needs and export. In planning product manufacture, it will be mandated that all commercially viable grades of the ore are utilized and the product portfolio is planned taking into account future product requirements and market forecasts both locally and globally.

The GSMB in addition to its role as the regulator may assist as a promoter, facilitator and service provider on behalf of the Government.