MINERALS: WHO NEEDS THEM, WHO SUPPLIES THEM AND HOW MUCH IS THERE?

This lecture will observe and question the global demand and supply of minerals and the role of geology in this process. Some of the generic aspects apply equally to oil and gas.

Initially the lecture will consider some basic facts regarding the use that the human race has made of minerals and will consider the changes in demand that have occurred during the last 100 years. It will set out to question some of the predictions of supply that were made some 30 years ago and will consider some aspects of future need. The emergence of China as a very important force in the global minerals industry will be examined, both as a producer with almost monopolistic control of some strategic minerals and metals and as a voracious consumer of mineral raw materials with attendant high metal prices. The audience will be asked to consider aspects of mineral supply that could dominate international aspects of the industry over the next 50 years, such as the sustainability of supply and where it will be sourced, the regulation of the industry, the dominant fuel, and the lecture will conclude with the role of minerals as part of the sustainable development agenda.

The second part will examine some of the decision making process that companies adopt to decide on whether to mine a particular deposit or not. It will consider how corporate growth objectives influence the viability of a potential mineral deposit that has been discovered especially in the case of limited development capital and in an environment of risk and uncertainty. An outline of the capital structure of companies will be noted as well as sources of capital together with the requirements of investors in regards to the degree of surety to which the deposit under consideration has been estimated and to set in context Feasibility Studies as a basis for investment decision making. Major stock exchanges require resources and reserves to be reported according to strict codes of practice and an outline of the nature of these codes will be covered. The minerals industry has its fair share of dubious operations, some of which are little more than vehicles to encourage investment and create an increase in share value that can be exploited quite legally. Others have been fraudulent and an examination of some of these cases will be used to emphasise the need for care and due diligence in mining investments, a very important role that geologists undertake.

This part of the presentation will concentrate on what is often the only asset, namely the rock in the ground. A broad overview of the estimate of the geological resource will be covered and it will be emphasised that accuracy and care in all aspects of the estimation process are essential. Case histories will illustrate the magnitude of this task and how a well structured team, each aware of each other's role, is necessary to obtain the objective. It will be noted that at different stages of development different levels of accuracy are required and this presentation will focus on the production of an estimate as part of bankable documents for the raising of finance to develop the property. Whilst the production of a reserve estimate can involve some sophisticated statistical calculations it will be emphasised that these will only lead to an incorrect estimate if the basic geological model has not been correctly defined.

The presentations will conclude by a demonstration of the inter-relationships of the topics in the three respective parts and will show the importance of geologists in the production of minerals and metals and how geologists need to have a broad understanding of other disciplines if they are to maximise on their career potential.