Valuation Process for Extractive Industrial Properties

P.W. Senaratne
Retired Government Chief Valuer

The mineral industry of Sri Lanka

Sri Lanka is well-endowed with industrial minerals including Graphite, Ilmanite, Rutile, Zircon, Quartz, Feldspar, Clay, Kaolin, Apatite (Phosphate Rock), Silica Sand, Garnet sand, Mica, Calcite and Dolomite. *Pulmoddai beach sand* deposit is the most important non-ferrous mineral reserve in Sri Lanka to date. This deposit contains minerals including one of the most expensive and sought after metals in the world – titanium. Ilmanite (FeTiO2) and rutile (TiO2) are found in enormous concentrations in the Pulmoddai beach sand deposit area. Several other beach mineral-sand deposits of Monazite, Zircon garnet and Ilmanite are found in various parts of the island and are now being exported.

The use of *graphite in Sri Lanka* has a long history that dates back to 1675. Sri Lankan graphite has gained popularity all over the world for its high purity and offers many processing applications in graphite lubricants, flake graphite, carbon brushes, refractory bricks and midget electrodes and nano-technology.

Three main types of clay - kaolinite, ball clay and brick clay - are used for ***export industries***. Yellow, red and blue colour ball clay is found in Sri Lanka's hill country. These are used to make casts and as refractory material because of their attributes of strength and high plasticity. Brick clay is found in most of the river valleys and is commonly used in the production of bricks and tiles.

Quartz, ball clay, silica and feldspar are utilized in *the ceramics and glass industries* with great success; *the country's porcelain* is ranked among the best in the world. *Sri Lanka's* ***natural resources*** include another valuable

economic mineral reserve known as apatite rock phosphate. It is estimated that the reserve consists of 60 million tons of apatite which is generally used to produce phosphate fertilizer.

The development of mineral resources is the responsibility of the Geological and Mines Bereau and is governed by the Mines and Minerals Act No: 33 of 1992 and Mining (licensing) Regulations No: 1 of 1993. The mining of graphite, mineral sands phosphate rock and salt and the *refining of petroleum* were performed by state owned companies: the private sector produced all other mineral output with the exception of cement, which was manufactured and sold mostly by the private sector, foreign investors and state-owned Sri Lanka Cement Corporation.

Background

In various stages, properties of extractive Industries of Sri Lanka were valued for various purposes including privertisation, financial reporting, bank purposes and regulatory purpose etc. This presentation is a product of experiences so gained.

Globally, *reliable valuations of Extractive Industries assets, including interests (rights) in natural resource properties,* are essential to ensure the, availability of capital necessary to support the continuity of the Extractive Industries component of the world's economic base, to promote the productive use of Mineral and Petroleum natural resources and to maintain the confidence of capital market.

Properties of Extractive Industries pass through a series of ownership, processing and measurement stages since extracting from the earth. Valuation process requires distinctions among real property, personal property and business interests involved in the stages. Financial reporting requires the recognition of various asset classifications into which these interest may fall. Valuations have to rely heavily on information provided by, technical experts and other accredited specialists.

Components of Extractive Industries are considered as depletion or wasting assets. They include, metallic Mineral deposits containing metals such as copper, aluminium, gold, iron, manganese, nickel, cobalt, zinc, lead, silver, tin, tungsten, uranium, and platinum group metals, Non-matalic Mineral deposits such as coal, potash, phosphates, sulphur, magnesium, limestones, salt, mineral sands, diamond and other gemstones, Construction materials such as sand, gravel, crushed stone, and dimension stone and Petroleum deposits including oil, natural gas, natural gas liquids, other gases, heavy oil, and oil sands.

Valuation concepts

Concepts of Valuation of Extractive Industries Properties are detailed out in International Valuation Standards. Even for Extractive Industries Valuations, Generally Accepted Valuation Principles (GAVP) apply, in accordance with the valuation fundamentals expressed/directed by the IVSs.

The standard of value is *Market Value* defined under, *Market Value Basis of Valuation.* If some other type of value is to be determined, *Bases Other than Market Value,* a clear definition of that value should be provided by the Valuer and highlighted in the Valuation Report, and a clear and conspicuous explanation should be provided.

The property type(s) involved in valuation of Minerals and Petroleum industry property must be correctly identified. Naturally occurring *in situ* Minerals and Petroleum are a part of physical land and Real Estate. The ownership of such *in situ* Minerals and Petroleum, an interest in such natural recourses, are Real Property, except where otherwise defined by statute.
Minerals and Petroleum are Personal Property during transportation and processing. The operation of a mine, quarry or petroleum well is a business activity, as is the transportation and processing of Minerals and Petroleum. Such business activity is generally conducted by an Extractive Industries business enterprise that owns real property and personal property assets, and the activity contributes to the Going Concern Value of enterprise.

A key aspect of the valuation of an Extractive Industry natural recourses property is that the property interests and related rights being valued must be properly identified. As Real Property, Market Valuation of an Extractive Industry property must be based on the Highest and Best Use (HABU) of the property. This requires consideration of non-Minerals or non- Petroleum uses for the property, if such uses are possible. Consideration must also be given to a change in exploration, development or operating strategy, or potential for leasing the property, in order to maximize its economic benefit. In determining the HABU, the Valuer should determine the most probable use that is *physically possible, appropriately justified, legally permissible, financially feasible*, and which results in the highest value of the property being valued. Market Value of land, based upon the "Highest and Best Use" concept reflects the utility and the permanence of land in the context of a market, with improvements constituting the difference between land value alone and total Market Value as improved.

In conducting a Market Valuation, the three Valuation Approaches are generally available for consideration. They are the Sales Comparison Approach (termed Market Approach for Business Valuations), generally by indirect means, the Income (Capitalisation) Approach, including market-related discounted cash flow and the Cost approach (termed Asset-Based Approach for Business Valuations), including depreciated replacement cost and equivalent cost analysis. Where one or more of the above Valuation Approaches has been applied in preference to others, the reason must be stated.

As applied to Mineral and Petroleum natural recourses property interests, the appropriate Valuation Methods employed depend upon the stage of exploration or development of the property. Such Mineral and Petroleum natural recourses properties can be categorized as four main types, which is the subject of the opinion of a Valuer or Technical Expert. They are Exploration properties, Resource properties, Development properties; and Production properties.

Exploration properties are Mineral or Petroleum real property interests that are being actively explored for mineral deposits or Petroleum accumulations, but for which economic viability has not been demonstrated. Resources properties contain a Mineral Resources or Petroleum Resources but have not been demonstrated by a Prefeasibility Study or a Feasibility Study to be economically viable. Development properties, in general, have been demonstrated by a Feasibility Study to be economically viable but are not yet in production. Production properties contain a Mineral or Petroleum producing operation active at the time of valuation.

The different stages of exploration and development carry different levels of risk. The risk pertains to the, likelihood of eventual or continued Mineral or Petroleum production. As an Exploration Property is advanced to a Resource property, to a Development property, and to a Production property, more technical information is collected, enabling technical analysis, including Prefeasibility and Feasibility Studies, to be carried out, and thereby reducing the risk factor, as the *amount of capital investment at risk rapidly increase*s.

At the end, the result from the valuation approaches and method employed must be weighed and reconciled into a *concluding opinion of value*. The reason for giving a higher weighting to one approach over another must be stated.

Competence and impartiality

To develop a Valuation of an Extractive Industry asset or interest, the *Valuer must have competence* relevant to the subject asset or interest, or retain the services of (an) appropriately skilled Technical Expert(s). Providing a reliable and accurate valuation typically requires the Valuer to have specialized training, or assistance from (a) Technical Expert(s) or other accredited specialist(s), in geology, Resource and Reserve estimation, engineering, and economic and environmental aspects relevant to the subject natural resources type and geographic setting.

The Valuer is responsible for the decision to rely on a Technical Assessment, data, or opinion provided by other expert or specialist. This includes responsibility for conducting reasonable verification that those persons are appropriately qualified and competent and that their work of credible.

Special considerations of extractive industries valuations

Each Mineral deposit, Petroleum accumulation and Exploration Property is unique. Therefore, direct comparison of Mineral or Petroleum natural resources property transaction is often difficult or inappropriate. However, *sales analysis* is an important valuation tool. Sales adjustments or ratio analysis can frequently be applied for indirect sales comparison purpose. Sales analysis and other market analysis can often yield market factors such as a market discount rate, a risk factor or uncertainty factor that may be used in the Income Approach.

For a Valuation Report to provide an estimate of Market Value, the valuation analysis must be based on market evidence and current expectations and perceptions of market participants for the property valued, and such market evidence must be consistently applied in the Valuer's analysis. The method most commonly used by businesses for investment decision-making within the Extractive Industries is net present value analysis/discounted cash flow analysis (NPV analysis/DCF analysis). The valuer is cautioned that this and other methods, such as those based on option theory, will yield other than Market Value estimates of Investment Value or Value in use, unless great care is taken to assure that a market value estimate is obtained.

For the valuer to report a Market Value estimate resulting from such an analysis, all inputs and assumptions must reflect available market-based evidence and current expectations and perceptions of market participants. The Market Value of Extractive Industries' natural resource properties and businesses are *usually more or less than the value of the sum of their parts or component values*. For example, the Market Value of a real estate tract

owned in fee simple, that contains a Menaral deposit, is rarely the sum of the independent values of the Minerals, land surface, and plant and equipment. Similar situations may often occur in the Petroleum Industry.

For a producing Mineral or Petroleum Industry natural resource property, there may be separate ownership rights over component parts utilized by the enterprise, such as the Reserve, Royalties, and plant and equipment. It is important for the valuer of the enterprise to correctly recognize these. There may also be a requirement to provide valuations of the *separate ownership interests*.

Material data relied on in developing the value estimate should be verified for accuracy whenever reasonable to do so. This may include, selective review of drill hole information and samples, related analytical data for a subject natural resource property, and conformation of published information pertaining to transaction of similar properties.

If there is more than one estimate of the quantity and quality of Resources and Reserves for a subject natural resource property, the Valuer shall decide which estimate it is appropriate to disclose and discuss, and which estimate to use as the basis in the Valuation process, and shall state the reasons. A critique of alternative estimates may be submitted with the Valuation Report.

The valuer shall take account of, and make reference to other matters that have a material impact on the valuation. Dependent on the property type and rights being valued, these may include, the status of tenements, rights and other interests; all Mineral or Petroleum deposits within the boundaries of the tenements or rights; access to markets and the quality and quantity of product that can be sold; services and infrastructure, and any toll arrangements, fees or liabilities related thereto; environmental assessments and rehabilitation liabilities; any Native Title aspects; capital and operating costs; timing and completion of capital projects; residual value estimates; material agreements and statutory/legal requirements; taxation and royalties; site rehabilitation, reclamation and closure costs; and any other aspect that has a material bearing on the Valuation.

Disclosure in extractive industries valuation reports

The Valuation Report shall properly identify the property type(s), specific property interest(s) and related rights being valued. The report shall disclose the name, professional qualifications and relevant industry experience of the valuer, and other Technical Expert(s) whose Technical Assessment has been relied upon to support the Valuation. And it should be supported by disclosure of relevant Extractive Industries Codes, Standards or Rules of Practice applicable to the Valuation and supporting Technical Assessments. All estimates of the Mineral or Petroleum Resource or Reserve disclosed in the valuation reports or supporting Technical Assessment shall abide by the definitions provided, and the classification systems referenced in those definitions, unless jurisdictional or other reasonable cause is disclosed. Maps, geological sections, diagrams and photographs shall be included in the Valuation Report, if appropriate and possible, to aid the communication of information.

Relevant technical information supporting the Valuation of a subject natural resource property (ies), including estimates of Resources and Reserves being valued, shall be disclosed and discussed in a Technical Assessment. Also the report shall disclose whether or not the entity employing/retaining the Valuer, or the owner of the subject asset or its operating management, has provided the Valuer with a statement that all available data and information requested by the Valuer or otherwise relevant to the Valuation have been supplied to the Valuer.

References

a) *Chin S. Kuo (2012), The Mineral Industry of Sri Lanka – USGS*
b) *International Valuation Standards (2007)*
c) *Sri Lanka Export Development Board web site*