



CVSRTA Registered Valuers Association

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Dear Members,

CVSRTA RVA is glad to publish **Draft Valuation Standards for Plant, Machinery and Equipment.**

Valuation Standards are prepared in collaboration with the Centre for Valuation Studies, Research and Training Association, Mumbai.

We request you to provide your comments and suggestions for bringing more clarity and for adoption of this standards in practice with ease.

Please send your comments and suggestions to cvsrtarvo@gmail.com by **31st January 2024.**

Sunitkumar Gupta

Date : 11.11.2023

MD & CEO

DRAFT 1.1

**STANDARDS
ON
VALUATION OF PLANT, MACHINERY AND EQUIPMENT**

My Promises to deliver...

Prepared by



**CVSRTA
Registered Valuers
Association**

in
collaboration
with



**Centre for Valuation
Studies, Research &
Training Association**

First Edition September, 2023

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Publisher:

Centre for Valuation Studies, Research & Training Association, India
8, Meghal Service Estate, First floor, Devidayal Road,
Near Johnson & Johnson, Mulund (West), Mumbai-400 080

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To error is human. Improvement is a continuous process. Therefore, any mistake, error or discrepancy noticed may be brought to our notice, which shall be taken care of in the future editions.

Centre for Valuation Studies, Research & Training Association, India

Members of the Standards Committee:

R. K. Gandhi	- Chairman
Kirit P. Budhbhatti	- Member
Nelson J. Macwan	- Member
Sundeep H. Bikhchandani	- Member
Jigesh J. Mehta	- Member
Sunitkumar Gupta	- Member

Note : Brief profiles of members of Standards Committee are given at the end of this document.

**Standards on Valuation of Plant, Machinery and Equipment Developed
by the Centre for Valuation Studies, Research and Training Association
(CVSRTA)**

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Acknowledgements

It is practically impossible to prepare Valuation Standards and Guidelines on the subject dealing with diverse issues without the help of experts.

Centre for Valuation Studies, Research and Training Association (CVSRTA) is grateful to following members for their contribution in this pioneering work:

- Rashmi K. Gandhi
- Kirit P. Budhbhatti
- Nelson J. Macwan
- Sundeep H. Bikhchandani
- Jigesh J. Mehta

CVSRTA is thankful to Kirit P. Budhbhatti for permitting to reproduce the material from his book on valuation of Plant and Machinery.

Our thanks also to:

Ms. Kiran Kitani from the office of Sundeep H. Bikhchandani and Jay Doshi from the office of Rajeev Shah for their help in giving final shape to the manuscript.

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STANDARDS ON VALUATION OF VALUATION OF PLANT, MACHINERY AND EQUIPMENT

DEVELOPED BY

CVSRTA REGISTERED VALUERS ASSOCIATION

In collaboration with

**CENTRE FOR VALUATION STUDIES, RESEARCH AND TRAINING ASSOCIATION
(CVSRTA)**

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PART – I : VALUATION STANDARDS

OBJECTIVES OF THE STANDARDS

CVSRTA has done the pioneering work in introducing full time PG degree courses in the disciplines of valuation of real estate as well as plant, machinery, and equipment at Sardar Patel University, Vallabh Vidyanagar, Gujarat in 1994.

The course in the discipline of real estate valuation is the first in India whereas the course on plant, machinery and equipment valuation is the first in whole world. Both the courses are full time residential courses.

Thereafter, they helped Shivaji University, Kolhapur, Maharashtra, India in introduction of the first distance learning real estate valuation course in the year 2008.

The object of these standards is to improve the current situation in the valuation profession in India by augmenting the level of professionalism.

There is a dire need for standards in the subject area. The Academic courses in valuation of plant, machinery and equipment is only available at post graduate level and that too in a few universities, with constrains of faculties for core valuation subjects.

In view of the prevalent scenario in India, these Valuation Standards are framed along with Guidelines for application only to specified tangible assets but not for liabilities. There may, however, be exceptional circumstances that will result in assets actually becoming a liability at the end of their lives and the recoverable value can be a liability. For example, in the case of nuclear power plant, it can happen that for the last couple of years of their life, the ultimate decommissioning cost will be greater than the Depreciated Replacement Cost and hence, the entity has a negative value, even though it is satisfactorily generating an income.

By setting out concepts, principles and procedures generally accepted internationally and having regard to legal framework as well as practices prevalent in India, the purpose of these standards is to ensure transparency and uniformity in the execution of valuation assignments by establishing requirements for valuers and thereby increase public trust in valuation profession.

In order to ensure a common understanding, some definitions useful in practice, though not specifically used in this document, are also included in the glossary as these may have to be referred to while conducting assignments.

To bring independence, objectivity and transparency in valuer's approach is an integral objective of these standards.

The Standard 7 Valuation Reports will be useful in preparation of the report.

These standards will be reviewed periodically and may be modified to meet future requirements.

These standards will certainly be useful for practitioners and users of tangible asset valuation services.

Mumbai
11th November, 2023

Rashmi K. Gandhi
Chairman
Centre for Valuation Studies, Research
and Training Association (CVSRTA)

INTRODUCTION

- 1.0** Plant, machinery and equipment are terms used to refer to installations and support facilities for manufacturing in an industry designed to perform a specific pre-determined function, whether used singly or in combination with other items to enhance the productivity or operating facility; and includes all devices in fixed or movable form, other than real estate, deployed in manufacturing, processing or assembling of products from the stage of raw materials to finished goods.
- 2.0** The wide spectrum of industries, each having plant, machinery and equipment of its own inherent characteristics, makes valuation of plant, machinery and equipment a complex process.
- 3.0** In practice, one thing is certain that on many occasions instructions are received to undertake valuation of plant for an industry in which the valuer may not have exposure and experience. It is difficult to cover countless types of plant and machinery found in varieties of industries individually. However, these valuation standards along with guidelines can equip valuers to deal with valuation of such varieties of plant and machinery.
- 4.0** Amongst the issues to be considered in the valuation of plant, machinery and equipment are the specific utility or usefulness of the asset, its contribution to the production of goods and services for which it was designed and deployed and its potential to produce and contribute to the profitability of the business, after considering the market situation and standard of maintenance.
- 5.0** Legislative or regulatory provisions, prevalent accountancy conventions, or juristic requirements may necessitate consequential modifications in valuation procedure.
- 6.0** Plant, machinery and equipment may be valued for a variety of reasons. The Standards elaborates the vital issues in valuation of plant, machinery and equipment arising in different approaches to value as well as highlight the role, duties and function of the valuer.

Scope of the Standards

- 1.0 This document covers definitions, role, duties and function of plant, machinery and equipment valuer, data collection, physical verification, identification, obsolescence, phases of valuation procedure, important considerations in valuation and related reporting for plant, machinery and equipment along with guidelines for valuation.

Definitions

1.0 PME

- (a) **Plant** - The assemblage of assets that may include specialized non-permanent buildings, machinery and equipment.
- (b) **Machinery** - Individual machines or collections of machines. A machine is an **apparatus using or applying mechanical power, having several parts each with a definite function, and together performing certain kinds of work.**
- (c) **Equipment** - Ancillary assets that are used to assist the function of the plant and machinery/enterprise/entity.

2.0 Cost, Price, Value and Worth

- (a) **Cost** is the price paid for goods or services, or the amount required to create or produce the good or service. It is a fact. The price paid for a good or service becomes its cost to the buyer.
- (b) **Price** is a term used for amount asked, offered or paid for a good or service. It is a fact whether it is publicly disclosed or retained in private. Price paid for goods or services may or may not have any relation to the value of goods or services.
- (c) **Value** is an estimate of the price that would be achieved if the plant, machinery and equipment were to be sold in the market.
- (d) **Worth** is the specific investor's perception of the capital sum which he would be prepared to pay (or accept) for stream of benefits which he expects to be produced by the investment. It varies from investor to investor for the same asset. Therefore, it is an estimate of price, to be offered which varies from investor to investor.

3.0 Market Value

The Law Commission of India, 1958 under principles of determining compensation under Land Acquisition Act, 1894, under paragraph 45, defined '**market value**' as the price, which a **willing vendor** might reasonably expect to obtain from a **willing purchaser**. The disinclination of the vendor to part with his land and the urgent necessity of the purchaser to buy must alike be disregarded and both must be treated as persons, dealing in the matter at **arm's length** and **without compulsion**.

Market value is the estimated amount for which an asset ought to exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.

4.0 **Reproduction Cost New and Replacement Cost New**

(a) **Reproduction Cost New**

The cost of acquiring an identical new asset/replica using same material, design, standards, quality, workmanship of the asset under consideration. It carries with it the good and bad attributes of the original. This includes costs of transport, foundation, erection and installation, commissioning, consultants' fees, non-recoverable taxes and duties and finance cost up to the stage of commercial production.

(b) **Replacement Cost New**

The cost of replacing an existing asset with the same or substantially similar new asset having a similar production or service capacity, including costs of transport, foundation, erection and installation, commissioning, consultants' fees, non-recoverable taxes and duties and finance cost up to the stage of commercial production.

Note: The 5-year-old machine can be replaced by brand new machine as well as 5-year-old second-hand machine. Therefore, it is essential to use the words replacement cost new instead of only using replacement cost.

5.0 **Depreciation**

It is the usual wear and tear caused by the normal working of any asset. Its use is liable to a certain amount of deterioration despite the care and attention bestowed on its maintenance and preservation.

The term Depreciation used in these Valuation Standards and Guidelines refers to wear and tear only. Obsolescence is separately considered.

6.0 **Depreciated Reproduction or Replacement Cost (DRC)**

It is established by depreciating the reproduction cost new / replacement cost new by considering age and condition (wear & tear) only.

7.0 Recoverable amount is the higher of an asset's net selling price and its market value in highest and best use.

8.0 Value-in-exchange is the price that would tend to prevail in a free, open, and competitive market on the basis of equilibrium set by the forces of supply and demand. This may be true for an item to be moved from one place to another or an entire plant in place.

This is referred to as an objective value because it is based on observable economic forces. A common form of value-in-exchange is market value.

9.0 Value-in-use is the worth of a PME to a specific user or set of users. As value-in-use is related to specific user's need, it is often referred to as subjective value.

(This is explained later under Sr.no.13)

10.0 Value in existing use means market value of PME utilized for current use.

11.0 Value in alternative use means market value of PME in use other than the existing use. Market Value in alternative use may reflect an **appreciation** in value when the plant would become capable of manufacturing other products with some modifications which has a high potential to generate income as explained **later under sr.no.13.**

12.0 Value in-situ is market value of PME at the location where it is installed on date of valuation.

13.0 Value in ex-situ is market value of PME at different location than where it is installed.

The following example is very relevant in realm of Market Value in existing use in-situ/ex-situ and Market Value in alternative use in-situ/ex-situ:

Let us consider a case of a plant established to produce a particular product with an investment of ₹ 1,00,00,00,000/- (Rupees one billion) in in plant and machinery. But it could not go into the commercial production as arrangement of abundant water required to run the plant was not made. The cost of bringing water to the site is exorbitant making a project unviable. The investment in plant and machinery is ₹ 1,00,00,00,000/- (Rupees one billion) and same is a cost to the investor and not the value as it is not capable of generating income in existing us in-situ.

In above case, the market value in existing use in-situ is very highly adversely affected as it is not possible to generate income from the assets at the location where they are installed. If it is possible to shift the plant where water is available in abundance and the plant becomes viable and capable of generating sufficient income then in that case it has a market value in existing use in ex-situ which is much more than the market value in existing use in-situ.

Let us now consider another situation in which by incurring an investment of about ₹ 150,000,000/- (Rupees one hundred and fifty million) in fixed assets it is possible to produce a product which hardly require any water and plant becomes capable of generating income then in that case it has a market value in alternative use in-situ which is much more than the market value in existing use ex-situ.

Suppose, above plant cannot be used for alternative purpose at same location but at different location it is viable to operate and the same is more lucrative. Then in that case its value in alternative use in ex-situ is to be adopted.

14.0 Highest and best use as applicable to Plant, Machinery and Equipment is defined as that use of Plant, Machinery and Equipment which may reasonably be expected to produce the greatest net return over a given period of time and legally permissible use which will yield the highest present value.

Highest and best use of any individual machine or total operating facility may not be its present use. Hence, a study should be made to determine the highest and best use of Plant, Machinery and Equipment being valued.

The following considerations pertinently arise:

- Permissibility (legal)
- Possibility (physical)
- Feasibility (financial)
- Profitability (economic)

- 15.0 Liquidation, forced sale value** - Either term refers to the amount which may reasonably be received from the sale of assets within a time frame which do not meet the marketing time frame of the market value definition. The sellers in such a transaction are unwilling seller and a buyer or buyers buy with knowledge of the disadvantage of the seller.
- 16.0 Auction realizable value** is the estimated amount that one would expect to achieve at a properly promoted, conducted, and attended auction sale. It normally assumes that the sale is held on the site and substantially all of the assets in the inventory listing are offered for sale at one time.
- 17.0 Salvage value** is the value of an asset that has reached the end of its economic life for the purpose it was made and may still have value for an alternative inferior use.
- 18.0 Scrap value** is the value of an asset, as if disposed of for the materials it contains rather than for continued use without special repairs or adaptation. It may be given as gross or net of disposal/ disposition costs.
- 19.0 Reinstatement value** is the cost necessary to replace, repair, or rebuild the insured assets to a condition substantially the same as, but not better or more extensive than, its condition when new.
- 20.0 Indemnity value** is the cost necessary to replace, repair or rebuild the insured assets to a condition substantially the same as, but not better or more extensive than, its condition at the time when the damage occurred, taking into consideration age, condition, and remaining useful life.

VALUATION STANDARD 1 (VS 1)

COMPETENCE OF VALUERS AND SCOPE OF WORK

COMPETENCE OF VALUERS

- 1.1 Valuers of plant, machinery and equipment having requisite academic qualifications and relevant experience can carry out valuations and provide such service for a fee or eligible to practice as a valuer under any law for time being in force.
- 1.2 The Valuer must possess knowledge and expertise while accepting valuation assignments. Valuer shall also disclose past, present, or foreseeable future relationships, either with the Client or the asset to be valued, that could lead to or be construed as possible conflicts of interest, and the same shall be disclosed while accepting an instruction to carry out valuation.
- 1.3 The Valuer shall ensure that he has knowledge, experience, and competence to complete the assignment in accordance with these Standards and generally accepted valuation principles.
- 1.4 The Valuer shall maintain the identity as an Independent Valuer. An “Independent Valuer” shall be one who has no, either directly or indirectly via partners, co-directors or close family, significant financial interest in the client company or vice versa and who has additionally no fee-earning relationship in the past three (3) years or at present, other than the valuation fee, and has disclosed in writing any involvement past or present with the subject assets or interested or connected parties over the previous three (3) years. Valuers preparing valuation reports under any regulatory framework shall ensure that they meet the definition of an “Independent Valuer” as defined under applicable regulatory framework and shall give a declaration to such an effect.
- 1.5 A Valuer shall not accept an instruction to carry out a valuation of assets; if his or her firm is involved in the sale or purchase of the assets, in any capacity within one (1) year of the completion of the sale or purchase.
- 1.6 The Valuer shall disclose any past, present, or foreseeable future relationship with either the assets to be valued or the Client that may lead to or be construed as possible conflict of interest.
- 1.7 The Valuer shall also ensure that he meets any other legal or regulatory requirements, which may be required by the Client or their advisors.
- 1.8 The purpose of this Standard is to ensure that only Valuers who have knowledge, technical skills, and expertise to complete all aspects of a valuation competently shall carry out valuations. For those who are unable to meet this criterion, after proper disclosure in the scope of work, they should seek the assistance of specialists (or other such qualified valuers and/or experts depending on the nature of assignment) who possess sufficient knowledge, experience, and competence, and would thus meet with the needs or requirements of the Client.

The “other legal or regulatory requirements” are those which may be required by the Client in accordance with the uses to which the valuation report may be put or that is legally required.

SCOPE OF WORK

1.9 The terms of reference must have clarity between the valuer and the client on the following points, amongst others:

- Purpose of valuation;
- Effective date of valuation opinion;
- Basic issues of the assignment like identification of client and other intended users, identification of the assets and its relevant characteristics, identification of rights, title and interest, inspection of assets, applicable basis of value and valuation;
- Information to be furnished by the client;
- Members of team with their qualifications, and nature and extent of reliance on any other expert for any specific aspect of the assignment;
- Fees along with payment schedule and duration of the work;
- Disclosure of any connection or previous involvement of the valuer with the client or the subject assets that could limit the valuer's ability to provide an unbiased valuation.

In certain cases where the scope of work may change during the course of the assignment, the necessary changes should be informed to the client at an appropriate time before completion.

VALUATION STANDARD 2 (VS 2)

ROLE, DUTIES AND FUNCTIONS OF PLANT, MACHINERY AND EQUIPMENT VALUER, INSPECTION, DATA COLLECTION AND ANALYSIS

2.1 Role, duties and functions of Plant, machinery, and equipment Valuer

2.1.1 Role

A Plant, machinery and equipment Valuer must possess knowledge of industry which incorporates the plant, machinery, and equipment to be valued and take into consideration the utility and special purpose of custom-built equipment. He must be able to hold discussions with various personnel in the plant at various levels which may include collection of particulars from –

- Experts of industry under consideration
- Plant Manager
- Shop Floor Specialist
- Draughtsman
- Pattern Maker
- Maintenance Supervisor
- Electrical Supervisor
- Production Supervisor

He should discuss with the financial and technical directors of the company to ascertain management's view on matters affecting the business of the company.

2.1.2 Duties and Functions

- (a) The valuer should carry out his functions in course of valuation of plant, machinery, and equipment with regard to
 - (i) Preparation of inventory in the form of a schedule (listing),
 - (ii) Inspection of plant, machinery, and equipment.
- (b) The valuer must have knowledge of approaches and methods of valuation applicable to plant, machinery and equipment.
- (c) The valuer should have acquaintance with the accounting terms including taxation implications.
- (d) The valuer should assess the present and future revenue earning potentials of industrial units for estimation of its value. This may require the valuer to adjudge the salability of the product manufactured in a competitive and fast changing market. This also demands the necessary specialized knowledge about the specific item of product manufactured by the plant, machinery, and equipment under consideration.
- (e) The valuer should consider the macro-economic issues that guide the recent monetary and commercial trends all over the world. He should to keep himself abreast of the current trends in the market of plant, machinery and equipment.

- (f) The valuer shall act as the team leader when consultants in specialty areas are associated with the work of valuation. He has also to take decision for deployment of consultant in any particular field which may help the valuation process. In the matter of intricacies, such deployment might become necessary in order to arrive at a valuation which is realistic, meaningful and useful. The decision in this behalf rests with the valuer as he has to co-ordinate the investigation by the specialists and cover the findings in the report.

2.2 Data collection

Valuation of Plant, machinery and equipment requires the preparation of an inventory in the form of a schedule. The extent of details to be included in such a schedule is a matter dependent upon the valuer's judgement after due consideration of client's instructions. However, information on the points mentioned under micro-identification (para 2.4.1) are relevant in the preparation of inventory.

Often the Fixed Assets records, maintained by the company, whether manual or computerized fail to reflect accurately the assets, installed in the factory. Therefore, valuer should not fully rely upon inventories or fixed asset/plant register provided by clients although they are useful aid to a valuer in preparing his own inventory and in establishing discrepancies, if any, between the book records and assets actually available on inspection.

2.3 Physical verification

2.3.1 Valuer must carry out physical verification of plant, machinery, and equipment prior to valuation. Inventory of plant, machinery and equipment installed in various sections must be verified with accounting and technical records of the company like fixed asset/plant register. It is essential to identify the discrepancies, if any, detected on actual physical verification. It is particularly necessary to notice if items of revenue nature are capitalized and vice versa.

2.3.2 Valuer shall make comparison of inventory with company's records for preparation of lists with due consideration to the following discrepancies which are often noticed: -

- (a) Plant, machinery, and equipment physically existing on site, but account reference not available, due to omissions may be arising out of:
- * Plant, machinery, and equipment having been manufactured in the company's own premises utilizing its own material and labour.
 - * Cost of plant, machinery and equipment treated as revenue expense.
 - * Plant, machinery, and equipment taken on lease, or otherwise (including those belonging to sister concern) put into use.
- (b) Plant, machinery, and equipment existing in account reference but physically not available due to factors, such as:
- * Plant, machinery, and equipment already scrapped/not in use/lying outside factory premises for repairs etc.
 - * Plant, machinery and equipment already sold, and money realized shown

as miscellaneous receipts, but effects not given in the fixed assets/plant register.

- * Items of a revenue nature capitalized.
- * Plant, machinery, and equipment given on lease or lying in sub-contractor's premises.

Any discrepancy noticed on such verification shall be adjusted in books of account to give a true and fair view. This is also important for accounting treatment of reserves created due to revaluation.

2.3.3 Technical specifications should be verified in the following manner: -

- * Reference to the purchase orders with the Purchase/Account department.
- * Consulting the technical literature from technical personnel using and/or maintaining plant, machinery, and equipment.
- * Thorough discussion with technical personnel after evolving a format of discussion based on familiarity with the process, background of experience and consultation with other experts in the field.
- * It is essential to scrutinize the purchase order as it gives reasonably complete details of a main machine, its accessories, and other salient features of relevance.

2.4 Identification

Identification of plant, machinery and equipment can be classified into the following two categories:

- 2.4.1** Micro-identification
- 2.4.2** Macro-identification

2.4.1 Micro-identification

In order to arrive at sound value of a machine, the valuer should properly identify the same and for that purpose it should be properly described. The description should be so precise that the reader can easily identify or find the machine.

Micro-identification means listing of each and every machine separately. To accomplish this, it is necessary to adopt standard procedure may be having the following descriptive characteristics:

- * Clients' Asset No./Identification No., if available;
- * Description;
 - General category - what it is?
 - Special type – further classification of category.
- * Model;
- * Type;

- * Size or capacity, if measured or given;
- * Serial number, if found;
- * Name of manufacturer;
- * Name of supplier
- * Year of manufacturing
- * Details of attachments, accessories and components; collets, tooling etc. for the machine;
- * Type of drive and details of drive; i.e., chain drive/V-belt drive, driven by engine/motor with power rating.
- * Reference to any special foundations, servicing connections like wiring controls, piping installations, as the case may be, if involving an installed value;
- * Modifications or renovations from the standard.

2.4.2 Macro-identification

In this method, the entire manufacturing process is studied by identifying the major components contributing to the design capacity of the plant in question.

This is useful for valuing a continuous process plant.

The valuer adopts macro-identification to indicate the following: -

- * What is the line of production?
- * What is the process employed?
- * What is the installed capacity and actual production?

The valuer should collect the following information for macro-identification as an “in use” value:

- Date as on which valuation is made
- Name and address of the company
- Details of products manufactured
- Process employed
- Flow-chart of process employed
- Details of by-products
- Installed capacity of the plant and actual production in quantity as well as in monetary terms during last five years.
- Raw material availability – whether finite or infinite
- Quality of finished goods – what is the percentage of rejection? Is it within permissible limits? If not, the reasons?
- Usage/Workload – whether single shift, double shift, triple shift or continuous?
- Duration of each shift i.e., 12-hour shifts, 8-hour shifts, etc.
- Shift-wise usage for number of days in a year.
- Standard of maintenance – what is the maintenance programme? Is it regular, preventive or on demand? Does any equipment require frequent repairs? If so, what are the reasons?
- Efficiency of plant layout
- Plant suitability
- Interdependency – in case of a continuous process plant consisting of several pieces of equipment, the Economic Balance Life of the entire plant is governed by

economic balance life of one or two core units. The valuer shall identify the core units in such circumstances.

- Details of amount spent on repairs during the last five years.
- Estimated cost of repairs for the next five years.
- Is the plant of the latest technology or old? Is it suffering from any obsolescence?
- If the plant is not of the latest technology, then has any comparison been made between the latest and the old plant in the following aspects to assess the obsolescence: -
 - - * Production capacity
 - * Replacement cost of brand-new equipment
 - * Direct wages
 - * Consumption of stores
 - * Consumption of energy
 - * Fixed cost
 - * Saving in space
- Electrical layout showing HT/LT distribution and sub-distribution system along with length, type and size of cable. Whether electrical installations provided is sufficient for present connected load or is there a provision for connecting additional load? What is the connected load in hp/kw?
- Is there any statutory liability for violation of any regulatory measures contained in the law enforcing Environmental Pollution Control/Factory Act/Electricity Act etc. If yes, has any calculation been made as regards the cost to cure?
- Chronological and Effective Age to evaluate life expectancy of the plant.
- Details of machines scrapped/discarded in following format: -
 - * Date of installation
 - * Date of scrapping
 - * Total number of hours in service
- Details of machines sold in following format: -
 - * Date of purchase
 - * Date of installation
 - * Purchase price
 - * Total number of hours in service
 - * Condition at the time of sale
 - * Sale price realized

2.4.3 While carrying identification as stated above, there are possibilities that all such information may not available, in such circumstances valuer should state such limitation in his report including any alternative measures taken to procure such information.

2.5 Obsolescence

There are following types of obsolescence:

- Technological (Many times, considered as same as functional or incorporated with functional)
- Functional

- Operating
- Economic

2.5.1 Technological obsolescence

Technological obsolescence occurs due to change in design and materials of construction of the plant, machinery, and equipment under consideration. Latest sophisticated equipment with reduced occupancy, improved efficiency or optimum energy consumption are common in plant, machinery, and equipment. Technological obsolescence may arise due to development of new technology which brings in changes in rate of production or reduction of operating cost. The need for adequate familiarity of the valuer with such a situation is more emergent in the present high-tech environment than before. Enough exposure to and background experience of technology in this regard is essential for a valuer. In case he is not fully competent, he shall refer appropriate matters to experts.

2.5.2 Functional obsolescence

Functional obsolescence arises when a machine already in function loses its optimum capacity owing to a decline in co-operation from its operating counterparts. It may arise due to variety of internal reasons. The company may have been compelled to commission a machine of high-rated capacity simply because a low-rated one is not available and the operating counterparts, whether it is labour or capital, are not geared to give the highly rated machine the opportunity for optimum output. Functional obsolescence may also arise due to faulty design or wrong location of industrial undertaking. It is assessed by a comparison to its more current replacement.

Functional obsolescence is also detected by noticing a decrease in value due to non-availability of spares or accessories, or any other allied factors.

2.5.3 Operating Obsolescence

Operating obsolescence is known as the present worth of the future excess operating cost of a machine. The valuer is expected to appropriately account these factors with relevant data.

2.5.4 Economic Obsolescence

This is due to factors external to the plant, machinery, and equipment themselves. This could be due to change in demand of the product manufactured or shrinkage in supply of raw materials and labour, legislation affecting taxes or duties, environmental or zoning controls etc.

Economic obsolescence can be properly measured with a “Business Enterprise Equation” as stated below:

Assets = Liabilities + Stockholders Equity

or

$$CA + FA + IA = CL + LTD + SE$$

Where -

CA	=	Current assets
FA	=	Fixed assets
IA	=	Intangible assets
CL	=	Current liabilities
LTD	=	Long-term debt
SE	=	Stockholders' equity
NWC	=	Net working capital
BE	=	Business enterprise

$$CA + FA + IA = CL + LTD + SE$$

$$(CA - CL) + FA + IA = LTD + SE$$

Because $CA - CL$ is net working capital (NWC) and $LTD + SE$ is defined as the value of the business enterprise (BE), then :

$$BE = SE + LTD = NWC + FA + IA$$

If we rearrange terms, the equation becomes:

$$BE - NWC = FA + IA$$

Business Enterprise Value Less Net Working Capital represents the economic support for fixed and intangible assets. Economic obsolescence exists, if the economic support for fixed and intangible assets is computed as less than the fractional values of the underlying identified assets, as individually estimated by the depreciated replacement cost or sales comparison methods, as the case may be.

Economic obsolescence is thus algebraically expressed as

$$BE - NWC < (FA + IA)$$

Whenever economic obsolescence is established to exist, it is necessary to reduce the individual asset values to the level of indicated economic support as contributing to the operation. This adjustment is called an economic penalty.

If there is excess economic support for the underlying identified assets, it is concluded that unidentified intangible value exists, which is generally considered to be goodwill or going concern value.

The terminology used as technological, functional, operating, economic is not important, but it is important to consider obsolescence in totality whatever may be the nomenclature used. However, they can be calculated individually or in total (accrued) depending upon the valuation method and required support.

VALUATION STANDARD 3 (VS 3)

MARKET VALUE BASIS OF VALUATION

3.1 The transactions of plant, machinery and equipment normally take place at market value. This is the amount an asset would fetch if offered for sale in the open market on the date of valuation under the circumstances that meet the requirements of the definition of Market Value.

3.2 Definition of Market Value

The Law Commission of India, 1958 under Para 45, defined 'market value' as the price, which a willing vendor might reasonably expect to obtain from a willing purchaser. The disinclination of the vendor to part with his land and the urgent necessity of the purchaser to buy must alike be disregarded and both must be treated as persons dealing in the matter at arm's length and without compulsion.

The Courts also have held that market value is conditioned with 'willing buyer' and 'willing purchaser'.

Market Value is defined by International Valuation Standards Council (IVSC) as under:

"Market Value" is the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing where the parties had each acted knowledgeably, prudently and without compulsion.

The conceptual framework of definition of market value by Law Commission of India as well as IVSC is almost same.

Note: It will be observed that in the definition of market value given by IVSC the words used are asset or liability. This seems to be mainly because the International Valuation Standards are prepared for tangible, intangible and financial assets and business valuers have to quite often assess liabilities also

The conceptual framework of definition of market value are:

- an estimated amount
- should exchange
- on the date of valuation
- willing buyer
- willing seller
- arm's length transaction,
- after proper marketing
- where the parties had each acted knowledgeably, prudently
- without compulsion.

Please refer to IVSC document for meaning of above terms.

Tangible asset valuers must specify whether any statutory liabilities, which can be recovered from the sale of the plant, machinery and equipment have been considered or not in the valuation exercise.

“The market value means the price that a willing purchaser would pay to a willing seller for the plant, machinery and equipment having due regard to its existing condition with all its existing advantages and its potential profitability.”

The market value may be determined from sales of comparable plant, machinery, and equipment, proximate in time to the date of valuation, similarly situated, and possessing the same or similar advantages or disadvantages. Market value is the price, the plant, machinery, and equipment may fetch in the open market if sold by a willing seller unaffected by the special needs of a particular purchaser.

Understanding of word used in the definition.

- i. A valuer has to estimate the amount, by assuming hypothetical buyer and hypothetical seller both willing to transact the deal in hypothetical market and no one being under any compulsion. This means that sentimental aspect and forced sale conditions are to be ignored in market value estimate.
 - ii. Both the buyer and seller must be knowledgeable. If they are ignorant of ruling market trends, the transacted price cannot be fair. Deal should be in accordance with normal business practice.
 - iii. Hypothetical market should be open market where all types of buyers and sellers compete with each other. It should not be a closed or restricted market.
 - iv. Transaction has to be considered at arm's length. It means that transaction between not related parties or not between close friends.
 - v. The words "estimated amount for which an asset should exchange" means that valuer's estimate should be as close and near as possible to the asset's probable sale or exchange price in the market.
 - vi. Words "after proper marketing" means after due advertisement, without time constrain and transaction at a fair price determined after a process of higggle/haggle.
- 3.3** Market Value is an estimate which does not take into consideration the costs of sale or purchase, and without offset for any associated taxes.
- 3.4** Any willing buyer and seller will certainly take into consideration the highest-and-best use (HABU) of the plant, machinery and equipment while entering into the transaction of plant, machinery and equipment and therefore, consideration of highest-and-best use of the assets is an integral part of the definition of market value.

In addition to the various factors considered above, there are following two important considerations while valuing assets.

- (i) The valuer while estimating market value of the assets should ensure that assumptions and limiting conditions are minimum.
- (ii) The valuer should give reasons for adopting or not adopting a particular approach to value, while undertaking valuation for market value.

VALUATION STANDARD 4 (VS 4)

VALUATION BASES OTHER THAN MARKET VALUE

- 4.1 In majority of the cases, valuers are required to carry out valuation as per the market value definition given in VS 3. However, there are circumstances that require valuation on the basis other than VS 3 i.e., bases other than Market Value. It is important that both, the Valuer and valuation users, clearly recognize the difference between valuation on the basis of market value and the valuation based on the basis other than Market Value (valuation basis other than market value is conventionally known as Non-Market Value based valuations). It is important to understand the differences between these concepts because both these bases are applicable under different situations.
- 4.2 This Standard is focused on bases of valuation other than Market Value.
- 4.3 For certain specific purposes of valuation where it will be necessary for the Valuer to use a basis of valuation other than the market value, the valuer shall specifically mention this fact in the report and also shall differentiate that the valuation is not a Market Value estimate.
- 4.4 Specialized assets by virtue of the fact that they are rarely, if ever, sold in the open market are to be valued on the Depreciated Reproduction / Replacement Cost (DRC) basis, subject to potential profit / demand and supply. However, computation of potential profit is not within the scope of assignment of tangible asset valuer because potential profit cannot be ascertained without consideration / valuation of all the assets in the balance sheet.

The Valuer should qualify every valuation on the DRC basis as being subject to adequate potential profitability of the business having due regard to the value of the total assets employed and the nature of the operation. **It is for owners of the assets to decide on the adequacy of the profit potentiality or service potential/demand and supply.**

- 4.5 Plant, machinery and equipment may be required to be valued on bases other than Market Value, or may exchange hands at prices, which do not reflect Market Value as defined. Such alternative bases may either be reflections of a non-market perspective of utility, or of unusual and non-market conditions. Examples include Liquidation Values (forced liquidation value as well as orderly liquidation value), Special Value.

The examples of valuation which are based on the basis other than market value are:

- (a) Please refer to Para 4.4 above.
- (b) Insurable Value.
- (c) Liquidation values (forced liquidation as well as orderly liquidation value)
- (d) Special Value.
- (e) Investment Value.

VALUATION STANDARD 5 (VS 5)

VALUATION PROCEDURE

5.1 Phases of Valuation Procedure

Logical phases of valuation procedure for plant, machinery, and equipment:

- Phase - I : Terms of reference
- Phase- II : Strategy of valuation
- Phase - III : Physical verification (survey and inspection)
- Phase - IV : Valuation Approaches & Methods
- Phase - V : Reconciliation

5.1.1 Phase – I Terms of reference

- * The source of the instruction;
- * The purpose of the valuation;
- * The date of the valuation;
- * Treatment of items;
- * On lease;
- * On hire purchase;
- * Held in trust;
- * Jigs, patterns, special tooling in machine tool industry, instrumentation, piping and other installations in process industry depending on type of industry under consideration;
- * Fixed plant normally regarded as part of the building services, such as, electrical installations for lighting, sanitary piping, acoustics, air-conditioners etc.
- * Assumptions to be made relating to the basis of valuation;
- * The appropriate instructions, particulars of publication and limit on liability to third parties

5.1.2 Phase - II Strategy of Valuation

General

Valuation of plant, machinery and equipment require the preparation of an inventory in the form of a schedule. The extent of details to be included in such schedule is a matter dependent upon the valuer's judgement after due consideration of client's instructions. However, information on the following points is relevant in the preparation of inventory:

- * description;
- * model, serial number and maker's name;

- * client's own plant reference number;
- * size or capacity;
- * age/year of manufacture/year of installation;
- * reference to any special foundations, service connections, accessories as the case may be;
- * modifications, renovations carried out after installation;
- * energy consumption;
- * environmental and other legal restrictions if any;
- * usage;
- * record of production and maintenance.

Plant, machinery and equipment need to be inspected in accordance with the method as detailed below:

- * Check the condition, physical deterioration and wear and tear.
- * Check the working environment with regards to following:
 - Is power supply easily accessible?
 - Condition of power cords and other connections.
 - Is power surge protection utilized?
- * Check the usage:
 - One shift, two shifts or three shifts per day.
 - Number of hours in one shift.
 - Number of working days in a year
- * Check the maintenance record and ascertain:
 - Is preventive maintenance adopted?
 - Number of complaints received.
 - Are any complaints repeated? How are they attended?
 - Are causes of complaints diagnosed?
 - Quantify the severity of complaints.
 - Whether all complaints are rectified?
 - History of breakdown with causes, if any.

Other matters to be taken into consideration: -

- * Certain fixed plants in building services are normally included in the valuation of land and buildings, such as, electrical installations for lighting, piping installations for sanitary purposes, lifts, acoustics etc. Whatever may be the purpose or basis of valuation, valuers are required to be consistent in their treatment of such "fixed plant".
- * A valuation of land and buildings will normally take into account those items of plant, machinery and equipment which primarily provide services to the land and building and which the open market regards as an integral part of the premises for purposes of letting, sale or loan security. Where such items are valued along with the land and building, they must be excluded from plant, machinery and equipment valuation.

The following items inter alia are to be treated as plant, machinery and equipment:

- * air-conditioning plant with ducting,
- * electrical installations for plant, machinery and equipment.
- * water and sewerage installations.
- * chimneys to boiler,
- * brick or concrete structures, foundation, and tanks associated with plant,
- * effluent treatment plant,

The following items inter alia are to be treated as land and building:

- * wells, tube wells, underground tanks, overhead tanks, roads.

Valuers are advised to discuss following Particular requirements with the company accountants and auditors in appropriate cases before carrying out detailed valuation:

- * Items 'held in trust':

Detailed scrutiny shall be carried out to establish as to which items are not the assets of the client but are 'held in trust'.

- * Patterns, jigs, moulds, instrumentation, piping, and other installation in process industry etc.:

As a general rule, press tools, dies, moulds, patterns, jigs, tapes, instrumentation, piping and other installation in process industry depending on type of industry under consideration shall be dealt and shown separately from the other items.

- * Administration records:

Administration records or copy rights in the form of design, drawing, etc. shall not form a part of valuation of plant, machinery, and equipment.

- * Motor vehicles (licensed for road use) shall be dealt with as separate item in the valuation process.

- * Plant, machinery, and equipment – work in progress (WIP):

These also shall be dealt with as separate item in the valuation process.

All valuation refers to a particular date. The estimate has to be on the basis that the relevant plant, machinery and equipment is ready for commercial production as on date of valuation and, therefore, the time required to bring the plant into commercial production has to be borne in mind, particularly while valuing large plants requiring several years to reach the state of commercial production.

5.1.3 Phase - III : Physical verification (survey and inspection)

Physical verification is already discussed earlier. (Refer 2.3)

5.1.4 Phase – IV : Valuation Approaches & Methods

The methods of valuation are: -

- Replacement/Reproduction cost new (depreciated replacement/reproduction cost) under cost approach
- Sales comparison under market approach
- Income capitalisation under income approach

Cost Approach (depreciated replacement/ reproduction cost):

Steps to be followed to arrive at final value are as under:

- Ascertaining replacement/reproduction cost new(a)
- Estimating depreciation and obsolescence(b)

Difference of (a) and (b) indicates depreciated reproduction/replacement cost.

Replacement/Reproduction cost new can be ascertained by any one of the following two methods:

- By floating inquiry
- By applying price index to historical/original cost.

Replacement/ Reproduction cost new calculated by floating inquiry and getting the quotation from the supplier is accurate. For this, it is necessary to provide proper technical specifications to the manufacturer or supplier of Plant, Machinery and Equipment.

The other method resorted to is applying a price index to the historical/original cost (trending the historical/original cost).

Valuer should ascertain Replacement/ Reproduction Cost New for majority of machinery by market inquiry and rest by applying price index.

Additional care to be taken in applying a price index:

- Many a time a second-hand machine is purchased for which first original cost (historical cost) is not available. In such cases, it is advisable to obtain a quotation.
- Price index to be applied to Ex-works purchase price of machine and to that all that duties and other charges on the date of valuation be added.
- Machine purchased in a particular accounting year remained under capital work in progress for more than one year and capitalized in a subsequent year of accounting. In order to calculate replacement, cost new in such cases, price index for the respective years of purchases to be applied to the historical costs and not to the year of capitalization.

- In case of imported machine extra care is to be taken, due to following factors: -

- difference in price index of country of origin of machine and location of machine.
- difference in rate of custom duty at the time of purchase and valuation.
- difference in currency rate at the time of purchase and valuation.

In such a case price index of country of origin is to be applied to ex-works price in foreign currency of machine under consideration, this will give trended cost in foreign currency; to this currency rate and custom duty prevailing as on valuation date are to be applied to arrive at Reproduction Cost New.

- Price indices available in the following manner are more reliable.

- * The machine price index prepared by obtaining the price year by year from various manufacturers. This will give a proper price index.
- * Valuers having their own data bank can present a credible and quantifiable valuation.

After ascertaining replacement/reproduction cost new, the next step is to calculate the depreciation and if obsolescence is present, the same needs to be computed appropriately.

Valuers have to encounter machines falling under following broad categories in actual practice:

- (a) Machines identical to the machine under consideration as available in the market from the original manufacturers.
- (b) Machines discontinued by the original manufacturer but identical machines manufactured by different manufacturers.
- (c) Old and outdated machines discontinued by the manufacturer.

Let us consider the machines falling under category (a) as referred above.

- In the case of these machines' valuers shall ascertain reproduction cost and depreciation to be calculated by any one of following methods applicable for plant, machinery, and equipment under consideration: -
 - * Straight line
 - * Decline and balance
 - * Observed deterioration

Machines falling under category (b) as referred above.

- Many a times, it is observed that the same machine by two different manufacturers is sold at different prices.

The reasons for the difference can be:

- * Brand name
- * Better quality
- * Percentage of rejection
- * Down time
- * Maintenance cost

If the products of the manufacturer other than the original manufacturer is well comparable with the original manufacturer; reproduction cost for a manufacturer other than the original manufacturer can be accepted. Otherwise, adjustments will have to be made with good judgments as there is no empirical formulae to provide the right answer. This is known as replacement in like kind and utility.

- In case of machines falling under category (c) it will be necessary to calculate obsolescence and for that purpose it will be necessary to carry out the comparison of machine under consideration with the latest available machine with regard to following factors:

- * technical specifications
- * direct wages
- * consumption of stores and space
- * consumption of energy
- * fixed cost
- * saving in space
- * down time

Summary of valuation for depreciated replacement cost

- (a) Replacement cost new estimated from the quotation or

Reproduction cost new obtained by applying price index to historical/original cost

less

- (b) Physical depreciation and obsolescence, if any, is equal to depreciated replacement cost.

Market Approach (Sales Comparison Method):

Details of machines already sold by the company to be obtained from the accounts department in the following format:

- * Description with complete technical specifications
- * Date of purchase
- * Date of installation
- * Purchase price
- * Sale price
- * Date of sale
- * Condition/Terms of sale
- * Condition (physical) of item at the time of sale

The above information helps in arriving at the following parameters:

- * Ascertaining remaining life
- * Establishing value of similar machines under consideration

Information on the following items is necessary for plant, machinery, and equipment under consideration:

- * Description with complete technical specifications
- * Date of purchase
- * Date of installation
- * Manufacturer and country of its origin
- * Purchase price
- * Any renovation/remodeling/upgradation carried out after installation so as to increase output etc.

The sale instances with above information with following additional information from market will be an aid to estimate value by sales comparison method.

- Date of sale
- Conditions(terms) of sale
- Condition(physical) at the time of sale

It is likely that there may be machines which have dissimilarity with regard to manufacturers. By using specifications of comparative models as manufactured by various manufacturers a guideline for comparison may be worked out.

It is also advisable to get information from reliable dealers of second-hand machines, or from privately created data bases.

Now-a-days information on price of secondhand machines are available on the internet. These data must be used judiciously.

It will be necessary to make adjustments to a sale price obtained as well as on information available from other sources. Because hardly any two identical machines are sold satisfying all conditions. Normally adjustments are required to be made on the following points:

- * Year of manufacture
- * Technical specifications and name of manufacturer
- * Time of sale and date of valuation
- * Market conditions at the time of sale and date of valuation
- * Location of actual sale and subject machine
- * Condition of the machine sold and condition of subject machine
- * Machine sold with accessories or without accessories
- * Terms and conditions of sale to ascertain whether it was a free sale or not.

Income approach (Income capitalisation method):

This method may be applicable in case of leased or rented plant, machinery, and equipment. Therefore, it is necessary to study the actual rental or lease agreements. If directly comparable rental transactions are not available, the rental or lease of a guideline plant, machinery and equipment has to be examined.

The following points need be considered while examining the various rental and lease agreements:

- * terms and conditions with regard to insurance
- * stipulations for repairs and maintenance
- * rent payable
- * type of penalty clause, if any
- * purchase clause with consideration
- * premium paid, if any
- * return provisions

For Valuation by this approach the following data need be confirmed:

- * rental history
- * history of maintenance with expenses incurred
- * general and administrative expenses incurred
- * marketing and advertising expenses incurred
- * taste and preferences of consumers for products manufactured by the plant, machinery and equipment
- * projected cost of repairs and maintenance under consideration

While deciding the rate of capitalization, the following points need be considered:

- * prevailing risk-free rate
- * amount of additional risk, if any
- * probable effect of inflation

Rate of capitalization for each industry will be different as each industry has its own inherent characteristics of performance in a marketplace.

Value of plant, machinery and equipment under consideration is derived in the following manner:

- * Normal income multiplied by appropriate present value discount factor is equal to discounted income.
- * Total of discounted income over remaining economic balance life equals to value by the discounted cash flow method.

5.1.5 Phase - V : Reconciliation

A valuation report shall contain

- The source of the instruction
- The purpose of the valuation
- The basis of the valuation
- The date of the valuation
- Reference to exclusions
- Any special instructions, unusual assumptions or omissions
- Reference to the treatment of local sales tax, duties and grants if required
- Comment on taxation implications
- Treatment of items with finance agreements and held in trust
- Caveats about limitations of responsibility-----
- A technical survey of condition not having been undertaken

- The verification of data and source of information not made
- Non-disclosure of material facts to the valuer

The valuer shall establish dialogue with the directors of the company for ascertaining whether any plant, machinery and equipment are subject to finance agreements. This is only to determine ownership.

In circumstances where a valuer is given definite instructions to adopt assumptions which would not normally be made or the valuer's usual investigatory procedure based on standards or sound practice of professional obligations are curtailed, it would be appropriate that reference to these assumptions and limitations be made in the valuer's report, including non-disclosure of material facts.

5.2 Important considerations:

The valuer shall take into consideration the following points as and when eventuality arises:

- * Value of plant, machinery and equipment will normally be on the basis of depreciated replacement cost as by and large plant, machinery and equipment encountered by valuers is of specialized nature for which there is very limited market for secondhand machinery and are rarely given on lease; except where a permanent diminution below this level has been recognized, in which case, value to the business will be the recoverable amount.
- * In the event of decommissioning, the costs of dismantling and demolition of a plant no longer required by the company shall be reflected in the report separately even if the same creates negative value.
- * Where plant, machinery and equipment are to be moved to another site and recommissioned to production, due allowance shall be made for costs of removal, reinstallation, and recommissioning including the cost of foundations where appropriate.
- * Factors which can affect future utilization of plant, machinery, and equipment, such as, finite material supply source, the limited life of buildings housing the plant, limited tenure of land and buildings, and limited planning consent all these shall be taken into account.
- * Where suitable market evidence exists, depreciated replacement cost should always be cross-checked with the cost of acquiring in the open market a similar asset with the same remaining economic working life as the existing asset after taking due account of costs of transport, installation, and other costs to bring the asset into operation, as far as possible.
- * Plant, machinery, and equipment assets based primarily upon depreciated replacement costs shall be expressed by the valuer as being subject to the adequate potential year-on-year profitability of the business having due regard to the value of the total assets employed and the nature of the operation.
- * A particular method to be adopted will depend on the circumstances under which the given plant, machinery and equipment is most likely to trade in the open market.

- * In a situation when the vendor has imposed a time limit for concluding the sale and such limit is not regarded as a reasonable period, the basis of valuation shall be on the basis of forced sale.
- * Value of the plant, machinery and equipment shall be estimated as an integrated package rather than simply as the sum of the individual machines valued. In such a valuation, due consideration has to be given to incompatibility of particular plant assets, imbalances between the capacity of different production sections, poor plant layout and other factors that affect overall efficiency.
- * Any other issues depending on facts and circumstances of the case may require to be considered to arrive at sound valuation.

5.3 The pilots plant tests the feasibility of a manufacturing process on a reduced scale. Once the main plant is operating the pilot plant may be superfluous and same shall be valued as surplus to the manufacturing facility at its highest and best use value. However, if the same can be used to develop a new process or effect improvement, then it should not be considered as superfluous but rather a part of research and development and/or quality control.

5.4 All industrial activities are subject to specific legislations and regulations, non-compliance with which may result in cessation of activity, pending suit. Cost to cure need to be calculated for non-compliance of regulatory measures.

VALUATION STANDARD (VS 6)

VALUATION FOR LIQUIDATION

6.1 Background

6.1.1 The explanation for terms Fair Value and Realizable Value

Fair Value means the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arm's length transaction.

Fair value requires the assessment of a price that is fair between two specific parties, taking into account the respective advantages and disadvantages that each party will get from the transaction. For example, synergies between two parties may mean that price that is fair between them is higher than the price that might reasonably be obtainable in the market. Therefore, Fair Value is often interpreted as a form of special value.

The example for this is given below:

There was a cement plant (X) for sale and the same was valued scientifically by a valuer and market value as on 31st December 2021 works out to say, 'A'. This value is estimated in such way that it can also be used for secured lending.

The owners of cement plant (Y) were interested in buying the plant (X). The sellers were tough bargainers, and they were aware of urgent need of the purchasers. The owner of cement plant (Y) purchased the plant at 1.75A.

Here the price paid is 1.75A and same is a special price paid by a party with its own subjective consideration.

This transaction at a price of 1.75A falls under the category of Fair Value defined earlier. However, market value remains at 'A' only and therefore fair value and market value cannot be used interchangeably.

In India, under Direct Tax Acts, words used are 'Fair Market Value' and not the 'market value' and hence there is a general feeling that 'Fair Market Value' indicates market value without unaccounted money. This is not correct at all. In USA and Canada the term used is 'Fair Market Value' (not the market value) where there is hardly any problem of unaccounted money.

Market Value / Fair Market Value / Open Market Value which are satisfying the criteria of 'willing buyer' and 'willing seller' have the same meaning as Market Value defined by Law Commission of India/IVS.

In case if any different definition is given in any statute, then in that case the definition given in the statute becomes market value for that statute.

Net Realizable Value means Market Value less all costs related to:

- Holding costs during expected marketing period,
- All selling costs related to disposal of the assets, and
- The cost of funds or rent loss during the anticipated marketing period.

Holding costs include, but are not limited to, real estate taxes, insurance of assets, liability insurance, utilities, and normal repairs and maintenance.

Selling costs include, but are not limited to, brokerage, commissions, closing costs.

It is pertinent to point out that holding costs and selling costs are not limited to what mentioned above but any other legitimate costs also need to be considered.

Realizable Value (RV) is the net amount available in the hands of the owner after meeting all the liabilities/costs in respect of sale.

6.1.2 Let us now examine what is the **meaning of the term ‘liquidation’ and the definitions of ‘liquidation value’ and other related terms** given by Insolvency and Bankruptcy Code 2016 of India (IBC), International Valuation Standards Council (IVSC) and Indian Banks’ Association (IBA).

- (i) **Liquidation**, in finance and economics, is the process of taking a business to an end and distributing its assets to the claimants. It is an event that normally occurs when a company is insolvent, meaning it cannot pay its debts when they are due.
- (ii) Definitions of liquidation value and other related terms as per Insolvency and Bankruptcy Board of India (Insolvency Resolution Process for Corporate Persons) REGULATIONS, 2016

Regulation 2(1) (hh) defines **fair value** as under:

“Fair value” means the estimated realizable value of the assets of the corporate debtor, if they were to be exchanged on the insolvency commencement date between a willing buyer and a willing seller in an arm’s length transaction, after proper marketing and where the parties had acted knowledgeably, prudently and without compulsion.

Market Value is defined by the International Valuation Standards Council (www.ivsc.org) as under:

Market Value is the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm’s length transaction, after proper marketing and

where the parties had each acted knowledgeably, prudently and without compulsion.

If Regulation 2(1) (hh) under IBC is read with definition of market value under IVS then one can infer that terms used as 'Fair value', 'Market Value' and 'Realizable Value' are having same meaning.

“Fair value” means the estimated <u>realizable value</u> of the assets of the corporate debtor, if they were to be exchanged on the insolvency commencement date....	‘Market Value is the estimated <u>amount</u> for which an asset or liability should exchange on the valuation date....
<u>...between a willing buyer and a willing seller in an arm’s length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.</u>	

The above discussion leads us to following conclusion:

Fair Value under IBC = Market Value under IVS = Realizable Value under IBC.

Realizable value is not defined under IVS for real estate as well as for plant and machinery.

Regulation 2(1)(k) of IBC defines **liquidation value** as under:

“Liquidation value” means the estimated realizable value of the assets of the corporate debtor if the corporate debtor were to be liquidated on the insolvency commencement date.

Liquidation Value defined under IBC also means the **realizable value under liquidation scenario.**

Fair value under Regulation 2(1) (hh) is **Realizable value** and **Liquidation Value** under Regulation 2(1)(k) is also the **Realizable value.**

This gives the impression that **fair value** is the **liquidation value.**

The term realizable value (RV) is under paragraph 6.1 earlier and according to that $RV = MV$, less cost involved in sale of assets.

Now, Regulation 35(1)(a) stipulates **how to determine fair value and liquidation value.**

Fair value and liquidation value shall be determined in the following manner:

the two registered valuers appointed under regulation 27 shall submit to the resolution professional an estimate of the fair value and of the liquidation value computed in accordance with internationally accepted valuation standards, after physical verification of the inventory and fixed assets of the corporate debtor;

On one hand, IBC defines terms like 'Fair Value' and 'Liquidation Value' and on other hand states that such values are to be computed in accordance with internationally accepted valuation standards, where such terms are defined differently. It is also interesting to know that the practice followed globally for estimating liquidation/forced sale values is different than laid down by International Valuation Standards Council (internationally accepted valuation standards).

IVSC has defined **Liquidation Value** referring to marketing time, etc. Definition of Liquidation value as per IVSC will be found later.

So far as marketing time is concerned, it varies for wide spectrum of real estate/plant and machinery each having its own characteristics like nature, design, configuration, and marketability.

There is no real estate/plant and machinery wise literature available which gives the information for marketing time. But it is the skill of the expert of respective fields.

(iii) Definitions of liquidation value and other related terms as per International Valuation Standards Council

According to International Valuation Standards 2022 published by the International Valuation Standards Council (Page nos.6, 26, 28, 29 and 30 of IVS 2022) - **Liquidation value** is the sum of money that would be obtained on the sale on piecemeal basis. This will take account for the following:

- a) the costs of bringing the assets into saleable state
- b) the costs of removal

Liquidation value can be determined under two different approaches:

- (i) an orderly deal
- (ii) a forced deal

(i) an **orderly deal** means:

- It has a typical marketing period which is reasonable but less than the time required as per market value definition to find a buyer.
- The reasonable time will depend on type of assets and conditions prevalent in the market.
- **The vendor is compelled to sell on as is where is basis.**

(ii) a **forced deal** means:

A deal with a reduced marketing period.

- The buyer is under the compulsion to sell, and hence proper marketing time is not possible, and purchasers may not be able to undertake proper due diligence.
- It is necessary to identify the reasons for the constraints on the seller if an indication of price obtainable under forced sale circumstances is required and also the consequences of failing to sell in the specified time by setting out appropriate assumptions.

The forced sale reflects most likely price that a particular asset is likely to get under all of the following circumstances:

- Consummation of a transaction within a short period.
- The asset is exposed to market circumstances prevalent as of the date of assessment or assumed timescale within which the deal is to be finished,
- Both the purchaser and the vendor are acting carefully and knowledgeably,
- The seller is under pressure to sell,
- The buyer is typically determined,
- Both parties are behaving with understanding that what they have considered is in their best benefits,
- A typical **marketing effort is not viable** because of the brief short time.

According to IVS

- (a) *Liquidation Value is to be estimated on piecemeal basis.*

There is no clarity on what the meaning of 'piecemeal' is.

A company may possess tangible assets consisting of land, buildings and plant and machinery. Does 'piecemeal' mean land, buildings, and machinery each is to be sold separately?

There may be several buildings and several machineries on one plot of land. Does it mean each building and machine to be sold in piecemeal?

Similarly, a company may have several parcels of land with buildings and machineries located at more than one location, then what the meaning of **piecemeal** basis is?

- (b) The costs of bringing the assets into saleable state to be considered.

The vendor is compelled to sell on as is where is basis under orderly liquidation. Then what is meaning of directing the valuers to estimate the costs of bringing the assets into saleable condition?

The valuers are also directed to estimate cost of removal. Again, how is this relevant when assets are sold on as is where is basis?

- (c) Under the forced sale scenario, the valuers are directed to identify the reasons for the constraints on the seller, if an indication of price obtainable under forced sale circumstances is required and also to identify the consequences of failing to sell in the specified time by setting out appropriate assumptions.

The valuers are working as per the instructions received from the clients. Then how valuers are concerned on the reasons for constraints of seller/clients and consequences of failing to sell?

6.1.3 The views of **Australian Property Institute (API)** and **Property Institute New Zealand (PINZ)** and **Singapore Institute of Surveyors and Valuers (SISV)** on forced sale value are given below:

API and PINZ

- (a) The terms '**forced sale value**' and/or '**distress sale value**' are

considered improper and not backed by the institutes. However, advice prepared by a valuer estimating a likely price realizable, based on an agreed set of circumstances may be provided, subject to agreeing and detailing all assumptions and necessary qualifications.

(b) Market constraints inconsistent with market Value.

- (c) When an estimate of realizable price is made with market constraints (commonly known as forced sale value) is not consistent with market value and represents likely price achievable in a 'non-market' situation.

This estimate is with special assumptions such as:

- Reduction in the marketing period than normally required
- Seller is not a willing seller.

- (d) It further says in any event if the Valuer is requested to carry out valuation with constraints then in that event the Valuer and clients should be aware that there is a difference in the market value and price realizable under constraints and it must be further made clear that the advice is not on the valuation but an opinion based on client's specific instructions whereby Valuer will have to rely on his experience and understanding of the market with the facts and circumstances on hand.

SISV

As stated in the 'Valuation Standards and Guidelines' by Singapore Institute of Surveyors and Valuers, **the Forced Sale Value "is generally not easily predictable by a Valuer because of the nature and extent of subjective and conjectural assumptions that must be made in formulating such an opinion. Therefore, Valuers shall not provide a Forced Sale Value unless specifically requested by the clients. In all such instances, the Valuer shall provide the assumptions on which such value is based."**

- 6.1.4** There is a reference of **realizable value and distress value** in the literatures of IBBI and IBA.

According to IBA Handbook of Valuation 2011 definitions of liquidation value related terms are as under:

- (a) **Orderly Liquidation Value is Realisable Value**, and it further says that the sale to take place under reasonable period of time and seller is compelled to sell.

(Note: Under IBA definition of orderly liquidation value seller is compelled to sell and there is no mention of price realized from a properly advertised and conducted public auction. But IBA under forced

liquidation value has mentioned price realized from a properly advertised and conducted public auction as mentioned under (b) below.)

- (b) **Forced Liquidation Value is Distressed Value** that could be typically realized from a properly advertised and conducted public auction, with the seller being **compelled to sell with a sense of immediacy** on as is where is basis.

(**Note:** According to IBA under orderly liquidation value there is no reference of price realized from a properly advertised and conducted auction but under forced liquidation there is a reference of price under sale by auction. But according to IVSC under forced sale a normal advertising/ selling/marketing effort is not feasible due to the short exposure time.

6.1.5 The confusion created by the definitions given by various institutions mentioned earlier:

- (a) IBA prepared the Handbook in 2011 by adopting various terms from IVS 2007. Subsequently IVS has revised various terms, but IBA has not periodically revised as per IVS.
- (b) IBC directs valuers to estimate fair value (i.e., Realizable value as per IBC) and liquidation value computed in accordance with internationally accepted valuation standards.

In fact, **Fair Value** means the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arm's length transaction.

Fair value requires the assessment of a price that is fair between two specific parties, taking into account the respective advantages and disadvantages that each party will get from the transaction. For example, synergies between two parties may mean that price that is fair between them is higher than the price that might reasonably be obtainable in the market. Therefore, Fair Value is often interpreted as a form of special value.

- (c) Realizable value (RV) = Market Value of Asset – Cost selling of the asset.
- (d) According to IBC, RV = Market Value defined by IVS.
- (e) As per Insolvency and Bankruptcy Board of India (Insolvency Resolution Process for Corporate Persons) REGULATIONS, 2016:

Fair value under Regulation 2(1) (hh) is **Realizable value** and **Liquidation Value** under Regulation 2(1)(k) is also the **Realizable value**.

This gives the impression that **fair value** is the **liquidation value**. This is not correct.

(f) Realizable Value is not defined in the IVS.

It is the valuer's job to study the market as on the date of valuation and give the opinion as to best price obtainable depending on the time within which the transaction is expected to be completed by the seller.

6.2 In view of the facts mentioned above this standard covers the following topics:

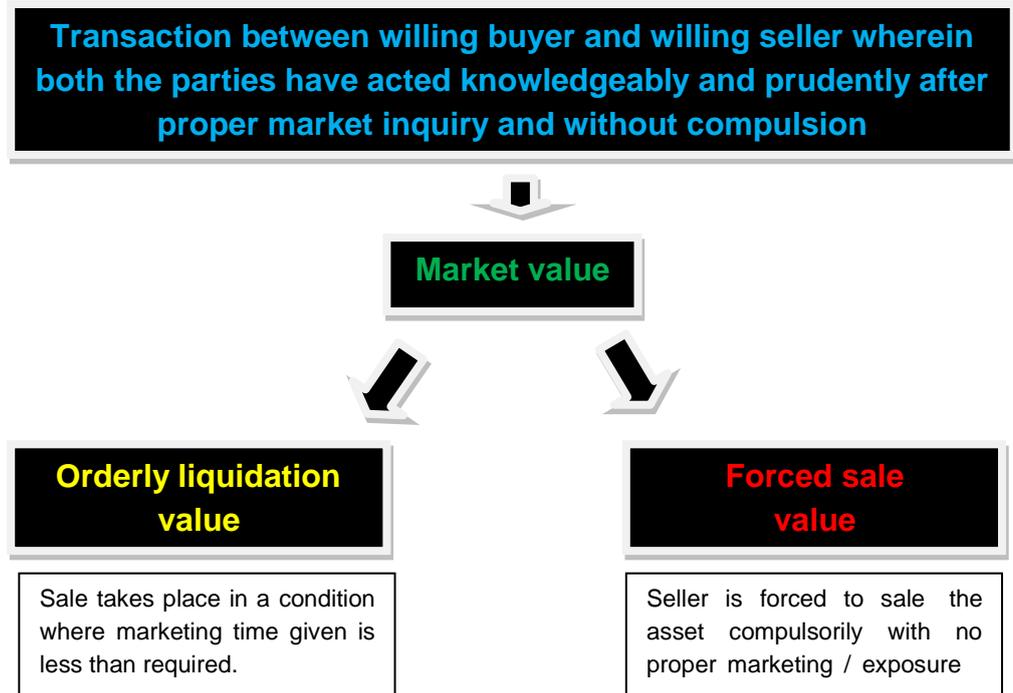
- Liquidation
- Fair Value
- Realizable Value
- Market Value
- Orderly Liquidation Value
- Orderly Liquidation Value in situ
- Forced Sale Value
- Valuer's views on special purpose machines or any other machine for which there is hardly any second-hand market
- Clients to instruct valuer for time limit in absence of availability of industry wise literature which gives the information for marketing time required to sale plant and machinery for wide spectrum of industries under various scenario.

6.2.1 Liquidation in finance and economics, is the process of taking a business to an end and distributing its assets to claimants. It is an event that normally occurs when a company is insolvent, meaning it cannot pay its debts when they are due.

6.2.2 The terms Fair Value and Realizable Value:

These terms are defined under paragraph 6.1 earlier.

6.2.3 The terms Market Value, Orderly liquidation value and Forced sale value, are explained by a chart below.



Market Value definition is given earlier.

Orderly liquidation value is an estimate of the gross amount that the tangible assets would fetch in an auction-style liquidation with the seller needing to sell the assets. The term 'orderly' implies that the liquidation would allow for a reasonable time to identify buyers, and the seller would have control of the sale process. The marketing time is less than required for a sale as per market value definition and more than required under forced sale condition.

Orderly liquidation value in-situ

Orderly liquidation value in-situ is an opinion on value (before any sale expenses) which the assets could realize if sold by negotiated price (private treaty), sale at a properly advertised and professionally managed liquidation sale, by a seller obligated to sell, over an extended period of time **depending on nature of specialization of plant, machinery and equipment**. However, the marketing time is less than required for a sale as per market value definition and more than required under forced sale condition. Orderly liquidation value in-situ assumes consideration of the present economy and viability of the entire facility being sold intact, along with all related equipment necessary to continue present processing operations. It further considers that market value, as normally defined, could not be obtained owing to restrictions of time.

The orderly liquidation value in situ concept makes the following assumptions:

- The market served by the company utilizing plant, machinery and equipment remains a profitable one.
- Failure to secure a projected larger market share caused due to management failure and not because of product line.
- The product is in demand in the market and demand was not the cause of failure.
- The plant, machinery, and equipment, as installed, can profitably operate to manufacture the current products.

However, projecting income or profits after a failure is very difficult due to the following unknowns:

- Though cause(s) for failure are poor management decisions. But that may also include lack of quality control or manufacturing support.
- Business considerations or new management plans that may make the changes in current product lines.
- Future economic or functional obsolescence of varying degrees.
- Other considerations that might change assumed risk used in the development of capitalization or yield rates used in the Income Approach.

Forced sale value is an estimate of the gross amount that the tangible assets would fetch when the seller is forced to sell the assets compulsorily without proper marketing time / exposure time. There is urgency to sell, and the seller does not have control of sale process (generally the banks / courts / receivers, etc. and thus **the seller is not a willing seller**).

For estimation of final value time plays an important role under orderly liquidation or forced liquidation concept. The forced liquidation value concept reduces time to a minimum and, therefore, price realized reflects this. An orderly liquidation concept can realize higher prize due to the increased time involved and by using an experienced liquidator.

So far as price obtainable in the forced sale condition is concerned, it is very difficult to predict because one is attempting to define a moving target. Is forced sale the one which is expected to take place within 3 months, 2 months, 1 month, 1 week or 1 day?

In case of liquidation value for plant, machinery, and equipment the valuation mainly under following two scenarios is generally relevant:

- Existing use in-situ
- Existing use ex-situ

In absence of availability of industry wise literature which gives the information for marketing time required to sale plant, machinery, and equipment under different situations like '**willing buyer**' and '**willing seller**' and **orderly liquidation** and **forced sale** for wide spectrum of plant, machinery and equipment used in the industries it is necessary that valuers are instructed by the clients on time limit by which transaction for sale is to be completed.

In case of special purpose machine and in case of any other machine if there is hardly any second-hand market then in that case Valuer's views on following is necessary:

- (a) If a machine is specially designed, then degree of specialty.
- (b) Does it suffer from limited marketability? If yes, how much?

Likely difference in realizable price if purchaser is going to use at the same place or at a different location.

VALUATION STANDARD 7 (VS 7)

VALUATION REPORTS

- 7.1** The valuation is communicated to the Client in the form of a report. As the Client acts on Valuation Report or certain third parties without any reference to the Valuer (unless a specific reservation has been made), it shall be clear and not misleading.

The valuation report must convey to the reader a clear understanding of the opinion expressed by the Valuer, the basis of the valuation used and the assumptions, limiting conditions and information on which it is based.

- 7.2** The valuation report must provide sufficient information so that who read and rely upon the report can understand its data/information, reasoning, analyses and conclusions. It must state any assumptions and limiting conditions upon which the valuation is based.

- 7.3** The General Structure of the Valuation Report set forth in this standard may constitute the basic outline and content of a valuation report. This format provides the client with the best method for understanding the Valuer's reasoning and conclusions and assists the valuer in analysing the problem logically.

The amount of data to be included in a report depends on the type of property valued and the judgement of the valuer. A report that fails to convey necessary background information cannot provide a sound basis for decision making. Subheadings should be used to organize the data to aid both the client and the valuer.

The reasons leading to the Valuer's conclusions should be clearly stated to help the client understand the report.

The valuation report provides the estimates and conclusions necessary to meet the objectives of the client.

7.4 General Structure of a Valuation Report

(a) Parts of a Report

- Instructions
- Purpose of valuation
- Executive summary
- Collection of data and narration of facts
- Analysis of information and data
- The conclusion
- Supporting material i.e. statements, tables, charts, graphs, plans, maps, photographs etc. forming annexure to the main descriptive report.

(b) The report should also include

- (i) Basis/Premise of value and its definition
- (ii) Assumptions and limitations
- (iii) Method of valuation adopted
- (iv) Caveats

(i) The definition of value

In the last 60 years, in a number of land acquisition cases the Supreme Court of India has held that the '**market value**' must satisfy the '**willing buyer**' and the '**willing seller**' concept. Similar view is expressed by the Law Commission of India in their report of the year 1958 given under VS 3.

As a general rule, where no definition of the 'market value' is given in a report then it is to be presumed that the standard definition of market value satisfying the 'willing buyer' and the 'willing seller' mentioned above has been adopted.

In cases, where the 'value' estimated is different from the standard definition, it must necessarily be clearly defined in a report.

(ii) Assumptions and limitations

Limiting conditions will mostly arise in collection of information and data where a valuer is unable to collect and verify the same. In such cases, the limitations must be stated along with the assumptions made for limiting conditions. In certain circumstances, the value statement can also be subjected to qualifying clauses. Utmost care should, however, be taken to ensure that such qualifying clauses shall not, in any case, render value statement almost meaningless.

If there are any limiting conditions regarding the use of a report, then they must be clearly mentioned.

(iii) Method of valuation to be adopted

The selection of a method of valuation is the prerogative of the valuer. Based on the facts and circumstances of each case, the valuer shall select appropriate method of valuation.

It is not necessary to estimate market value of plant, machinery and equipment by adopting all the three approaches to valuation, unless

the valuer himself desires to cross-check with alternative approach. In any case, however, temptation to arrive at an average value should always be scrupulously or strictly avoided.

Valuation of tangible assets involves three basic approaches:

- Market
- Income and
- Cost

(iv) Caveats

Caveats are essential part of instructions, setting limits to the extent of contract between the parties. Caveats are especially in respects of

- confidentiality
- physical
- information
- special circumstances

Confidentiality

In giving and accepting instructions, a contract has been created whereby a professional owes certain duty to a client. It is necessary to make the extent of such liability clear and limited to the client only. While writing a report it must be borne in mind as to how the data and information in a report will be used especially when such data and information are passed on to professional advisors of the client or third parties. In order to limit the liabilities, it should be stated in the report that –

The report is confidential to the client for specific purpose to which it relates. It may be disclosed to other professional advisors assisting the client in respect of that purpose only, but the client shall not disclose the report to any other person.

It should also be clearly stated that –

No responsibility can be accepted to any third party including the professional advisors in respect of whole or part of the report.

Further, considering the eventuality of litigation in respect of the subject matter of valuation, it is advisable to include a clause in the report that –

The valuer does not agree to any appearance or giving testimony / evidence in any court, any hearing or any other proceedings by reason of rendering this report **unless** prior arrangements have been made in that respect.

Physical

An inspection of the assets to be valued is a '**must**' for a valuer. However, any latent defects, i.e. defect, which cannot be normally revealed, even after thorough search of record and site inspection, will remain hidden. Therefore, a valuer may state that no investigations were possible for latent defects, if any.

In case a valuer comes to know from the inspection and going through the records more detailed investigation and analysis are essential then same can be reported advising the clients to further look into such aspects.

Information

In carrying out the work as per instructions, several types of data and information are required to be collected from various sources. While data and information regarding physical condition of assets, fixed asset records, records of maintenance, licences to run the industries are collected at the time of site inspection, the data regarding prices are collected from manufacturer/suppliers of new and second-hand equipment.

Further, it is advisable to quote the source of information in the report. Any information, if attributed to its source, creates no liability for a valuer unless it is so erroneous or misleading, which a reasonably competent professional is expected to realise.

Any asset or its use in contravention of any statutory requirements or otherwise, any statutory notice served etc. is a matter, which usually affect the value of plant, machinery and equipment and these fall under regulatory measures.

A valuer interprets legal and statutory documents on the basis of his academic and professional education in valuation.

He is, however, not held responsible for finer points of law and in cases involving finer points of law; a client may be clearly advised to seek a legal opinion.

Special Circumstances

In order to continue the industrial operation, it is essential to renew the licences/permits periodically. In case of any default needs to be clearly stated in a report.

The client's attention may be drawn in respect of the following issues:

- validity of licences
- condition requiring repairs/immediate repairs
- outstanding liability on account of regulatory measures

Caveats are to stated -

- for preventing liabilities to third parties and misuse of a report by the client or other persons
- to limit the responsibility of a valuer in respect of the quality of information supplied by others as well as for finer points of law
- the task being limitless, to set limitations to the task.

The limits to be established by caveats. However, same must be relevant to the client's needs and practice in terms of the task that can be undertaken by a reasonably competent valuer, otherwise it will be of little or no benefit to the client. By pointing out the limitations of the report in certain specific matters, the caveats in general also guard the client against misinterpretation of the report and thereby being misled. A reasonably qualified and experienced professional valuer, in fact, needs no other safeguard than that provided by his professional integrity and honesty.

7.5 It is to be borne in mind by the valuer that while performing his duty he shall:

- Completely and understandably set forth the valuation in a manner that will be not be misleading.
- Provide sufficient information to fully understand its data, reasoning, analyses, assumption and limiting conditions.

7.6 The services of valuers are mainly required for following purposes:

- Insurance
- Financial reporting
- Impairment
- Sale and leaseback
- Due diligence

- Mergers and acquisitions (including purchase price allocation)
- Litigation support
- Disposal
- Capital raising
- Corporatization and privatization
- Highest and best use analysis reporting
- Stamp duty

The Valuation Procedure is explained in detail under Valuation Procedure in Standard 5. The valuation process carried out for conducting any assignment by a valuer need to be reported in writing.

Note: The minimum requirement on the content of the report is highlighted hereinafter. This is not exhaustive. The content of the report and information to be reported will depend upon the nature of assignment.

The report may broadly divided into following two parts:

- | | | |
|-----------|---|-------------------|
| Part – I | - | Executive Summary |
| Part – II | - | Annexures |

The **Executive Summary** will give the gist of the exercise in about 5-10 pages so that it can serve the purpose of the management.

The content of Executive Summary:

- Identity of the valuer
The letterhead of the valuer must show the qualifications of valuer to perform the assignment.
- Date of report
The date on which report is submitted.
- Instructions
The terms of reference by the clients showing details of the plant, machinery and equipment to be valued with the location(s).
- Date
The date on which the value of plant, machinery and equipment is required which in most of the cases is prior to date of report.
- Purpose
The purpose for which instructions is given e.g. Insurance, Sale/Purchase, etc. as the case may be.

- The checklist submitted and information received.
- Company profile
 - History, product and other activities.
- Brief manufacturing process in case of industries involved in manufacturing activities.
- Process layout / Machinery layout
- Definition of market value used
 - To suit the terms of reference.
- Basis of valuation (As per the terms of reference)
 - Existing use in-situ
 - Existing use ex-situ
 - Alternative use in-situ
 - Alternative use ex-situ
 - Scrap value
- Procedure adopted
 - How the exercise is conducted
- Method of valuation
 - Cost / Income / Market approach
- Sample calculation
 - Based on the approach selected a sample calculation showing how the value is estimated to be given here.
- General remarks
 - Here the valuer shall narrate the following issues, as when relevant :
 - Estimated economic balance life of machinery with respect to estimated balance life of building and unexpired period of lease on which the buildings are constructed.
 - Availability of raw material with respect to estimated balance life of machinery at the site.
 - Compliance of applicable regulatory measures in respect of assets under valuation like Labour laws , Electricity Act, Environment laws or any other act time being in force applicable to industry under consideration.
 - In case of valuation by cost approach it is to be reported that Depreciated Replacement Cost (DRC) is subject to potential profitability and report accordingly.

- Statement showing installed capacity, actual production and capacity utilization for last 3 years and comments on the same.
- Any observations from inspection carried out worth reporting to be brought to the notice of the client like –
 - Condition of power cords or any deficiency on power connection.
 - Usage – No. of shifts per day, No. of hours per shift and total No. of working days in a year.
 - Inspection of maintenance records – whether preventive maintenance adopted, how the complaints are attended, past history of breakdown with causes.
 - Electrical installations for lighting, piping installation for sanitary purpose fall under building; however if this is included in machinery than to be reported accordingly.
- The following items inter alia are to be treated as plant & machinery:
 - air-conditioning plant with ducting
 - electrical installations for plant, machinery and equipment
 - water and sewerage installations
 - chimneys to boiler
 - brick or concrete structures, foundation, and tanks associated with plant
 - effluent treatment plant
 - alarm installations
- The following items inter alia are to be treated as land and building:
 - wells, tube wells, underground tanks, overhead tanks, roads, etc.
 - Assumptions and limiting conditions
In this part valuers shall discuss the limiting conditions under which the assignment is performed and assumptions made for such limiting condition.
 - Summary of Valuation
The summary of values estimated.

Annexures will include details of plant, machinery and equipment valued along with supporting documents used in estimating the value.

- Statement showing plant, machinery and equipment installed in various sections/ departments along with technical specifications, account reference no. with market value or DRC based on the approach used.
- Computation of obsolescence, if any.
- Checklist submitted / information received.

Computation of Reproduction Cost / Replacement Cost which will include all direct and indirect costs. In case of market approach comparison of machine under consideration with second-hand machine available in the market with regards to relative merits and demerits to estimate market value. Whereas income approach will be based on the income derived from all the machines under consideration.

Brief profiles of members of Standards Committee

(a) **Rashmi K. Gandhi**

- Graduate in civil engineering from BVM Engineering College, Sardar Patel University, Vallabh Vidyanagar, Gujarat
- Awarded H.P. Gold Medal by Sardar Patel University for securing First rank in B.E.(Civil) examination.
- Founder Member – Centre for Valuation Studies, Research and Training Association (CVSRTA)
- Fellow – Institution of Valuers
- Member – Institution of Engineers
- Former Council Member – Institution of Valuers
- Practicing civil engineer, architect and valuer since 1961.
- Designed all types of structures –residential, factories and colleges
- Government registered valuer of real estate with more than 60 years of experience of valuation of wide range of properties-residential, commercial and industrial for large corporate like Bajaj, Mafatlal, Pittie, GP Goenka, Britannia and many others
- Appeared as an Expert Witness in number of valuation assignments and clients derived benefits.
- Author of book-Elements of Valuation of Immovable Properties
- Former Editor, Indian Valuer and conducted popular Question/Answer column 'In my opinion'
- Presented more than 50 papers/articles in conferences and lectured throughout India.
- Member of a team of valuers pioneer in introducing academic course in RE valuation in Sardar Patel University, Shivaji University
- Assisted the universities in preparing study material for real estate valuation
- Helped Insolvency and Bankruptcy Board of India (IBBI) in establishing examination system for their examinations in the disciplines of land and building and plant and machinery and prepared study material running in 4000 pages for both these disciplines with the help of members of CVSRTA.

(b) Kirit P. Budhbhatti

- Graduate in electrical engineering from BVM Engineering College, Sardar Patel University, Vallabh Vidyanagar, Gujarat and have passed an examination in valuation of real estate conducted by Institution of Surveyors (India).
- Former President – Institution of Surveyors
- Former Council Member – Institution of Valuers
- Founder Chairman (1998-2007) International Plant and Machinery Valuation Conference Committee (IPMVCC). The IPMVCC organized the first conference exclusively on PME valuation in Anand, Gujarat, India in 1998 subsequently once in two years in KL, Sydney, HK, London respectively and thereafter other parts of the world.
- Founder Member – Centre for Valuation Studies, Research and Training Association (CVSRTA)
- Fellow – Institution of Surveyors
- Fellow – Institution of Valuers
- Member – Institution of Engineers
- Government registered valuer of real estate as well as plant & machinery with more than 50 years' experience. Valued wide spectrum of industries for various purposes for Hindustan Unilever, Murugappa, TATA, RPG, Arvind Mafatlal etc.
- Author of books on plant and machinery as well as real estate valuation
- Involved in preparing basic document for International Valuation Standards Committee (IVSC) on Plant, Machinery & Equipment Valuation in 1994-95
- Delivered lectures in Asia, Africa, America, Australia, and Europe
- Pioneer in introducing academic course in PME valuation in Sardar Patel University, India which is unique in the whole world and real estate valuation in India.
- Assisted the universities in preparing study material and teaching both for real estate and plant & machinery valuation courses.
- Helped Insolvency and Bankruptcy Board of India (IBBI) in establishing examination system for their examinations in the disciplines of land and building and plant and machinery and prepared study material running in 4000 pages for both these disciplines with the help of members of CVSRTA.
- Former Member-Committee appointed by the Govt. of India for regulating valuation profession.
- Queensland Government Australia accepted his suggestions for improvement

in plant and machinery valuation profession.

- Recognized by BVM Engineering College as – JEWEL OF BVM
- Yoga Teacher and Sadhaka of Yoga Institute-Mumbai-400 055

(c) Nelson J. Macwan

- Graduate in civil engineering from BVM Engineering College, Sardar Patel University (SPU), Vallabh Vidyanagar, Gujarat and law from SPU
- Post graduate in valuation of plant & machinery as well as real estate from BVM Engg. College and ISTAR, SPU respectively
- Founder Member – CVSRTA
- Member – Institution of Surveyors
- Fellow – Institution of Valuers
- Academician – Lecturer in Post Graduate courses in valuation of plant & machinery as well as real estate offered by Sardar Patel University (1996-2008) and former visiting faculty for Master of Valuation (Real Estate), Shivaji University, Kolhapur
- Wide spectrum of industries valued for various purposes (2008 – till today) for Murugappa, Elecon, Hindustan Unilever, etc.
- Prepared study material for PM and RE valuation courses
- Presented papers in real estate valuation conferences
- Member – Multi Faculty Board for Master of Valuation (Real Estate), Shivaji University, Kolhapur
- Helped Insolvency and Bankruptcy Board of India (IBBI) in establishing examination system for their examinations in the disciplines of land and building and plant and machinery and prepared study material running in 4000 pages for both these disciplines with the help of members of CVSRTA.

(d) Sundeep H. Bikhchandani

- B.E (Hons) degree from BVCOE, Mumbai University.
- Diploma in Business Management from Narsee Monjee Institute of Management Studies.
- Masters of Valuation Real Estate and is a recipient of Gold Medal awarded by Sardar Patel University for securing 1st rank in post graduate degree course in Valuation of Real Estate.
- Master of Valuation in Plant & Machinery.
- Regular Speaker at various seminars and has been invited by universities, Banks, NBFCs for providing training programs in the area of valuation and Technical Due-Diligence of Real Estate Projects.

- Visiting faculty at Niranjani Hiranandani School of Management and Real Estate, Teaching MBA (Real Estate)
- Presented a paper on obsolescence in 5th International PME Conference in London in 2007.
- Founder Member – CVSRTA
- Member – Institution of Surveyors
- Fellow – Institution of Valuers
- Member – Royal Institute of Chartered Surveyors (RICS)
- Consultants for various Real Estate Funds, NBFC and Banks

(e) Jigesh J. Mehta

- Post-graduate in civil engineering and Graduate in law
- Post-graduate in valuation of plant & machinery
- Member – CVSRTA
- Fellow – Institution of Valuers
- Authored several articles in monthly journal of Institution of Valuers
- 25 years' experience in Valuation and executed the large assignments for corporate including Reliance Industries, Murugappa Group, ABG Shipyard Ltd., Hindustan Unilever Ltd., Breweries.

(f) Sunitkumar Gupta

- Post-graduate in valuation of Real Estate
- Co-author of Stamp Duty Ready Reckoner for last 25 years
- Co-author of Property Tax Ready Reckoner.
- He has interviewed Senior Government Officials of Stamp Duty and Registration Department which was published in the Times of India and other leading News papers of Mumbai. Leading Newspapers relay on his opinion in the matters of stamp duty, registration and property tax.
- Contributed more than 25 articles on stamp duty & registration which were published in various leading new papers of Mumbai.
- Spoke on stamp duty & registration related subjects at many of the seminars & lectures organized by Western India Regional Council of Institute of Chartered Accountants of India
- Specialized in valuation of immovable property in Mumbai as on 1-4-1981 & 1-4-2001.
- Worked as associate to Mr. Santosh Kumar, very prominent and senior Govt. Regd. Valuer, for the valuation of very high value properties. like office premises in World Trade Centre at Colaba, UTI Tower at Bandra, Simplex Mill at Mahalaxmi etc.

PART- II : GUIDANCE NOTES

Guidelines on Valuation of Plant, Machinery and Equipment published by CVSRTA containing following topics:

1.0 Various terms in realm of PME Valuation

- Plant
- Machinery
- Equipment
- Cost, Price, Value and Worth
- Market value
- Reproduction cost new and Replacement cost new
- Depreciation
- Recoverable amount
- Value-in-exchange
- Value-in-use
- Value in existing use
- Value in alternative use
- Value in-situ
- Value in ex-situ
- Value to the buyer and value to the seller
- Highest and best use
- Liquidation, forced sale value
- Auction realizable value
- Salvage value
- Scrap value
- Reinstatement value
- Indemnity value
- Valuation maxims
 - Physical
 - Legal
 - Social
 - Economic
 - Utility
 - Marketability and Transferability
 - Scarcity
 - Present worth of future benefits
 - Intangible rights

2.0 Earnings of an undertaking

3.0 Role, duties and functions of a PME valuer

- Role
- Duties and functions

4.0 Micro-identification

- Fixed asset register
- Collection and verification of data

5.0 The steps involved in preparing final inventory

6.0 Macro-identification

7.0 Depreciation

8.0 Obsolescence

- Technological
- Functional
- Illustration on computation of technological and functional
- Economic

9.0 Approaches to value – cost, market and income

10.0 Phases of valuation procedure

- Terms of reference
- Strategy of valuation
- Physical verification
- Data collection and valuation analysis
 - Cost approach
 - Market approach
 - Income approach
- Reconciliation

11.0 Important considerations

12.0 Illustrations

Illustration – I

Functional obsolescence and imbalance in different production sections

- Effect of demand on value
- Cost to cure functional obsolescence and imbalance in different production sections
- Functional obsolescence and imbalance in different production sections
- important consideration for bankers

Illustration – II

Valuation - ongoing concern basis for mergers and takeovers

- 'Part', 'Fraction' and 'Whole' Valuation
- Depreciated replacement cost (DRC) value?
- Golden Principle of valuation
- Surplus assets
- Going concern and fair return
- Reference of a court case
- Productive assets

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- Identification of non-productive/surplus assets
- Identification of off-balance sheet assets

- Additional issues for disinvestment, mergers and acquisitions
- Effect of non-compliance of regulatory measures

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- Insurance Valuation under Indian Context
 - Contract of insurance
 - Fire insurance covers
 - Industrial All Risk Policy
- Indemnity
 - Principle of indemnity
 - Insurable interest
- Utmost Good Faith
- Various add on covers/clauses of insurance policy important from the point of view of valuers and insured
 - Add on cover for omission to insure additions, alterations or extensions
 - Add on cover for start-up expenses
 - Designation of property clause
 - Reinstatement Value (RIV) clause/policy
 - Example of RIV
 - Condition of average
 - Local authority's clause
 - Escalation clause
 - Architects', Surveyors' and Consulting Engineers' fees clause
 - Debris removal clause
- Machinery break-down policy
- Boiler and Pressure Plant policy
- Illustration on computation of insurable value

- **Impairment**

- What is impairment?
- Impairment loss from accounting view point
- International Accounting Standard (IAS 36) and Indian Accounting Standard (AS 28)
- Identification of impairment
- Illustration on impairment

- **Bank Finance (Security against loan)**

- Secured Assets as per S.5(n) of Banking Regulation

Act, 1949

- **Liquidation Value**
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 - Illustration showing difference amongst market value, orderly liquidation value and forced sale value
 - Orderly liquidation value in-situ
 - Illustration on price realized in existing use in-situ
 - Illustration on price realized in existing use ex-situ

Check-list on valuation of plant, machinery and equipment for users of valuation services.

GUIDELINES

ON

VALUATION OF PLANT, MACHINERY AND EQUIPMENT

Prepared by

Centre for Valuation Studies, Research & Training Association, India



First Edition June, 2015

IMPORTANT NOTICE

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Price:

₹ 900/-

US \$ 55/-

Euro 45/-

Publisher:

Kirit P. Budhbhatti

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Printed in India at –

Anand Press, Opp. Anand Railway Station, Gamdi, Anand – 388 001.

ISBN 81 – 901523-6-X

To err is human. Improvement is a continuous process. Therefore, any mistake, error or discrepancy noticed may be brought to our notice, which shall be taken care of in the future editions.

Centre for Valuation Studies, Research & Training Association, India

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Preface

Centre for Valuation Studies, Research and Training Association (CVSRTA) considers itself lucky to do pioneering work in bringing out an exhaustive document on the subject which will be beneficial to professionals across the globe.

During my professional practice, I had to develop a fund of expertise within myself with fragments of valuable information on valuation of plant and machinery scattered over literature from all around the globe, mostly in journals, Guidance Notes etc. published by professional bodies like the Royal Institution of Chartered Surveyors - London (RICS), American Society of Appraisers, Institute of Plant & Machinery Valuers, New Zealand and the like. My association with the International Valuation Standards Committee (now known as International Valuation Standards Council), as a representative of the Institution of Surveyors (India) stimulated the need for a vigorous exercise to collate the mass of information on various topics on valuation of plant and machinery into a well-coordinated text book. This was all the more necessary for the students of the post-graduate degree course introduced in 1994 in BVM Engineering College (now offered by ISTAR), Sardar Patel University, Gujarat, India which is the only course in the discipline of valuation of plant and machinery at the university level in the whole of the world.

I had an impression that by visiting RICS library at their head quarter in London, I will be able to get sufficient literature for PG course in plant & machinery valuation introduced at BVM Engineering College. Bill Carr the then Chairman, Plant and Machinery Valuation Committee, RICS was kind enough to arrange my visit to RICS library in March, 1994. **On visit to library I did not find the major books prescribed for plant and machinery valuation examination conducted by them and I brought this fact to the notice of Bill Carr.** RICS appreciated for bringing to their notice the shortfall. From London I went to Los Angeles and Washington D.C to visit the libraries of American Society of Appraisers at both the places and also the Library of Congress at Washington D.C., but I did not find books which deal with all the aspects that pertinently arise in the field of valuation of plant and machinery so as to serve the purpose of university students as well as practitioners.

However, it was certainly available in the minds of practitioners all over the globe and therefore first ever international conference on plant and machinery valuation was organized in Anand, Gujarat in February 1998 to extract the literature from minds of practitioners. This was a grand success as it was participated by stalwarts from developed and developing countries of all the continents. Not only that, the conference has become a regular feature as the conferences are regularly held in KL, Sydney, HK, London, San Francisco, Beijing and St. Petersburg in 2000, 2002, 2005, 2007, 2009, 2011 and 2013 respectively. The next will be held in Tokyo in October 2015.

I consider myself very lucky to have lectured on valuation of plant and machinery in Asia, Africa, America, Australia and Europe on invitation from professional valuation societies and also from Government valuation department of Malaysia. While interacting with them, I discovered a dire need for guidelines in the subject area. This is very essential because practitioners in the discipline of valuation of plant, machinery and equipment (PME) across the globe are practicing without academic degree in PME Valuation except a few in India, UK and Australia who have undergone the course offered by ISTAR,

Sardar Patel University, Gujarat. Therefore, there is a basic difference in preparing the guidelines for the practitioners who practice with academic degree and those who practice without academic degree. Standards/Guidelines available for real estate professionals across the globe are giving direction to the real estate valuers that he/she shall do this or that. This is because what to do is covered in the course curriculum.

This material is titled as Guidelines. The format of the material is different as compared to available guidelines in the discipline of valuation. The purpose behind preparing this material is to equip the practitioners in the areas which are not covered in course curriculum of academic degrees possessed by them and vital for valuation of PME. It is said for computation of obsolescence that it is important to consider the obsolescence in all forms in totality whatever may be the nomenclature is used – technological, functional, and economic. In the same way, whatever may be the nomenclature used for the title, the idea is to fill the gap, and if that is achieved then the purpose is served.

Valuation of plant, machinery and equipment is more complex than real estate as wide spectrum of industries are to be encountered by a PME valuer; each industry is unique and has its own inherent characteristics.

Valuation really concerns itself with all species of legal interests arising out of plant, machinery and equipment which are exchanged for money and therefore entails the phenomena of exchange, scarcity and choice that characterize a “market” in the economic sense of the term. Plant and machinery are purchased both for use and investment; but in both cases the purchaser measures the expected return or benefits to be received from the plant and machinery against cost outlay.

The valuer’s task is to express these benefits in money terms and to interpret the relationship between cost and benefit as a rate of return, thus allowing a choice between alternatives.

PME valuation is a multi-disciplinary subject involving following disciplines over and above valuation:

- Law
- Economics
- Finance
- Insurance
- Industrial processes
- Machine tools, factory equipment and utility services

To be capable of carrying out PME valuation assignment, a valuer needs to have developed skills and knowledge of a wide range of industries and **legislative controls** as they apply to a particular industry under consideration. In order to acquire these required skills, **it is essential that one has undergone a course covering wide range of aspects required to handle the assignments in actual practice; as it is necessary that the theoretical elements must provide a sound foundation on which a superstructure of sound practices can be built up for the benefit of valuation profession.**

The major issues to be considered in PME valuation in actual practice are:

- Fundamentals of valuation
- Valuation maxims
- Valuation approaches and methods
- Accounting terms
- Industrial processes
- Machine tools, factory equipment and utility services
- Obsolescence
- Regulatory measures, and
- Many others

The details of the above are given in Annexure – A.

The above issues are not covered in the course curriculum of mechanical, electrical, chemical, computer, production, industrial, mining, automobile, textile engineering etc. They are only covered in the post graduate degree course leading to the degree Master of Valuation (Plant & Machinery) offered by ISTAR, Gujarat. Therefore, Central Board of Direct Taxes, Ministry of Finance, Government of India have reduced the experience criteria (10 years for engineers and architects) to 2 years for holders of PG degrees in valuation of real estate as well as plant & machinery offered by ISTAR for registration as valuers of immovable property and plant & machinery u/s 34 AB of Wealth Tax Act, 1957.

Therefore, it is essential that an examination in the subjects which are vital for PME valuation and not covered in mechanical, electrical, chemical, computer, production, industrial, mining, automobile, textile engineering etc. courses be prescribed for PME valuers practicing with these qualifications. The course curriculum of such an examination is also part of this material (please refer to page number 133). The duration of such a course is one semester (6 months) and same can be offered in the distance learning so that practitioners are not caused inconvenience. In some countries, real estate valuers are carrying out valuation of plant & machinery. For such valuers also one semester examination will be helpful.

Shortcomings in the criteria for registration as valuers u/s 34 AB of Wealth Tax Act 1957 are highlighted under paragraph number 4.0 of the section – Need of the hour – creation of separate cadre of valuers at page number 123 of this document.

The rules for registration as valuers for plant and machinery need to be amended by putting a condition that after certain date only academically qualified plant and machinery valuers shall be registered. Those who are registered without academic degree in valuation of plant and machinery must pass one semester examination referred earlier by certain period otherwise their registration shall be cancelled. This provision is similar to one provided in Section 13(3) of Valuer's Act, 1982 of South Africa.

It is also essential to have a grandfathering provision stipulating that the valuers who have attained certain age may be exempted from undergoing one semester course and for them a training programme be stipulated. The topics to be covered in such a training programme are also part of this document.

In view of above facts, for the benefit of practitioners, these Guidelines are framed.

These Guidelines will certainly serve useful purpose for practitioners as well as users of services of valuers of plant & machinery.

The users of services of valuers will certainly expect service from valuers according to these Guidelines. Then in that case they will have to compensate valuers accordingly.

Date: 23rd May 2015
Mumbai

Kirit P. Budhbhatti
Chairman
Centre for Valuation Studies,
Research and Training Association

The major issues to be considered in PME valuation in actual practice

1. Fundamentals of Valuation

- Cost, price, value and worth
- Various types of value
- Value elements – ingredients – characteristics
- Investment property, marketable non-investment and non-marketable non-investment property.
- Annuities – capitalization – rate of capitalization – sinking fund – redemption of capital
- Construction and use of valuation tables

2. Valuation

(a) Valuation maxims related to PME

- Physical
- Legal
- Social
- Economic
- Utility
- Marketability
- Transferability
- Scarcity
- Value means present worth of future benefits
- Valuation involves estimating value of individual's rights in owning assets

(b) Other issues

- Three approaches to value – cost, market and income
- Bases of value and the purposes for which their use is most appropriate
- Interpretation and use of the following terms:
 - gross current replacement cost
 - net current replacement cost
 - market value 'in-situ' and 'ex-situ' and 'existing use' and 'alternative use'
 - residual values
 - recoverable amount
 - highest and best use
- Accounting depreciation, technical depreciation, depreciation from market evidence
- Meaning of terms - written down / book values

- Indexation – their uses and limitations
- Plant records and asset registers, their compilation, uses and limitations
- Preparation of inventories
- Plant and machinery normally valued with the premises
- Leasing of machinery
- Valuation of specialized machinery
- Assessment of imbalance in various production sections and cost to cure of the same
- Assessment of liability on account of regulatory measures and cost to cure
- Valuation for impairment loss and restructuring of organization
- Elements of business valuation
- Earning and assets

3. Industrial processes

- Textiles
- Dairy
- Vegetable oil
- Iron, steel and non-ferrous metal production
- Chemical and pharmaceutical
- Plastic and rubber
- Paper and paper products
- Printing, binding and publishing
- Food and beverages

4. Machine tools, factory equipment and utility services

5. Obsolescence

- Meaning and computation of functional, technological, economic obsolescence

6. Regulatory measures

- All industrial activities are subject to specific legislations and regulations, non-compliance with which may result in cessation of activity pending suit.

Acknowledgements

It is practically impossible to prepare Guidelines on the subject dealing with diverse issues without the help of experts.

Centre for Valuation Studies, Research and Training Association (CVSRTA) is grateful to following members for their contribution in this pioneering work:

- Kirit P. Budhbhatti
- Amish S. Patel
- Nelson J. Macwan
- Kashyap K. Budhbhatti
- Hitesh B. Borad
- Jayesh F. Lad

CVSRTA is thankful to Kirit P. Budhbhatti for permitting to reproduce the material from his books on valuation.

Our thanks also to:

- (a) Shri. H.M. Shah, Regional Manager, National Insurance Co. Ltd., Vadodara for going through material on insurance and offering valuable suggestions.
- (b) Dr. P.K. Priyan – Professor in Finance – MBA Programme – Sardar Patel University for going through material on impairment and offering valuable suggestions.
- (c) Dr. Shamsa Emanuel for editing the manuscript.
- (d) Shri. R. Venkatraman in giving final shape to manuscript by his ardent efforts beyond the call of duty.
- (e) Anand Press for doing an excellent job within a time schedule.

Nelson J. Macwan
Secretary
Centre for Valuation Studies,
Research and Training Association

Brief profiles of members of PME Guidelines Committee

(a) Kirit P. Budhbhatti

- Graduate in electrical engineering from BVM Engineering College, Sardar Patel University, Vallabh Vidyanagar, Gujarat and have passed an examination in valuation of real estate conducted by Institution of Surveyors (India).
- Former President – Institution of Surveyors
- Founder Chairman (1998-2007) International Plant and Machinery Valuation Conference Committee
- Founder Member – Centre for Valuation Studies, Research and Training Association (CVSRTA)
- Fellow – Institution of Surveyors
- Fellow – Institution of Valuers
- Member – Institution of Engineers
- Government registered valuer of real estate as well as plant & machinery with more than 40 years experience. Valued wide spectrum of industries for various purposes for Hindustan Unilever, Murugappa, TATA, RPG, Arvind Mafatlal etc.
- Author of books on plant and machinery as well as real estate valuation
- Involved in preparing basic document for International Valuation Standards Committee (IVSC) on Plant, Machinery & Equipment Valuation in 1994-95
- Delivered lectures in Asia, Africa, America, Australia and Europe
- Pioneer in introducing academic course in PME valuation in Sardar Patel University, India which is unique in the whole world and real estate valuation in India and also organizing the first conference exclusively on PME valuation in India in 1998 subsequently in KL, Sydney, HK and London respectively in 2000, 2002, 2005 and 2007
- Assisted the universities in preparing study material both for real estate and plant & machinery valuation courses
- Recognized by BVM Engineering College as – **JEWEL OF BVM**

(b) Amish S. Patel

- Graduate in electrical engineering and law
- Post graduate in valuation of plant & machinery as well as real estate
- Founder Member – CVSRTA
- Member – Institution of Engineers
- Member – RICS
- The first recipient of Pragji Dharshi Budhbhatti Gold Medal in whole world for achieving 1st rank in Master of Valuation (Plant & Machinery) awarded by Sardar Patel University, Vallabh Vidyanagar, Gujarat, India
- Academician – Lecturer in Post Graduate courses in valuation of plant & machinery as well as real estate offered by Sardar Patel University (1996-2006)
- Director – RBSA Valuers (2007 – till today) largest firm of PME and RE Valuers in India
- Wide spectrum of industries valued for various purposes for GAIL, TATA, Hindustan Zinc, BHEL, JSW Steel, Reliance Power etc.
- Prepared study material for PM and RE valuation courses
- Delivered lectures on PME Valuation, presented papers in seminars throughout India, Hong Kong, China and Malaysia

(c) Nelson J. Macwan

- Graduate in civil engineering and law
- Post graduate in valuation of plant & machinery as well as real estate
- Founder Member – CVSRTA
- Member – Institution of Surveyors
- Fellow – Institution of Valuers
- Academician – Lecturer in Post Graduate courses in valuation of plant & machinery as well as real estate offered by Sardar Patel University (1996-2008)
- Wide spectrum of industries valued for various purposes (2008 – till today) for Murugappa, Elecon, Hindustan Unilever etc.
- Prepared study material for PM and RE valuation courses

(d) Kashyap K. Budhbhatti

- Graduate in Civil Engineering
- Post graduate in valuation of plant & machinery as well as real estate
- Recipient of Vasantben Chunilal Shah Gold Medal awarded by Sardar Patel University for securing first rank in PG degree course in valuation of real estate.
- Graduate Diploma in Finance
- Fellow– CVSRTA
- Certified Practicing Valuer – Australian Property Institute (Plant & Equipment)
- Member - RICS
- SA Fin – Senior Associate Financial Services of Australasia
- Practicing Valuer of real estate as well as plant & machinery since 2000
- Valuer – real estate and plant & machinery, Budhbhatti & Associates (2000 – 2004)
- Valuer – plant & machinery, Rushton Valuers, Australia (2005 – 2008)
- Senior Valuer – plant & machinery, Australian Valuation Office (2008 – 2012)
- Managing Director – B&A Valuers, Australia since 2012
- Chairman – Discussion Group (Plant & Equipment), Australian Property Institute
- Wide spectrum of industries valued for various purposes for Australian Maritime Safety Authority, National Film and Sound Archive of Australia, BHP Billiton, Kellogg's, National Aluminium and Newmont Mining, Unilever etc.
- Presented a paper on Valuation for Impairment at 4th International PME Conference in Hong Kong in 2005.

(e) Hitesh B. Borad

- Graduate in civil engineering
- Post graduate in valuation of plant & machinery as well as real estate
- Recipient of Pragji Dharshi Budhbhatti Gold Medal awarded by Sardar Patel University for securing 1st rank in post graduate degree course in valuation of plant & machinery
- Fellow – CVSRTA
- Valuation Officer – real estate and plant & machinery in financial institution - Housing and Urban Development Corporation (HUDCO) since 2000
- Main speaker on valuation of real estate and plant & machinery for in-house training programmes in head office and regional offices of HUDCO
- Presented a paper on impairment in 4th International PME Conference in Hong Kong in 2005

(f) Jayesh F. Lad

- Graduate in mechanical engineering
- Post graduate in valuation of plant & machinery
- Fellow – CVSRTA
- Fellow – Institution of Valuers
- Practicing Valuer of plant & machinery since 2002.
- Valuer – plant & machinery, Independent practice as well as with Budhbhatti & Associates (2002 – 2008)
- Valuer – plant & machinery Ernst & Young (2008 – 2013)
- Independent practice since 2014
- Wide spectrum of industries valued for various purposes for Hindustan Unilever, Arvind Mafatlal, University of Mumbai

Note: The above members have rendered the services to the committee in their individual capacities.

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Guidelines
on
Valuation of Plant, Machinery and Equipment (PME)

1.0 Introduction

- 1.1** PME are terms used to refer to installations and support facilities for manufacturing in an industry designed to perform a specific pre-determined function, whether used singly or in combination with other items to enhance the productivity or operating facility; and includes all devices in fixed or movable form, other than real estate, deployed in manufacturing, processing or assembling of products from the stage of raw materials to finished goods.
- 1.2** The valuation of PME is a very complex process as it pertains to industries of wide spectrum, each having PME of its own inherent characteristics.
- 1.3** In practice, one thing is certain; there will be many occasions when instructions are received to undertake valuation of PME in an industry of which the valuer has no experience.

These Guidelines will act as an aid in such a situation.

- 1.4** Amongst the issues to be considered in the valuation of PME are the specific utility or usefulness of the asset, its contribution to the production of goods and services for which it was designed and deployed and its potential to produce and contribute to the profitability of the business, after considering the market situation and/or standard of maintenance.
- 1.5** Legislative or regulatory provisions, prevalent accountancy conventions, or juristic requirements may necessitate consequential modifications in valuation procedure.
- 1.6** The objective of these Guidelines is to provide clarification and guidance to Valuers in preparing valuation of PME. As defined earlier, PME collectively constitute a general class of property other than realty, classified for accounting purposes as tangible assets.
- 1.7** PME may be valued for a variety of purposes. The focus of Guidelines is on the vital issues arising in different approaches to value, highlighting the role, duties and requirements of a PME valuer.

These Guidelines provide the highway to such valuation while those have to be suitably adapted for each industry, which claim elements of uniqueness in the matter of application. It is necessary that the valuers in this specific field equip themselves with these Guidelines before entering into an exercise of valuation for achieving a level of professional expertise, which alone can feed substance to sound valuation mounted on the principles of science and art developed as a global practice.

2.0 Scope

These Guidelines cover following:

- Definitions
- Valuation maxims
- Role, duties and functions of PME valuer
- Physical verification
- Micro and Macro - identifications
- Fixed asset register
- Collection and verification of data
- Steps involved in preparing final inventory
- Obsolescence
- Approaches to Value: Cost, market and income
- Phases of valuation procedure
- Important considerations and issues in valuation for various purposes.

3.0 Various Terms in Realm of PME Valuation

3.1 PME

- (a) **Plant** - The assemblage of assets that may include specialized non-permanent buildings, machinery and equipment.
- (b) **Machinery** - Individual machines or collections of machines. A machine is an apparatus using or applying mechanical power, having several parts each with a definite function, and together performing certain kinds of work.
- (c) **Equipment** - Ancillary assets that are used to assist the function of the enterprise/entity.

3.2 Cost, Price, Value and Worth

- (a) **Cost** is the price paid for goods or services, or the amount required to create or produce the good or service. It is a fact. The price paid for a good or service becomes its cost to the buyer.
- (b) **Price** is a term used for amount asked, offered or paid for a good or service. It is a fact whether it is publicly disclosed or retained in private. Price paid for goods or services may or may not have any relation to the value of goods or services.
- (c) **Value** is an estimate of the price that would be achieved if the property were to be sold in the market.
- (d) **Worth** is the specific investor's perception of the capital sum which he would be prepared to pay (or accept) for stream of benefits which he expects to be produced by the investment (**Refer paragraph 3.14**). It varies from investor to investor for the same asset. Therefore, it is an estimate of price to be offered which varies from investor to investor.

3.3 Market value

The Law Commission of India, 1958 under principles of determining compensation under Land Acquisition Act, 1894, under paragraph 45, defined '**market value**' as the price, which a **willing vendor** might reasonably expect to obtain from a **willing purchaser**. The disinclination of the vendor to part with his land and the urgent necessity of the purchaser to buy must alike be disregarded and both must be treated as persons dealing in the matter at **arm's length** and **without compulsion**.

Market value is the estimated amount for which a property ought to exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.

3.4 Reproduction cost new and Replacement cost new

(a) Reproduction cost new

The cost of acquiring an identical new asset/replica using same material, design, standards, quality, workmanship of the asset under consideration. It carries with it the good and bad attributes of the original. This includes costs of transport, foundation, erection and installation, commissioning, consultants' fees, non-recoverable taxes and duties and finance cost up to the stage of commercial production.

(b) Replacement cost new

The cost of replacing an existing asset with the same or substantially similar new asset having a similar production or service capacity, including costs of transport, foundation, erection and installation, commissioning, consultants' fees, non-recoverable taxes and duties and finance cost up to the stage of commercial production.

Note: The 5 year old machine can be replaced by new machine as well as 5 year old second-hand machine. Therefore, it is essential to use the words **replacement cost new** instead of only using **replacement cost**.

3.5 Depreciation

It is the usual wear and tear caused by the normal working of any asset. Its use is liable to a certain amount of deterioration despite the care and attention bestowed on its maintenance and preservation.

The term Depreciation used in these Guidelines refers to wear and tear only.

Obsolescence is separately considered.

3.6 Depreciated reproduction or replacement cost (DRC)

It is established by depreciating the reproduction cost new / replacement cost new by considering age and condition (wear & tear) only.

3.7 Recoverable amount is the higher of an asset's net selling price and its market value in highest and best use.

3.8 Value-in-exchange is the price that would tend to prevail in a free, open and competitive market on the basis of equilibrium set by the forces of supply and demand. This may be true for an item to be moved from one place to another or an entire plant in place.

This is referred to as an objective value because it is based on observable economic forces. A common form of value-in-exchange is market value.

3.9 Value-in-use is the worth of a PME to a specific user or set of users. As value-in-use is related to specific user's need, it is often referred to as subjective value.

(Example given in paragraph 3.14 is for value-in-use to a particular user.)

3.10 Value in existing use means market value of PME utilized for current use.

3.11 Value in alternative use means market value of PME in use other than the existing use. Market Value in alternative use may reflect an appreciation in value when the plant would become capable of manufacturing other products with some modifications which has a high potential to generate income as explained in paragraph 3.13.

3.12 Value in-situ is market value of PME at the location where it is installed on date of valuation.

3.13 Value in ex-situ is market value of PME at different location than where it is installed.

The following example is very relevant in realm of Market Value in existing use in-situ/ex-situ and Market Value in alternative use in-situ/ex-situ:

Let us consider a case of a plant established to produce a particular product with an investment of ₹ 1,00,00,00,000/- (Rupees One billion only) in fixed assets. But it could not go in to the commercial production as arrangement of abundant water required to run the plant was not made. The cost of bringing water to the site is exorbitant making a project unviable. The investment in fixed assets is ₹ 1,00,00,00,000/- (Rupees One billion) and same is a cost to the investor and not the value as it is not capable of generating income in existing use in-situ.

The market value in existing use in-situ is very highly adversely affected as it is not possible to generate income from the assets at the location where they are installed. If it is possible to shift the plant where water is available in abundance and the plant becomes viable and capable of generating sufficient income then in that case it has a market value in existing use in ex-situ which is much more than the market value in existing use in-situ.

Let us now consider another situation in which by incurring an investment of about ₹ 15,00,00,000/- (Rupees One hundred fifty million) in fixed assets it is possible to produce a product which hardly require any water and plant becomes capable of generating income then in that case it has a market value in alternative use in-situ which is much more than the market value in existing use ex-situ.

Suppose, above plant cannot be used for alternative purpose at same location but at different location it is viable to operate and the same is more lucrative. Then in that case its value in alternative use in ex-situ is to be adopted.

3.14 Value to the buyer and value to the seller are different

Value to the buyer means capitalized value of additional income generated due to acquisition of any industrial plant.

Value to the seller means deprival value i.e. capitalized value of income foregone.

There was a cement plant 'X' for a sale and same was valued scientifically by valuers for ₹ A.

The owners of cement plant 'Y' were interested in buying the plant 'X'.

The sellers were tough bargainers and they were aware of urgent need of the purchasers. The owner of cement plant 'Y' purchased the plant at 1.75 A.

There was a very big hue and cry on the transaction that 'Y' has paid exorbitant price.

The Managing Director of company 'Y' gave the following justification for price paid.

- (i) They have a very huge order to be completed in the next two years.
- (ii) The capacity of plant 'Y' is not sufficient.
- (iii) If new plant is put up it will take at least 2 to 3 years to go for commercial production.

- (iv) Even if 'X' plant is purchased at 1.75 A, the company 'Y' will have excellent profitability, if orders are timely executed.

Note: In above case, market value of cement plant X = 1.0A

Price realized = 1.75 A

If the plant X is accepted by bank as a security (with 20% margin) for loan advanced based on transaction price 1.75 A, then in that case, does the security accepted by bank fall under secured loan? No. Because secured loan or advance under **S.5(n) of Banking Regulation Act, 1949** is defined as under:

“a loan or advance made on the security of the assets the market value of which is not at any time less than the amount of such loan or advance.”

$$\text{Loan advanced} = 1.75 \times \frac{(100 - 20)}{100} = 1.4A$$

Loan is not secured because market value is 1.0A.

The price paid is a special price by a purchaser with subjective consideration.

If the borrower becomes defaulter then in that case bank cannot expect more than market value.

3.15 Highest and best use as applicable to plant and machinery is defined as that use of plant and machinery which may reasonably be expected to produce the greatest **net** return over a given period of time, and legal use which will yield the highest present value.

Highest and best use of any individual machine or total operating facility may not be its present use. Hence, an analysis must be made to determine the highest and best use of plant and machinery being valued.

The following considerations pertinently arise:

- Permissibility (legal)
- Possibility (physical)
- Feasibility (financial)
- Profitability (economic)

3.16 Liquidation, forced sale value - Either term refers to the amount which may reasonably be received from the sale of a property within a time frame which do not meet the marketing time frame of the market value definition. The sellers in such a transaction are unwilling seller and a buyer or buyers buy with knowledge of the disadvantage of the seller.

3.17 Auction realizable value is the estimated amount that one would expect to achieve at a properly promoted, conducted, and attended auction sale. It normally assumes that the sale is held on the site and substantially all of the assets in the inventory listing are offered for sale at one time.

- 3.18 Salvage value** is the value of an asset that has reached the end of its economic life for the purpose it was made. The asset may still have value for an alternative inferior use.
- 3.19 Scrap value** is the value of an asset, as if disposed off for the materials it contains rather than for continued use without special repairs or adaptation. It may be given as gross or net of disposal/ disposition costs.
- 3.20 Reinstatement value** is the cost necessary to replace, repair, or rebuild the insured property to a condition substantially the same as, but not better or more extensive than, its condition when new.
- 3.21 Indemnity value** is the cost necessary to replace, repair or rebuild the insured property to a condition substantially the same as, but not better or more extensive than, its condition at the time when the damage occurred, taking into consideration age, condition, and remaining useful life.
- 3.22 Valuation maxims**

Value of PME is conditioned by following factors:

- Physical
- Legal
- Social
- Economic
- Utility
- Marketability
- Transferability
- Scarcity
- Present worth of future benefits, and
- Intangible rights

Physical: Type, make, model, capacity (technical specifications)

The physical characteristics like type, make, model, technical specifications and various features will affect the value of a machine. The technical specifications of a lathe machine along with its ex-works price are given below.

Type – I

Lathe machine with Norton gear and flame hardened bed

Admit between
Centre (ABC) = A

Centre height = B

Price : ₹ 1,20,000/-

Type – II

Lathe machine with pulley driven and ordinary bed

Admit between
Center (ABC) = A

Center height = B

Price : ₹ 55,000/-

The difference in the price of two lathe machines having same ABC and center height is due to difference in physical features of both the machines.

Legal: Zoning, environment protection laws, taxation policy

(i) Zoning

An industrial unit was established 30 years back; at that time it was outside the city limit and on land reserved for industrial use. The city started expanding and now the unit is in the heart of the city. As per the revised Development Plan land is earmarked for commercial use and unit is served with a notice to quit. So unit will have to be shifted to other site due to zoning effect.

(ii) Environmental protection laws

One of the largest chemical manufacturing units was located near mega city. The demand of chemical manufactured by that unit was excellent and unit was running successfully. However, the unit violated norms of Pollution Control Board and did not comply with the requirement of Pollution Control Board. Ultimately Pollution Control Board passed an order to close the activity.

(iii) Taxation policy

An industrial unit was established one year back with totally imported machinery. The custom duty was then 120%. But within a year custom duty was reduced to 40%.

Social: The taste and preference of consumers utilizing products manufactured by the machines.

The 'Social' factor can very well be understood by following example.

One of the oldest, profit making and well known textile mill located in the state of Gujarat of India made huge investment in the brand new PME to produce a particular fabric. The demand of that fabric was at its peak at the time of making huge investment but within a year or two the trend changed and the taste of consumer for that fabric drastically reduced and hence the demand in the market. The mill had to stop the production of that fabric. Though the equipment were hardly two years old and also in good condition, but marketability of the equipment was adversely affected.

Economic:

The 'Economic' factor can be explained by the following example:

A salt processing and packaging unit was established in Gujarat. The unit was running to its full capacity and had a good financial

position. The unit was getting incentives from the Government because of its location in backward area and due to the nature of industry. Suddenly, due to the changes in the Government's policy the incentives were withdrawn and railway discontinued its route to the plant site. Now transport was possible by means of road. Road transport is very expensive. All these factors resulted in closing down the industry. PME were in good condition but they could not be utilized as the whole activity became uneconomical.

Utility: Utility is the power of goods to render a service. In order to possess value an asset ought to have utility.

In other words, PME have some use and therefore possess a value.

Utility can also be termed as the power of a good or service to satisfy needs of human beings. As value is dependent on the degree of satisfaction derived, which varies from person to person and hence it is subjective.

The main criterion in the valuation of any property is its utility. The method used in the valuation exercise must have the main objective of quantifying usefulness of the property valued.

Utility is not an absolute condition but a relative or comparative term. As per example, the utility of an agricultural land is conditioned by its productivity. Its value is dependent on the quantity and quality of produce.

If the land has potential for development then its productivity is measured by how it will support potential use as a residential, commercial, industrial or mixed use.

Utility is measured over the normal useful life of a particular asset. At times, a particular asset may become temporarily redundant or otherwise removed from production or put to alternative use. It may be kept idle also for some time due to market forces. Valuation in such a situation requires a special skill.

The main effect of political or economic uncertainty is a variation in utility; it could be in terms of capacity or efficiency. It is the valuer's responsibility to assess the market. The property or asset valued need to be viewed in the light of all factors, internal and external, having bearing on its operating performance.

The utility is explained in the following illustration.

Let us consider a hypothetical case of manufacturing facility established five years back as per technology available then. The buildings and plant & machinery required for the process are shown in photographs marked 'A' and 'B'. **Photograph 'A'** shows specially designed building with walls having abnormally high thickness (1000 mm) and height (15000 mm) and a large built-up

area. **Photograph 'B'** shows rows of aluminium trays used for manufacturing process. These aluminium trays are housed in the building shown in photograph 'A'. The total investment in building and equipment was approximately ₹ 15 Crores five years back.

Now, the technology has changed and current process is carried out in a white coloured reactor (shown in **photograph 'C'**) which requires building area less than 80% of the old process.

The latest process has following advantages also:

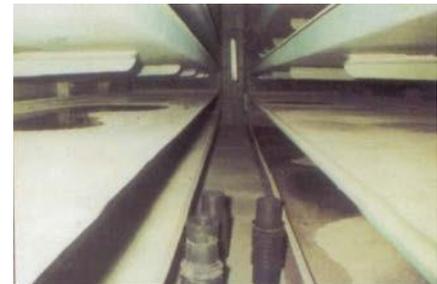
- Improved quality
- Improved yield
- Less capital cost
- Less running / operating cost

The current cost of brand new reactor and building required for the same capacity (as of old process) for latest process is ₹ 7.5 Crores.

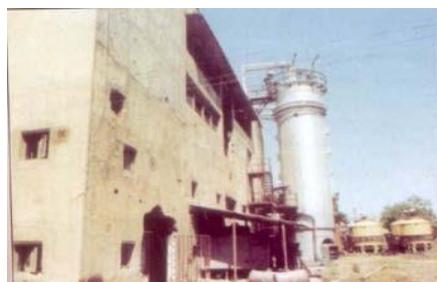
This gives an idea that equipment and buildings used in old process are functionally obsolete and utility of these assets is also adversely affected.



Photograph - A shows the building in which the aluminium trays shown in **photograph - B** are installed. The building is specially designed with walls having abnormally high thickness (1 m) with height of about 15 m and a large built-up area.



Photograph - B shows rows of aluminium trays used for manufacture.



Photograph - C shows the white reactor for manufacturing as per latest technology.

Marketability and **Transferability**

Transferability is a legal concept that must be considered in the determination of PME value. Even though the characteristics of utility,

scarcity and demand are present, if the goods cannot be transferred in whole or in part, market value cannot exist.

The ownership and possession of the property can be transferred by way of sale, gift, exchange, lease, mortgage, will, etc. and hence it has value.

Scarcity

Scarcity is a relative term and must be considered in relation to demand and supply and the alternate uses (present or prospective) to which the good or service may be put.

PME available in limited quantity, and are in demand, have value.

Present worth of future benefits

Plant, machinery and equipment are purchased as a decision to make an investment typically in the form of equity or debt. An equity investment entails the purchase of an interest in the PME by the primary party. In the case of a debt investment, money is lent to a second party for the purchase of an interest in the PME. The decision of making any investment is based on the current value of the future benefits to be earned by that investment, and the value of a particular asset is represented by the present value of its projected future benefits.

Intangible rights

In the process of valuation of tangible assets, the subject matter of valuation is the value of rights derived from ownership of tangible assets. This is explained in detail in following examples.

Example - I

There is a recently constructed industrial unit installed with brand new machines. Since it has not complied with the environmental regulations the court has ordered to close down its activity. Even if machines are brand new, the value of those machines in existing use in-situ will be much less, the extent of which can only be measured by the cost of cure to obviate the grounds of objection raised by the court.

Example – II

A cement plant was established 3 years back and at that time there were no cement plants in that area. There was no scarcity of raw material at the time of establishing the unit. Economic working life of cement plant is very high say up to 40 years.

In last 3 years number of cement plants are established in the region with the result raw material will now be available for next 10 years only which has adverse effect on value of PME; though they are 3 years old and capable of working for next 37 years; but due to constrains of availability

of raw material for only next 10 years its economic working life in-situ is reduced from 37 years to 10 years.

Example – III

Let us consider six plants located side by side on the same road, manufacturing the same product, having the same capacity and supplied by the same manufacturer, they went into commercial production at the same time and their usage from date of installation to the date of valuation is also same (say, each one has been in operation for 12,000 hours). The product manufactured by all the plants will have good market for next 10 years and the plants are not suffering from obsolescence.

Plant ‘A’ is run by the owner and is well maintained. It has complied with all statutory requirements.

Plant ‘B’ is also run by the owner and has complied with all statutory requirements but its maintenance is not as good as plant ‘A’.

Plant ‘C’ is also run by the owner and has complied with all statutory requirements but its maintenance is poorer than plant ‘B’.

Plant ‘D’ has no electricity supply of its own but draws power from its neighbour. Under the governing Electricity Act, it is illegal to draw power from other company.

Plant ‘E’ is taken on lease and the lease deed contains following vital terms:

- (a) The lease cannot be terminated during the lock-in period of 7 years.

Note: The unexpired period of lock-in period is 5 years.

- (b) If the lessee intends to terminate lease during the lock-in period, lessee has to pay damage to the tune of ₹25,00,000/-.

Net lease rent agreed during lock-in period is ₹ 5,00,000/- per annum.

Note: Recently an identical plant is given on lease at net yearly rent of ₹ 2,50,000/- in nearby area.

Plant ‘F’ was located in a designated industrial zone when it was established. As per revised development plan, it now falls in a commercial zone and the plant owner is served with a notice to shift the plant.

If all the plants are offered for sale in the open market, the price realized by each one will be different though each one is identical from the point of view of following factors:

- i. Product manufactured
- ii. Capacity
- iii. Technical specifications of equipment
- iv. Supplied by the same manufacturer
and
- v. Usage up to valuation date.

4.0 Earnings of an undertaking: It is true that an investor would be interested in ascertaining the earning potential before making any investment in any industry.

Earnings of an undertaking are caused by tangible as well as intangible assets. Intangibles are the contribution of human resources. If an undertaking possesses excellent tangible assets but has untrained human resources, it will have an adverse effect on profitability. On the other hand, if there are poor tangible assets but excellent human resources, it will also work adversely. Therefore, the value of a business though linked with income, cannot rest solely on the contribution of intangible assets in generating income as tangibles also do generate steady income up to a certain level and thereafter, increase in income depends primarily on intangibles. Thus, tangible assets play a vital role in income generation.

5.0 Role, duties and functions of a PME valuer

(a) Role

A PME Valuer must possess a comprehensive knowledge of industry to be valued and he must be able to hold discussions with various personnel in the plant at various levels which may include collection of particulars from –

- Experts of industry under consideration
- Plant manager
- Shop floor specialist
- Draughtsman
- Pattern maker
- Maintenance supervisor
- Electrical supervisor
- Production supervisor

He must discuss with the financial and technical directors of the company to ascertain management's view on matters affecting the business of the company.

(b) Duties and functions

- (i) The valuer should carry out his functions in course of valuation of PME with regard to –
 - (a) Preparation of inventory in the form of a schedule (listing)
 - (b) Inspection of PME.

- (ii) The valuer must have the state-of-art and up to date knowledge about PME and acquire familiarity with the particular discipline of application. He must possess the basic clarity for analyzing the established methodology to handle essentials of the concerned industry.
- (iii) The valuer shall have sufficient familiarity with the accounting terms including taxation implications.
- (iv) The demand of the product manufactured by PME under consideration.
- (v) He has to keep himself abreast of the current trends in the market of PME.
- (vi) The valuer shall act as the team leader when consultants in specialty areas are associated with the work of valuation. He has also to take decision for deployment of a consultant in any particular field which may help the valuation process. In the matter of intricacies, such deployment might become necessary in order to arrive at a valuation which is realistic, meaningful and useful. The decision in this behalf rests with the valuer as he has to co-ordinate the investigation by the specialists and cover all the findings in his report.

Note: In order to give proper justice PME valuer will require service from experts from other relevant disciplines depending on facts of each case.

6.0 Micro-identification, fixed asset register, collection and verification of data and steps involved in preparing inventory

In order to estimate sound value, a machine should be properly identified and for that it must be properly described. The description should be so precise that the reader can properly identify and supplier can quote the price without any question.

It is at first necessary for the valuer to address himself in collecting the data required for proper description before he starts his field/practical ventures, which will save the time in field and in turn can be used for other creative work; this will lead to high standard of professional development.

Preparation of schedule of inventory, collection of data and physical verification are pre-requisite for sound valuation.

6.1 Micro-identification concerns itself with listing of a single machine. To accomplish this, it is necessary to adopt standard procedure for taking proper description / details.

Valuation of PME requires the preparation of an inventory in the form of a schedule. The extent of details to be included in such schedule is a matter dependent upon the valuer's judgement, after due consideration of client's instructions. However, information on the following points is relevant in the preparation of inventory:

- * Description;
- * Model / type;
- * Serial number and maker's name;
- * Client's own plant reference number / identification number;
- * Size or capacity;
- * Age/year of manufacture/year of installation;
- * Reference to any special foundations, service connections as the case may be;
- * Modifications, renovations carried out after installation;
- * Energy consumption;
- * Environmental and other legal restrictions if any;
- * Usage;
- * Record of production and maintenance;
- * Name of manufacturer / supplier;
- * Details of attachment, accessories and components; i.e. chucks, collets, tooling in case of machine tools;
- * Type of drive.

Let us examine importance of each of above items.

Description Model Type Maker's Name	Helps in identifying machines very precisely and in floating inquiries to ascertain current prices.
Serial number given by Manufacturer	Many a time clients are unable to furnish year of manufacture. Serial number assigned by manufacturer helps in ascertaining age. This also helps in furnishing correct pricing information by manufacturer.
Client's own plant reference number / identification number	Helps in obtaining description, original cost from records maintained by the company.
Size or capacity	The size generally refers to the maximum size of a piece that can be handled by a machine. This may be expressed in following pattern to name a few. * Width only * Plane surface length x width

	<ul style="list-style-type: none"> * Width x thickness * Diameter and length * Length, width and height * Spindle diameter or spindle capacity and number of spindles * Pounds or tonnes or force of lifting capacity * Holding capacity as measured in kilograms/tones/litres <p>The unit of measurements indicated above are for reference. Unit of measurements depends upon the type of machinery under consideration.</p>
Age / year of manufacture / year of installation	<p>Machine to be valued is either purchased new or second hand. Many times years of purchase and installation are different for new machine. The depreciation is to be calculated from date of installation. In case of second hand machine year of manufacture is important. Thus, these are very relevant information.</p>
Reference to any special foundations, service connection as the case may be	<p>The cost of foundation in case of certain plant is very high e.g. paper, automobile tyre manufacturing plants</p> <p>In chemical plant structural steel used in erection of equipment, piping and its installation contribute a substantial cost and therefore need to be properly estimated.</p>
Refurbishment, modifications, renovations carried out after installations	<p>Many times the substantial amount of capital expenditure is incurred for modernization. This capital expenditure must bring value. While taking inventory this piece of information is helpful.</p> <p>This will require to calculate effective age which will be less than chronological age. This is due to renovation carried out.</p>

Energy consumption	If energy consumption is not within specified limit, cost to cure need to be worked out which is to be deducted from value.
Environmental and other legal restrictions if any	This is required under regulatory compliance e.g. boiler is required to be annually tested and as per test certificate issued by authority there is any noncompliance then it is to be ascertained whether appropriate steps are taken and if anything to be complied for cure, the cost of cure to be estimated. The cost of cure being a liability, need to be deducted from value.
Usage and record of Maintenance	This helps in ascertaining how the machine has been used single, double or triple shifts, maintained and repairs carried out. This information is vital for depreciation calculation.
Names of manufacturer / Supplier	The machines with same technical specifications are supplied by different manufacturers with very wide range of prices. Therefore, this helps in adopting price of appropriate manufacturer for proper comparison.
Details of attachment, accessories and components	<p>In a boring machine the cost of accessories and tooling is about 30% of cost of main machine which one cannot afford to ignore. These accessories and tooling are many a time lying in a cupboard and hence not visible while taking inventory of machinery.</p> <p>If components and spares are not available in the market it brings down value of machine. It is explained with an example.</p> <p style="padding-left: 40px;">A textile unit purchased a printing machine from Japan at a cost of ₹ 80 lakh. Five years later, it stopped working as one</p>

	<p>of the ICs of the machine was damaged. The owner of the machine contacted the manufacturer in Japan to get IC and it was informed by supplier that now new model is introduced and latest model does not have IC used in old machine. The machine cannot be put to use unless IC is obtained.</p> <p>This is a classic example how availability of spares has bearing on value.</p>
<p>Type of drive and control of machines</p>	<p>When we say “type of drive” - it indicates as to whether the machine is of direct drive or driven by ‘V’ belt, flat or cleated belt, chain, reduction gear, countershaft, variable speed etc. and whether the power source of such drive is electric motor or steam turbine or diesel or steam engine.</p> <p>Control of machines means the devices require to operate the drive mechanism or various operations and consist of systems involving electronics, computer etc.</p>

Machine tools can be identified, quite often, from work they are performing e.g., grinding, tapping, honing, boring, drilling, milling and reaming, to mention a few.

Accessories or attachments are sometimes like equipment and need to be properly described. They are either supplied by the same manufacturer or different manufacturers.

Let us consider the descriptions of machines as per examples given below: -

Example No. 1:

Floor Type Horizontal Milling Machine
Dial type dual power
Model # 4 Plain
Serial number. HMT - 1979 - 489
Motor drive to table with 3 hp, ac, squirrel cage, 1500 rpm, 50 cycles/second (c/s), 440 V

'V' belt drive in base from 25 hp, ac, 1500 rpm, 50 c/s, 440 V motor including wiring, controls, piping, fittings and all accessories
Company's identification number: 1/259/NC/1979/6
Supplied by: HMT Ltd., Bangalore

The above description contains data required for getting current price of brand new machine.

In above example the name of manufacture is available; in case if it is not available then also current price of brand new machine can be ascertained. But a care has to be taken while making inquiry. As mentioned earlier price of a machine with same technical specifications is different for different manufacturers. Therefore, it is desirable to ascertain under which class of manufacturer machine falls - Class-I, Class-II or Class-III. If it falls under Class-I, price of manufacturer falling under Class-I to be adopted.

Now let us consider a case of another machine having following data :

Example No. 2:

S.S. reaction vessel of 1000 liter capacity with S.S. stirrer driven by 10 hp motor with jacket.

The valuer will not be satisfied with above information for conducting valuation and will pose following questions to the client:

- * Is it made out of plates S.S. 304, 316 or 316 L? Again, what is the thickness of the plate used?
- * Whether 1000 liters mean a batch capacity or water filling capacity?
- * What type of stirrer? It may be S.S. 304, 316 or 316 L in its material; again, it may be of anchor, turbine or gate type.
- * What is the speed of stirrer? Is the motor flame-proof?
- * What is the material of construction and type of the jacket?
- * Which type of insulation has been used and what is the thickness?
- * What is the thickness of aluminium sheet used for cladding?
- * What type of heating or cooling system is provided?

Importance of above information has been discussed later.

Each piece of PME installed needs to be inspected, as detailed below:

- Check the condition, physical deterioration and wear and tear.

The clients will not permit to open the machine to check wear and tear etc. This is one of the limiting conditions under which valuer performs his duty. Therefore, valuer has to make proper estimate by making inquiry with clients.

The following questions will help in this regard.

- (a) When the equipment underwent major repair or reconditioning and at what cost?
 - (b) When did the equipment undergo capability test?
 - (c) What is the present condition in terms of production rate and accuracy vis-à-vis the original at the time of purchase?
- Check the working environment with regards to following:
 - Is power supply easily accessible?
 - Condition of power cords and other connections.
 - Is power surge protection utilized?
 - Check the usage:
 - One shift, two shifts or three shifts per day.
 - Number of hours in one shift.
 - Number of working days in a year.
 - Check the maintenance record and ascertain:
 - Is preventive maintenance adopted?
 - Number of complaints received.
 - Are any complaints repeated? How are they attended?
 - Are causes of complaints diagnosed?
 - Quantity and the severity of complaints.
 - Whether all complaints are rectified?
 - Past history of breakdown with causes, if any.

6.2 Fixed asset register / Fixed asset records (FAR)

Fixed asset register contains the details of each item of machine held by the company.

The specimen of an ideal Asset Card for PME is given below:

Name of company	ABC Ltd. (Owner of machine)
Description	S.S. reaction vessel with agitator and S.S. coil
Purchase order number and date	PO/FCD/1 dated 28 th February, 2013
Capital proposal number	Job number : 2013/1
Drawing number	2013/2
Location / department	FCD (Final Chemical Department)

Date of installation	01.04.2013
Plant card number	FCD/1
Identification number	1/100/C/2013-14/1
Explanation for identification number	<p>The company has pharmaceutical plants in Mumbai, Ghaziabad and Goa. The plants are numbered as 1, 2, 3 for Mumbai, Ghaziabad and Goa respectively. 100 is the cost centre number for Fine Chemical Division (FCD). C indicates machine is corrosive, 2013-14 indicates the year of installation, 1 indicates serial number assigned by the company.</p> <p>The identification number indicates machine is installed in Mumbai, in FCD, purchased in the year 2013-14 having sr. no.1.</p>

Technical specifications:

Insulated reactor vessel with coil closed from both ends

Capacity	:	1,000 liters (total volume/water filling capacity)	
Batch capacity	:	700 liters	
Design pressure			
Shell	:	6 kg/cm ²	
Jacket	:	Full vacuum	
Design temperature			
Shell	:	- 29 to + 200 ^o C	
Jacket	:	- 29 to + 200 ^o C	
Dimensions			
Dia.	:	850 mm (top and bottom)	
Height	:	1850 mm	
		<u>M.O.C.**</u>	<u>Thickness</u>
Shell	:	SS 316	10 mm
Dish	:	SS 316	12 mm
Jacket	:	SS 304	6 mm

** M.O.C. means material of construction

Serial number of machine: 1

Details of gearbox and drive

Gearbox

Model : SK.9016.IVXF+W
Ratio : 23.89:1
Make : Nord

Drive : 3 hp, 1430 rpm

Motor : Flameproof

Supplier : XYZ Ltd.

Amount capitalized

(All figures are in Indian Rupees and are hypothetical)

(i)	Ex-works price at manufacturer's premises	8,00,000
(ii)	Packing & forwarding charges	15,000
(iii)	Excise duty at 16.48% of (i) + (ii)	1,34,312

		9,49,312
(iv)	VAT (Value Added Tax) at 4% of (i) + (ii) + (iii)	37,973

	Total of (i) to (iii) and (iv)	9,87,285

Add to the above:

Costs of	(a) Transit insurance	2,000
	(b) Handling at buyer's site	5,000
	(c) Foundation, erection, installation	10,000
	(d) Pre-operative expenses	75,000

		10,79,285

		Say ₹ 10,80,000/-

Gross Book Value (GBV) = Purchase price without depreciation
= ₹ 10,80,000/-

Let us assume that the machine is used in single shift in 2013-14 and also in 2014-15 and rate of depreciation is 10% on WDV basis.

Format of computation of GBV, Depreciation and Net Book Value (NBV) is given below:

Year	G.B.V.	Add./Dedu.	G.B.V. After Add./Dedu.	Rate of Depreciation	Depreciation for the year	Cumulative Depreciation	N.B.V.	Physical Verification Signature/ Date
	(a)	(b)	(c)=(a)+/-(b)		(d)	(e)	(f)=(c)-(e)	
	(₹)	(₹)	(₹)		(₹)	(₹)	(₹)	
2013-14	10,80,000	-	10,80,000	10%	1,08,000	1,08,000	9,72,000	Sd/- Date
2014-15	10,80,000	-	10,80,000	10%	97,200	2,05,200	8,74,800	Sd/- Date

If the information is available as per specimen given above then it is very helpful in valuation exercise and also for the company to calculate installed capacity as detailed technical specifications are readily available in fixed assets records. But situation in actual practice is entirely different.

The following shortfalls have been observed in FAR maintained by the industries.

- Description given is vague.
- Proper technical specifications are not given.
- Break-up of GBV is not given.
- Equipment which is already scrapped long back and same is appearing in register.
- **Equipment manufactured by the company from its own material and labour for which no capital appropriation report is prepared; hence account department is not aware of the addition made and therefore not reflected in FAR.**

Instead of giving complete description of machine as mentioned earlier, generally the description given by company in the FAR is as under.

700 L S.S. reaction vessel with stirrer.

On comparing above description with technical specifications mentioned under specimen of FAR earlier it will be observed that following vital data are missing.

Missing data

Effect of missing data on estimation

- | | |
|---|--|
| (1) Instead of water filling capacity (1000 L) batch capacity 700 L is mentioned. | (1) If weight of plate is calculated from dimensions of equipment based on batch capacity then in that case there will be a considerable difference. |
|---|--|

- | | |
|---|---|
| (2) Type of stainless steel plate used is not given whether is it SS 304 or SS 316 or SS 316L | (2) SS 316 plate is about 15% costlier than SS 304 and SS 316L is about 15% costlier than SS 316.

If SS 316L plate is used and calculations are made as per SS 316 then there will be a difference of about 15%. |
| (3) Thickness of plate used is not given | (3) If calculations are made as per thickness of 6 mm and actual thickness is 10 mm there will be a difference in weight by about 50%. |
| (4) Closed from both ends or open on top is not given. | (4) If it is closed from both ends and calculations are made as if it is open from top then weight of steel used on top dish is missing. |
| (5) Type of stirrer is not given | (5) Generally anchor, turbine or gate type stirrers are used.

Design and weight varies in each of the three cases which will have effect on computation of reproduction/ replacement cost new. |
| (6) Whether fitted with a coil is not given | (6) If it is fitted with a coil and it is not considered then estimate will be lower to the tune of cost of coil depending on material, diameter and length of coil. |
| (7) What is the speed of stirrer? | (7) Price of gearbox depends on gear ratio, and gear ratio depends on speed of stirrer. |
| (8) Is it flameproof or ordinary motor? | (8) Flameproof motor is costlier by 75% to 100% than ordinary motor. |

It is noticed that in actual practice, plant personnel use batch capacity. Representative(s) from plant furnishes batch capacities while taking inventory.

While going through above, it is observed how important is micro-identification and independent inventory.

6.3 Collection and verification of data

It is pertinent to point out that the FAR maintained by the company, invariably fail to reflect accurately the assets that are installed in the factory. Therefore, inventories or fixed asset / plant register provided by clients need not be fully relied upon, although they are useful aid to a valuer in preparing his or her own inventory and provide assistance in establishing discrepancies, if any, that exists between the book records and assets actually available on inspection.

Information volunteered by the client or an employee of the client need to be treated with caution due to possibility of bias arising out of subjective considerations.

Physical verification of PME by the valuer is pre-requisite to valuation. Inventory of PME installed in various sections complete in details like technical specifications, make, model, capacity, present wear and tear, unusual maintenance, energy consumption, machinery if unused etc. shall have to be verified with accounting and technical records of the company like fixed asset / plant register. It is essential to identify the discrepancies, if any, detected on actual physical verification.

Fixed asset register (FAR) contains machinery capitalized by the company.

It is worthwhile to mention that in good time a company may put major item even entire equipment as a revenue expense and hence it will not appear in FAR. It is note-worthy to mention here that when any item is taken as a revenue expense it will reduce profit which in turn will reduce tax liability. In bad times even small items may be capitalized and hence loss gets reduced. This is noticed by valuers while going through FAR.

Let us consider a case of a machine.

On the name plate of that machine the year of installation shown is 2005 and in FAR it is shown as 1995. Further inquiry with account department revealed that the machine existing in the plant is of 2005 make and it is treated as revenue expense in 2005. But in FAR old machine continues.

Therefore, it is particularly necessary to notice if items of revenue nature are capitalized and vice versa; whether the year of manufacture in the account record and the year of manufacture of the machine installed in the plant differ due to the replacement of an original machine; and if the cost of replacement treated as a revenue expense.

Comparison of inventory with company's records shall be made for preparation of lists on the following basic considerations:

- (a) PME physically existing on site, but account reference not available, due to omissions arising out of:
 - * PME having been manufactured in the company's own premises utilizing its own material and labour.
 - * Large tank having been converted into a number of small tanks or similar units.
 - * Cost of PME treated as revenue expense.
 - * PME taken on lease, or otherwise (including those belonging to sister concern) put into use.

- (b) PME appearing in fixed asset register but physically not available due to factors, such as:
 - * PME already scrapped/not in use/lying outside factory premises for repairs etc.
 - * PME already sold and money realized shown as miscellaneous receipts but effects not given in the fixed assets/plant register.
 - * Items of a revenue nature capitalized
 - * PME given on lease or lying in sub-contractor's premises.

Any discrepancy noticed on such verification shall be adjusted in books of account to give a true and fair view.

Technical specifications shall be verified in the following manner:

- * Reference to the purchase orders with the purchase/account department.
- * Consulting the technical literature from technical personnel using and/or maintaining PME.
- * Thorough discussion with technical personnel after evolving a format of discussion based on familiarity with the process, background of experience and consultation with other experts in the field.
- * It is essential to scrutinize the purchase order as it gives reasonably complete details of a main machine, its accessories and other salient features of relevance. While taking inventory, a valuer shall not miss those accessories, which have potential to contribute to the process of manufacturing but actually not pressed into service.

7.0 Steps involved in preparing final inventory are given below :

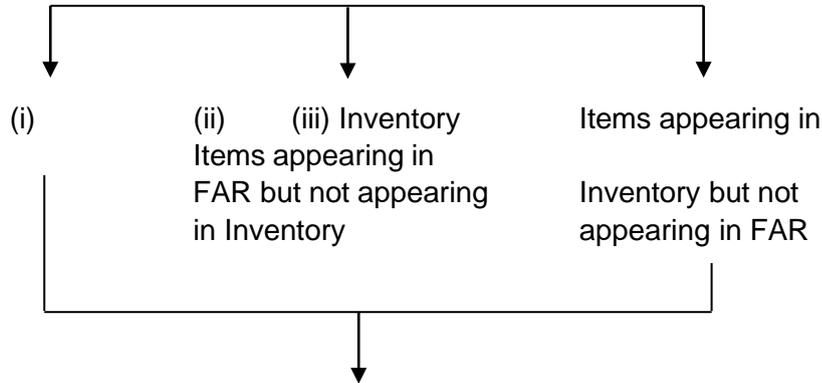
Step – 1

Taking inventory of PME installed in various departments / sections of the factory.



Step – 2

Comparing inventory with FAR maintained by accounts department.



Step – 3

Discussions with the personnel from the accounts and technical departments result in identifying certain machinery appearing in FAR which were missed while taking inventory. These items need to be added to the inventory taken as per Step – 1. These items which are added to inventory are termed as ATI (add to inventory). The certain items which are already written off/scrapped/sold should not appear in the FAR but are appearing in the FAR and therefore these items need to be deleted from FAR.



Step – 4

Preparing final list of machinery installed in the plant = Inventory taken under Step – 1 + ATI.



Step – 5

Sometimes it is observed that certain machinery are not in use and lying idle. Such machinery are generally missed while taking inventory and need to be classified in following categories and to be considered appropriately.

- Machinery which can be used without repairs
- Machinery which cannot be used without repairs
- Machinery which cannot be repaired

8.0 Macro-identification

In this, the entire manufacturing process is studied by identifying the major components contributing to the design capacity of the plant in question.

This is useful for valuing continuous process plant.

The valuer adopts macro-identification to indicate the following:-

- * What is the line of production?
- * What is the process employed?
- * What is the installed capacity and actual production?

The valuer shall collect the following information for macro-identification:

- Date as on which valuation is made
- Name and address of the company
- Details of products manufactured
- Process employed
- Flow-chart of process employed
- Details of by-products
- Installed capacity of the plant and actual production in quantity as well as in monetary terms during last five years.
- Raw material availability – finite or infinite
- Quality of finished goods – what is the percentage of rejection? Is it within permissible limits? If not, the reasons?
- Usage/workload – whether single shift, double shift, triple shift or continuous?
 - * Duration of each shift i.e., 12 hour shifts, 8 hour shifts, etc.
 - * Shift-wise usage for number of days in a year.
- Standard of maintenance – what is the maintenance programme? Is it regular, preventive or on demand? Does any equipment require frequent repairs? If so, what are the reasons?
- Efficiency of plant layout
- Plant suitability
- Interdependency – in case of a continuous process plant consisting of several pieces of equipment, the economic balance life of the entire plant is governed by economic balance life of one or two core units. The valuer shall identify the core units in such circumstances.
- Details of amount spent on repairs during the last five years.
- Estimated cost of repairs for the next five years.
- Is the plant of the latest technology or old? Is it suffering from any obsolescence?

- If the plant is not of the latest technology, then has any comparison been made between the latest and the old plant with regard to following aspects to assess the obsolescence:
 - * Production capacity
 - * Replacement cost of brand new equipment
 - * Direct wages
 - * Consumption of stores
 - * Consumption of energy
 - * Fixed cost
 - * Saving in space

- Electrical layout showing HT/LT distribution and sub-distribution system along with length, type and size of cable. Whether electrical installations provided is sufficient for present connected load or is there a provision for connecting additional load?

What is the connected load in hp/kw?

- Is there any statutory liability for violation of any regulatory measures contained in the law enforcing Environmental Pollution Control/Factory Act/Electricity Act etc.? If yes, has any calculation been made as regards the cost to cure?

- Chronological and Effective Age to evaluate life expectancy of the plant.

- Details of machines scrapped/discarded in following format:
 - * Date of installation
 - * Date of scrapping
 - * Total number of hours in service

- Details of machines sold in following format:
 - * Date of purchase
 - * Date of installation
 - * Purchase price
 - * Total number of hours in service
 - * Condition at the time of sale
 - * Sale price realized

9.0 Depreciation

It is the usual wear and tear caused by the normal working of any asset, its use is liable to a certain amount of deterioration despite the care and attention bestowed on its maintenance and preservation.

The term Depreciation used in these Guidelines refers to **wear and tear only**. Obsolescence of any form is separately considered.

In case of plant, machinery and equipment due regard to be given to the following parameters while selecting the method of depreciation:

- Capital value to be recouped in installments during the remaining life of the asset and not the lump sum amount at the end of life.
- Value of plant and machinery to decline slowly in the beginning and faster during mid-life and maximum at the end.
- Rate of yield declining during the remaining life.

9.1 Methods of computing depreciation used in practice are

- * Observed deterioration
- * Straight line
- * Decline and balance

The scrap value is one of the important considerations in computation of depreciation irrespective of method of depreciation used which is evident from the example given below.

Scrap value mainly depends on material content which in turn depends on type and weight of material used in machinery.

In case of laboratory equipment, computer scrap value is almost negligible.

But in case of certain process of manufacture like fiberglass some machines are with precious metals and scrap value of such machines is very high.

In case of high valued items one cannot afford to ignore scrap value as illustrated below.

There are two machines A and B which are made out of the same metal and scrap value based on material content is 10% of replacement cost new (RCN) for both the machines. But RCN of machine A is ₹ 5,000/- and machine B is ₹ 10 Crores (one crore = ten million therefore 10 Crores = 100 million).

The scrap value at 10% for machine A and B will be ₹ 500/- and ₹ 1,00,00,000/- (one crore = ten million) respectively. If depreciation in both the cases is 20% then depreciated replacement cost (DRC) for machine A and B will be ₹ 4,100/- and ₹ 8,20,00,000/- (Rupees eighty two million) respectively.

If scrap value is considered to be zero then DRC of machine A and B will be ₹ 4,000/- and ₹ 8,00,00,000 (Rupees eighty million) respectively.

This clearly establishes that if scrap value is not considered then value of machine gets reduced by ₹ 100/- in case of machine A which is negligible but for machine B it gets reduced by ₹ 20 lacs (Rupees two million) which one cannot afford to ignore.

Therefore, it is essential to consider scrap value. If it is considered to be zero then it is necessary to mention that scrap value considered is zero.

This also throws light on the fact that the value of any enterprise shall not be less than the scrap value of its tangible assets.

The following input for machinery under consideration by technical personnel of clients helps in estimating depreciation.

- (i) Did the equipment undergo major repair or reconditioning?
- (ii) Did the equipment undergo capability test?
- (iii) What is the present condition in terms of production rate and accuracy vis-à-vis the original at the time of purchase?

If business enterprise value worked out by business valuers is less than the scrap value of its tangible assets, the prudent entrepreneur will prefer to realize money by scrapping the plant instead of selling entire business at value estimated by a business valuer.

Therefore, it is necessary to estimate scrap value also especially for big deals to make sure that the transaction is not taking place at a price less than the scrap value.

(a) Observed deterioration (also known as the 0 – 100% method)

Lump sum figure of depreciation can be adopted as given below:

Condition	Depreciation %
New (N)	0 - 5
Excellent (E)	6 - 10
Very Good (VG)	11 - 20
Good (G)	21 - 50
Fair (F)	51 - 70
Poor (P)	71 - 90
Scrap (S)	91 - 100

Let us consider a case of a machine having an age of 5 years and replacement cost new ₹ 1,00,000/-. Scrap value is zero.

It is in very good condition and depreciation on above method is estimated to be 20% which works out to ₹ 20,000/- and Depreciated Replacement Cost (DRC) works out to ₹ 80,000/-.

(b) Straight line method

Depreciation and depreciated replacement cost of above machine having age 5 years, total economic life 15 years and scrap value at 10% by straight line method will be as under:

Age 5 years

$$\text{Depreciation per annum (\%)} = \frac{100 - \text{scrap value}}{\text{total economic life}}$$

$$= \frac{100 - 10}{15}$$

$$= 6\%$$

$$\begin{aligned} \text{Depreciation for 5 years} &= 30\% \\ &= ₹ 30,000/- \end{aligned}$$

$$\begin{aligned} \text{Replacement cost new} &= ₹ 1,00,000/- \\ \text{Depreciation} &= ₹ 30,000/- \\ \text{Depreciated replacement cost (DRC)} &= ₹ 70,000/- \end{aligned}$$

(c) Decline and balance method

(This is also known as written down value/diminishing balance):

Let us consider a case of a machine having replacement cost new of ₹ 1,00,000/- and scrap value is zero, it is depreciated at 10% per annum. Depreciation in respective years will be as under:

Year	Depreciation in ₹ for the year
1 st	10,000/-
2 nd	9,000/-
3 rd	8,100/-

Depreciation for 5 years old machine at 10% per annum by decline and balance method will be as under (in ₹).

Total depreciation for 3 years	=	27,100/-
Depreciation for 4 th year	=	7,290/-
Depreciation for 5 th year	=	6,561/-
	-
		40,951/-
	-

Say ₹ 41,000/-

Replacement cost new	=	₹ 1,00,000/-
Depreciation	=	₹ 41,000/-
Depreciated replacement cost (DRC)	=	₹ 59,000/-

The above illustration is for a machine having scrap value zero. If scrap value of machine is considered to be 10%, then the depreciation will be worked out on ₹ 90,000/- instead of ₹ 1,00,000/-.

The depreciation and depreciated replacement cost at 10% on WDV for 5 years old machines with 10% scrap value having replacement cost ₹ 1,00,000/- will be as under:

Replacement cost new	1,00,000
Depreciation	36,856

Depreciated replacement cost (DRC)	63,144

9.2 Method of depreciation to be adopted

The question of selecting the appropriate depreciation method arises subsequent to completion of following process:

- * taking inventory
- * completing collection and verification of data
- * going through the records of maintenance, ascertaining usage, standard of maintenance etc.

Therefore, after taking into consideration all relevant aspects discussed in the foregoing paragraphs, the valuer, on his best judgement and experience, has to select the appropriate method for computing depreciation.

The method of reckoning depreciation in case of plant and machinery is to be determined by a valuer with due regard to the parameters indicated below:

- * Age and estimated economic balance life;
- * History of repairs and maintenance;
- * Number of working hours per shift per day;
- * Wear and tear *vis-à-vis* maintenance;
- * Effect of surrounding weather conditions, and environment;
- * Anticipated scrap value.

Let us consider a hypothetical case of brand new identical cars purchased by three persons A, B, C on same day for ₹ 25,00,000/-. After three years each one had run the car for 50,000 km. The maintenance of A was excellent, B inferior to A and C inferior to B.

Each car was sold as per price given below (current price of brand new identical car on date of sale was ₹ 30,00,000/-).

A	-	₹ 12,50,000/-
B	-	₹ 9,00,000/-
C	-	₹ 6,00,000/-

The buyers and sellers were falling under category of 'willing buyer' and 'willing seller' in above transactions.

The depreciation from market derived data in each of the cases will be as under:

A	-	(30,00,000 – 12,50,000)	=	₹ 17,50,000/-
B	-	(30,00,000 – 9,00,000)	=	₹ 21,00,000/-
C	-	(30,00,000 – 6,00,000)	=	₹ 24,00,000/-

Let us assume that the scrap value of cars is negligible, the rate of depreciation adopted for motor cars in books of account is 20% on decline and balance (WDV) method.

The depreciation for 3 years at 20% on purchase price and current price of brand new car will be as under (rounded):

	Depreciation in ₹ for 3 years (20% WDV) <u>on purchase price</u>	Depreciation in ₹ for 3 years (20% WDV) <u>on current price of brand new car</u>
A	- 12,20,000/-	14,64,000/-
B	- 12,20,000/-	14,64,000/-
C	- 12,20,000/-	14,64,000/-

The statement showing Book Value (purchase price less depreciation), (DRC) (current price of brand new motor car less depreciation) and market value is given below:

	<u>Book value</u> (₹)	<u>D.R.C.</u> (₹)	<u>Market value</u> (₹)
A	- 12,80,000/-	15,36,000/-	12,50,000/-
B	- 12,80,000/-	15,36,000/-	9,00,000/-
C	- 12,80,000/-	15,36,000/-	6,00,000/-

Book value of each of the three cars is same. DRC at the same rate of depreciation (20%) is also for each of the three cars is same. But market value is different.

The reasons for the difference in market value are:

- (i) Amount spent on maintenance increases balance life.
- (ii) Amount spent on maintenance is not a capital expenditure and therefore not added to purchase price of a car.
- (iii) **Market value depends on market condition i.e. demand and supply.**

Now suppose, the book value of each of the three cars is zero instead of ₹ 12,80,000/- and other things remaining the same, the market value will be same as computed above. This is to bring to light that even if the book value is zero, market value may not be zero.

Now let us consider the situation in which the condition is very poor then in that case the market value can be negligible compared to book value.

In practice, many a time 'DRC' is adopted as 'Market Value' which is not correct.

The above illustration makes it absolutely clear that **DRC and Market Value are not to be used interchangeably.**

The above statement makes it amply clear that the technical depreciation computed from market derived data is quite different than accounting depreciation. **This is mainly due to the fact that technical depreciation takes into consideration demand, supply and condition which decide value.**

10.0 Obsolescence

There are three types of obsolescence:

- Technological (many times considered as same as functional or incorporated with functional)
- Functional
- Economic

10.1 Technological obsolescence

Technological obsolescence occurs due to change in design and materials of construction of the PME under consideration. Latest sophisticated equipment with reduced occupancy, improved efficiency or optimum energy consumption is common in PME. Technological obsolescence may arise due to development of new technology which bring changes in rate of production or reduction of operating cost. The need for adequate familiarity of the valuer with such a situation is more emergent in the present high-tech environment than before. Enough exposure to and background experience of technology in this regard is essential for a valuer. In case he is not fully conversant, he shall refer appropriate matters to experts.

10.2 Functional obsolescence

Functional obsolescence arises when a machine already in function loses its optimum capacity owing to a decline in co-operation from its operating counterparts. It may arise due to variety of internal reasons. The company

may have been compelled to commission a machine of high-rated capacity simply because a low-rated one is not available and the operating counterparts, whether it is labour or capital, are not geared to give the highly rated machine the opportunity for optimum output. Functional obsolescence may also arise due to faulty design or wrong location of industrial undertaking. It is assessed by a comparison to its more current replacement. (For further examples on functional obsolescence refer to paragraph 3.13 Value in ex-situ and Illustration - I under paragraph 14.0).

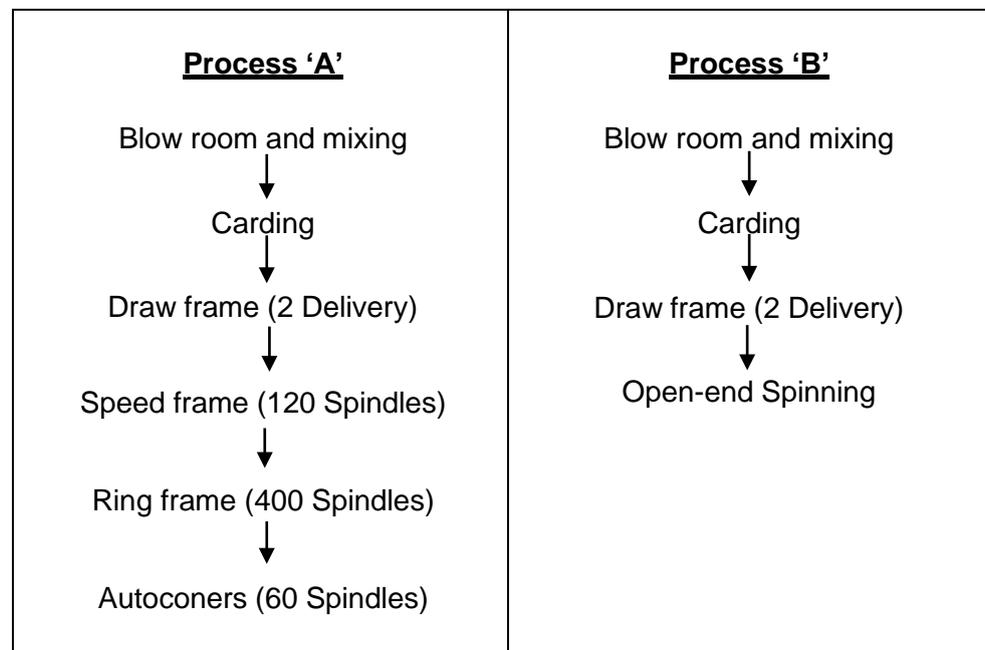
Functional obsolescence is also detected by noticing a decrease in value due to non-availability of spares or accessories, or any other allied factors. Operating obsolescence is known as the present worth of the future excess operating cost of a machine. The valuer is expected to appropriately account these factors with relevant data to carry out credible valuation.

10.3 Illustration on computation of technological and functional obsolescence

Let us consider the hypothetical case of spinning section of a textile manufacturing process involved in manufacturing of cotton using two processes 'A' and 'B'.

Count of yarn considered = 12
 Production considered = 1535 kg.

Material flow-diagram for process 'A' and process 'B' is outlined below.



It may be noted that process 'B' bypasses the speed frames, ring frames and autoconers.

Details of the machines required to manufacture 1535 kg. of yarn for both the processes.

'A'

<u>Name of the machine</u>	<u>Machine required</u>	<u>Unit cost of machine ₹ 000's</u>	<u>Cost of machine ₹ 000's</u>
Blow room & mixing	0.19	9400	1786
Carding	1.44	3100	4464
Draw frame	0.83	2500	2075
Speed frame	1.22	1420	1732
Ring frame	3.72	893	3322
Autoconer	0.32	10600	3392
		Total	16771

'B'

<u>Name of the machine</u>	<u>Machine required</u>	<u>Unit cost of machine ₹ 000's</u>	<u>Cost of machine ₹ 000's</u>
Blow room & mixing	0.19	9400	1786
Carding	1.44	3100	4464
Draw frame	0.83	2500	2075
Open-end spinning	1.00	14000	14000
		Total	22325

Investment in machinery of process 'B' is higher by 33% compared to process 'A'.

Comparison of direct wages (figures in ₹)

	<u>'A'</u>	<u>'B'</u>
Blow room & mixing	49	49
Carding	80	80
Draw frame	114	114
Speed frame	560	-
Ring frame	862	-
Autoconer	322	-
Open-end spinning	-	340
Total	1987	583

Note: The comparison of direct wages shows that the process 'B' is cheaper by approximately 70% and hence process 'A' has been rendered obsolete from the viewpoint of direct wages.

Comparison of consumption of stores (figures in ₹)

	<u>'A'</u>	<u>'B'</u>
Blow room & mixing	55	55
Carding	91	91
Draw frame	10	10
Speed frame	117	-
Ring frame	325	-
Autoconer	51	-
Open-end spinning	-	72
Total	649	228

Note: The comparison shows that the process 'B' is cheaper by almost 65% and hence the process 'A' has been rendered obsolete even from the point of view of comparison of stores.

Comparison of utility (figures in ₹)

	<u>'A'</u>	<u>'B'</u>
Blow room & mixing	410	410
Carding	1170	1170
Draw frame	74	74
Speed frame	602	-
Ring frame	2282	-
Autoconer	588	-
Open-end spinning	-	3621
Total	5126	5275

Note: The comparison shows that the process 'B' is costlier by approximately 2% which is marginal.

Comparison of fixed cost (figures in ₹)

	<u>'A'</u>	<u>'B'</u>
Blow room & mixing	517	517
Carding	515	515
Draw frame	28	28
Speed frame	1021	-
Ring frame	1085	-
Autoconer	397	-
Open-end spinning	-	1685
Total	3563	2745

Note: The comparison shows that the process 'B' is cheaper by approximately 25% and hence it is better so far as comparison of fixed cost is concerned.

Comparison of space required

(a) 'A'

	<u>Area per machine (sq. m.)</u>	<u>No. of machine required</u>	<u>Actual area required in sq. m.</u>
Blow room & mixing	213.16	0.19	40.50
Carding	25.20	1.44	36.00
Draw frame	8.82	0.83	7.30
Speed frame	46.80	1.22	57.00
Ring frame	16.00	3.72	60.00
Autoconer	32.85	0.32	10.50
			211.30

(b) 'B'

Blow room & mixing	40.50 sq. m.
Carding	36.00 sq. m.
Draw frame	7.30 sq. m.
Open-end spinning	12.30 sq. m.
	96.10 sq. m.

Note: The comparison shows that the process 'B' is cheaper by approximately 55% and hence the process 'A' has been rendered obsolete from the point of view of space requirement.

Summarized statement of overall comparison

	Process 'A' (%)	Comparative figures for Process 'B' (%)
Investment in machinery	100	133
Direct wages	100	30
Stores	100	35
Utility	100	102
Fixed cost	100	75
Saving in space	100	45
Weighted average	100	70

BLOW ROOM AND MIXING (A1 = B1)



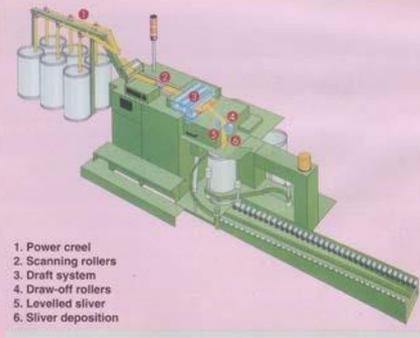
(A1 = B1)



CARDING (A2 = B2)



DRAW FRAME (A3 = B3)



SPEED FRAME (A4)



RING FRAME (A5)



AUTOCONER (A-6)



OPEN-END SPINNING (B4)



10.4 Economic obsolescence

This is due to factors external to the PME itself. This could be due to change in demand of the product manufactured or shrinkage in supply of raw materials and labour, legislation affecting taxes or duties, environmental or zoning controls etc.

Economic obsolescence can be properly measured with a “Business Enterprise Equation” as stated below :

$$\text{Assets} = \text{Liabilities} + \text{Stockholders Equity}$$

or

$$\text{CA} + \text{FA} + \text{IA} = \text{CL} + \text{LTD} + \text{SE}$$

where

CA	=	Current assets
FA	=	Fixed assets
IA	=	Intangible assets
CL	=	Current liabilities
LTD	=	Long-term debt
SE	=	Stockholders' equity

$$\text{CA} + \text{FA} + \text{IA} = \text{CL} + \text{LTD} + \text{SE}$$

$$(\text{CA} - \text{CL}) + \text{FA} + \text{IA} = \text{LTD} + \text{SE}$$

(CA - CL) is net working capital (NWC) and (LTD + SE) is defined as the value of the business enterprise (BE), then :

$$\text{BE} = \text{SE} + \text{LTD} = \text{NWC} + \text{FA} + \text{IA}$$

If we rearrange terms, the equation becomes:

$$\text{BE} - \text{NWC} = \text{FA} + \text{IA}$$

Business enterprise value less net working capital represents the economic support for fixed and intangible assets. Economic obsolescence exists, if the economic support for fixed and intangible assets is less than the fractional values of the underlying identified assets, as individually estimated by the depreciated replacement cost or sales comparison methods, as the case may be.

Economic obsolescence is thus algebraically expressed as

$$\text{BE} - \text{NWC} < (\text{FA} + \text{IA})$$

Whenever economic obsolescence is established to exist, it is necessary to reduce the individual asset values to the level of indicated economic support as contributing to the operation. This adjustment is called an economic penalty.

If there is excess economic support for the underlying identified assets, it is concluded that unidentified intangible value exists, which is generally considered to be goodwill or going concern value.

The Gujarati and Marwari communities are shrewd businessmen. They define obsolescence in a very nice manner. According to them, everything boils down to ROKADA (Cash). The business is nothing but ROKADE KA KAMAL (i.e. wonder of cash). If a company is capable of generating ROKADA with old machine then it is not suffering from obsolescence and even with new machines it is not generating ROKADA then it is obsolete.

The terminology used as technological, functional, economic is not important but it is important to consider obsolescence in totality whatever may be the nomenclature used. However, they can be calculated individually or in total (accrued).

Note: *The business valuation does not fall under the jurisdiction of PME Valuer as it requires a special skill which is possessed by a few Chartered Accountants. Therefore, for computation of economic obsolescence PME valuer will have to depend on such experts. It will be the duty of PME valuer to make it clear with clients before taking up the assignment on the areas which fall outside his/her purview.*

11.0 Approaches to value – Cost, market and income

11.1 Cost approach

The logic behind the cost approach is that a prudent investor would pay no more for a property than the cost of producing a substitute property with the same utility. Thus, it rests mainly on the principle of substitution. While using the cost approach the valuer is comparing an existing facility to modern counterpart when a replacement cost is contemplated. Its main advantage lies in the fact that it provides the opportunity for specific asset identification. That is to say, the valuer knows the specific inclusions and exclusions and elements of depreciation. But its primary weakness is its difficulty to measure and quantify objectively the full amount of economic obsolescence.

For more information on cost approach please refer to paragraph number 12.0 – phases of valuation procedure.

11.2 Market approach

The primary strength of the market approach lies in the fact that it is the most reliable indicator of value of the individual item of plant and machinery and is a direct measure of all of its depreciation and obsolescence aspects. But it often suffers from the difficulty of non-availability of comparable sales and also the lack of an adequate data base for comparison. Even when there are sufficient sales, we may not have access to the facts of those sales. Again, the timing of the sale transaction is another important factor. Using sales data from the past may not fit in with the economic perspective of the present. Thus, an objective comparison requires a more expert skill in valuation in order to make the proper adjustments.

Ideally the valuer of plant and machinery using the market approach should strive to base conclusions on sales of comparable assets which have been transacted in the market place. He should take care to identify the age of the machine, its condition, features including accessories, location, manufacturer, price, quality, quantity etc. for the purpose of comparison. It is also necessary to inquire if the sale is induced by compulsion or speculation. The type of transaction is also to be looked into. For example, if it is a liquidation sale, the price fetched may be different from what it otherwise would have been. The question is often raised whether one sale makes a market. The answer is generally in the negative. Again, circumstances exist when there is no market information, as no property is exchanging hands. In such unique circumstances valuation may be required to be made by analyzing a single sale transaction. This is a limiting condition under which a valuer performs his duty.

For more information on market approach please refer to paragraph number 12.0 – phases of valuation procedure.

11.3 Income approach

The income approach to valuation of plant and machinery is perhaps the best measurement of total depreciation and obsolescence of all assets and bears reflection of the rationale behind all business decisions. The relative strength of the income approach is its ability to project the full amount of economic obsolescence and at the same time measure the value of all assets in aggregate, not achievable through the use of market or the cost approach to that extent. Of course, the income approach cannot segregate specific assets in the process of valuation as it becomes very difficult to identify the value of specific assets without some sort of arbitrary allocation. In spite of such infirmity the income approach is perhaps the most desirable method if applicable, so far as valuation of plant and machinery is concerned. It is very relevant for leased plant and machinery. When using the income approach, the remaining useful life of the subject plant and machinery also plays an important role in the analysis.

For more information on income approach please refer to paragraph number 12.0 – phases of valuation procedure.

12.0 Phases of valuation procedure

Logical phases of valuation procedure for PME:

Phase - I	Terms of reference
Phase - II	Strategy of valuation
Phase - III	Physical verification (survey and inspection)
Phase - IV	Data collection and valuation analysis under different approaches to value
Phase - V	Reconciliation

12.1 Phase – I Terms of reference

- The source of the instruction;
- The purpose of the valuation;
- The date of the valuation;
- Treatment of items;
 - On lease;
 - On hire purchase;
 - Held in trust;
 - Jigs, patterns, special tooling in machine tool industry, instrumentation, piping and other installations in process industry depending on type of industry under consideration;
- Fixed plant normally regarded as part of the building services, such as, electrical installations for lighting, sanitary pipings, acoustics, etc.
- Assumptions to be made relating to the basis of valuation;
- The appropriate instructions, particulars of publication and limit on liability to third parties.

12.2 Phase - II Strategy of valuation

- **General**
 - Valuation of PME requires the preparation of an inventory in the form of a schedule. The extent of details to be included in such schedule is a matter dependent upon the valuer's judgement after due consideration of client's instructions. Refer paragraph 6.1 - Micro-identification.
- Each piece of PME needs to be inspected in accordance with the method as outlined in example no.2 in paragraph 6.1.
- Other matters to be taken into consideration:
 - Information volunteered by the client or an employee of the client need be treated with caution due to possibility of bias arising out of subjective considerations.

- Certain fixed plants in building services are normally included in the valuation of land and buildings, such as, electrical installations for lighting, piping installations for sanitary purposes, lifts, acoustics etc. Whatever may be the purpose or basis of valuation, valuers are required to be consistent in their treatment of such “fixed plant”.
- When different valuers are employed to carry out property and plant valuation for the same assignment careful liaison and co-ordination is necessary to avoid either omission or duplication.
- A valuation of land and buildings will normally take into account those items of PME which primarily provide services to the land and building and which the open market regards as an integral part of the premises for purposes of letting, sale or loan security. Where such items are valued along with the land and building, they must be excluded from PME valuation.

➤ **The following items *inter alia* are to be treated as PME:**

- air-conditioning plant with ducting
- electrical installations for PME
- water and sewerage installations
- chimneys to boiler
- brick or concrete structures, foundation, and tanks associated with plant
- effluent treatment plant
- alarm installations

➤ **The following items *inter alia* are to be treated as building:**

- wells, tube wells, underground tanks, overhead tanks, roads etc.

Valuers are advised to discuss with the company accountants and auditors in appropriate cases before carrying out detailed valuation.

● **Particular requirements:**

- Items ‘held in trust’:

Detailed scrutiny shall be carried out to establish as to which items are not the property of the client but are ‘held in trust’.

- Patterns, jigs, moulds, instrumentation, piping and other installation in process industry etc.:

As a general rule, press tools, dies, moulds, patterns, jigs, punch cards, tapes, instrumentation, piping and other installation in process industry depending on type of industry under consideration shall be dealt and shown separately from the other items.

- Administration records:

Administration records or copy rights in the form of design, drawing, etc. shall not form a part of valuation of PME.

- Motor vehicles (licensed for road use) shall be dealt with as a separate item in the valuation process.

- PME – work in progress:

These also shall be dealt with as a separate item in the valuation process.

All valuation refer to a particular date. The estimate has to be on the basis that the relevant PME is ready for commercial production as on date of valuation and, therefore, the time required to bring the plant into commercial production has to be borne in mind, particularly while valuing large plants requiring several years to reach the state of commercial production.

12.3 Phase – III Physical verification (survey and inspection)

For collection and verification of data please refer to paragraph 6.3.

12.4 Phase – IV Data collection and valuation analysis

For collection and verification of data please refer to paragraph 6.3.

The approaches to valuation are:

- Cost
- Market
- Income

12.4.1 Cost approach (depreciated reproduction / replacement cost new):

Steps to be followed to estimate final value are as under:

- Estimating reproduction/replacement cost new (a)
- Calculating depreciation (b)
- Calculating depreciated reproduction/replacement cost (DRC)
- Computation of obsolescence if any (c)
- Value (a – b – c)

Reproduction/Replacement cost new can be estimated by any one of the following two methods.

- By floating inquiry
- By applying price index to historical/original cost.

Reproduction/replacement cost new calculated by floating inquiry and getting the quotation from the supplier is very accurate. For this, it is necessary to provide proper technical specifications to the supplier.

The other method resorted to is applying a price index to the historical/original cost (trending the historical/original cost).

Valuer shall estimate Reproduction/Replacement cost new by floating inquiry. But sometimes it becomes necessary to use a method known as trending the historical/original cost.

It is worthwhile to mention here that it is generally noticed that about 30% of total number of items held by any enterprise contribute to about 70% of total value. Therefore, it is desirable that such high valued items be valued by floating inquiry and balance items by trending the historical/original cost.

When price index is applied to purchase price the resultant figure is the reproduction cost new. This method is not accurate on account of the following reasons.

- Historical cost itself is not likely to be accurate due to the following reasons:
 - * It is inflated to reduce the margin at the time of obtaining a loan for purchase of PME or due to other reasons.
 - * It can be deflated because a purchase consideration was not fully reflected due to variety of reasons.
- Additional care to be taken in applying a price index is because of the following reasons.
 - * Many a time a second-hand machine is purchased for which first original cost (historical cost) is not available. In such cases, it is advisable to obtain a quotation.
 - * Price index to be applied to ex-works price of machine and to that all duties and other charges applicable on the date of valuation to be added.

- * Machine purchased in a particular accounting year remained under capital work in progress for more than one year and capitalized in a subsequent year of accounting. In order to calculate reproduction cost new, in such cases, price index for the respective years of purchase to be applied to the historical costs and not to the year of capitalization.
- * In case of imported machine extra care is to be taken due to following factors:
 - difference in price index of country of origin of machine and location of machine.
 - difference in rate of custom duty at the time of purchase and valuation.
 - difference in currency rate at the time of purchase and valuation.

In such a case price index of country of origin is to be applied to ex-works price in foreign currency of machine under consideration, this will give trended cost in foreign currency; to this currency rate and custom duty prevailing as on valuation date are to be applied and costs of clearing, forwarding, transit insurance, handling charges, foundation, erection installation etc. applicable on date of valuation to be added to work out Reproduction Cost New.

Price indices available in the following manner are more reliable.

- A lathe machine manufacturer has 10 models. It started manufacturing all the 10 models from say 1980.

It has a data bank of ex-works price of all the models year wise from 1980 to 2014.

The price index developed for all the models for this manufacturer from its data bank is very reliable.

- Valuers having their own data bank can present a credible valuation.

Note: Ministry of Finance, Govt. of India publishes cost indices for computation of capital gains tax for immovable property. These indices are for immovable property and therefore should not form a base for computation of reproduction cost new of plant & machinery.

After estimating reproduction/replacement cost new, the next step is to calculate the depreciation and if obsolescence is present, the same needs to be computed appropriately.

Valuers have to encounter machines falling under following broad categories in actual practice:

- (a) Machines identical to the machine under consideration as available in the market from the original manufacturers.
- (b) Machines discontinued by the original manufacturer but machines with identical technical specifications manufactured by other manufacturers.
- (c) Old and outdated machines discontinued by the manufacturer.

Let us consider the machines falling under category (a) as referred above.

In the case of these machines valuers shall ascertain reproduction cost new and depreciation to be calculated by any one of following methods applicable for PME under consideration:

- * Straight line
- * Decline and balance
- * Observed deterioration

Machines falling under category (b) as referred above.

Many a time, it is observed that the machine with same technical specifications are manufactured by two different manufacturers is sold at different prices.

The reasons for the difference can be:

- * Brand name
- * Quality
- * Percentage of rejection
- * Down time
- * Cost of maintenance

If the products of the manufacturer other than the original manufacturer is well comparable with the original manufacturer, replacement cost new for a manufacturer other than the original manufacturer can be adopted. Otherwise, adjustments will have to be made with good judgments as there is no empirical formulae to provide the right answer. This is known as replacement in like kind and utility.

In case of machines falling under category (c) it will be necessary to calculate obsolescence and for that purpose it will be necessary to carry out the comparison of machine under consideration with the latest available machine with regard to following factors:

- * technical specifications
- * direct wages
- * consumption of stores and spares
- * consumption of energy
- * fixed cost
- * saving in space
- * down time

Summary of valuation for depreciated replacement cost

(a) Reproduction cost new/replacement cost new estimated from the quotation

or

Reproduction cost new obtained by applying price index to historical/original cost

less

(b) Physical depreciation and obsolescence, if any, the resultant figure is value.

12.4.2 Market approach (sales comparison method):

Details of machines sold by the company is to be obtained from the accounts department in the following format:

- * Description with complete technical specifications
- * Date of purchase
- * Date of installation
- * Purchase price
- * Date of sale
- * Terms and condition of sale
- * Condition (physical) of item at the time of sale

The above information helps in considering the following parameters:

- * Estimating remaining life
- * Establishing value of similar machines under consideration

It is likely that same machine may not be available in the market and there may be similar machines from different manufacturers. However, the prices can be used as a 'guideline' for estimating value of more or less comparable machines with appropriate adjustments.

Information on the following items for sale instances is necessary for comparison of PME under consideration with sale instances:

- * Description with complete technical specifications
- * Date of purchase
- * Date of installation
- * Manufacturer and country of its origin
- * Purchase price
- * Sale price
- * Date of sale
- * Condition of machine at the time of sale
- * Terms and conditions of sale
- * Any renovation / remodeling / up gradation carried out after installation so as to increase output etc.

It is likely that there may be machines available in the market which have dissimilarity with regard to manufacturers. By using specifications of comparative models as manufactured by various manufacturers a guideline for comparison may be worked out.

It is also advisable to get information from reliable dealers of second-hand machines, or from privately created data bases.

It will be necessary to make adjustments to a sale price obtained from website as well as on information available from other sources. Because hardly any two identical machines are sold satisfying all conditions. Normally adjustments are required to be made on the following points:

- * Year of manufacture
- * Technical specifications and name of manufacturer
- * Time of sale and date of valuation
- * Market conditions at the time of sale and date of valuation
- * Location of actual sale and subject machine
- * Condition of the machine sold and condition of subject machine
- * Machine sold with accessories or without accessories
- * Terms and conditions of sale to ascertain whether it was a free sale or not.

12.4.3 Income approach (capitalized income method):

This method may be applicable in case of leased or rented PME. Therefore, it is necessary to study the actual rental or lease agreements. If directly comparable rental transactions are not available, the rental or lease of a guideline PME has to be examined.

The following points need be considered while examining the various rental and lease agreements:

- * Terms and conditions with regard to insurance
- * Stipulations for repairs and maintenance
- * Rent payable
- * Type of penalty clause, if any
- * Purchase clause with consideration
- * Premium paid, if any
- * Return provisions

While deciding the rate of capitalization, the following points need be considered:

- * Prevailing risk free rate
- * Amount of additional risk, if any
- * Probable effect of inflation

Rate of capitalization for each industry will be different as each industry has its own inherent characteristics of performance in a market place.

Value of PME under consideration is derived by any of the following methods:

- * Net income multiplied by years purchase gives a capitalized value.
- * Total of discounted income over remaining economic balance life equals to value by the discounted cash flow method. DCF technique to be adopted where there is certainty of cash flows like leased machinery.

12.5 Phase – V Reconciliation

A valuation report shall contain the following points.

- * The source of the instruction
- * The purpose of the valuation
- * The basis of the valuation
- * The date of the valuation
- * Reference to exclusions
- * Any special instructions, assumptions or omissions
- * Effect of any grants, incentive and tax benefits
- * Treatment of items with finance agreements and held in trust
- * Caveats about limitations of responsibility to name a few:
 - A technical survey of condition not having been undertaken
 - The verification of data and source of information not made
 - Non-disclosure of material facts to the valuer
- * Any other matter not referred above

The valuer shall establish dialogue with the directors of the company for ascertaining whether any PME is subject to finance agreements. This is mainly to determine ownership.

In circumstances, where a valuer is given definite instructions to adopt assumptions, which would not normally be made or the valuer's usual investigatory procedure based on these Guidelines or sound practice of professional obligations are curtailed, it would be appropriate that reference to these assumptions and limitations be made in the valuer's report, including non-disclosure of material facts.

13.0 Important considerations:

13.1 The valuer shall take into consideration the following points as and when eventuality arises.

- * Cost approach is appropriate in case of PME falling under the category where there is hardly any market for secondhand machinery and are rarely given on lease. This is mainly because market and income approaches are not applicable.
- * Value of PME assets worked out by cost approach shall be expressed by the valuer as being subject to the adequate potential profitability of the business having due regard to the value of the total assets employed and the nature of the operation.
- * For specialized and special purpose machinery, which are rarely sold and there is no comparable sales data the Depreciated Replacement Cost (DRC) shall be applied. An estimate derived from DRC is referred to as "valued by reference to DRC". This result is subject to the adequate potential profitability or service potential of the entity from the use of assets as a whole.
- * In the event of decommissioning, the costs of dismantling and demolition of a plant no longer required by the company shall be reflected in the report separately even if the same creates negative value.
- * Where PME is to be moved to another site and recommissioned to production, due allowance shall be made for costs of removal, reinstallation, and recommissioning including the cost of foundations where appropriate.
- * Factors which can affect future utilization of PME, such as, finite material supply source, the limited life of buildings housing the plant, limited tenure of land and buildings, and limited planning consent all these shall be taken into account.

- * Where suitable market evidence exists, depreciated replacement cost for wear & tear plus obsolescence worked out should always be cross-checked with the cost of acquiring in the open market a similar asset with the same remaining economic working life as the existing asset after taking due account of costs of transport, installation and other costs to bring the asset into operation, as far as possible.
- * The particular method to be adopted will depend on the circumstances under which the given PME is most likely to trade in the open market.
- * In a situation when the vendor has imposed a time limit for concluding the sale and such limit is not regarded as a reasonable period, valuation shall be on the basis of orderly liquidation/forced sale as the case may be.

Value of the PME shall be estimated as an integrated package rather than simply as the sum of the individual machines valued. In such a valuation, due consideration has to be given to incompatibility of particular plant assets, imbalances between the capacity of different production sections, poor plant layout and other factors that affect overall efficiency.

Any other issues depending on facts and circumstances of the case may require to be considered to estimate sound value.

- 13.2** The pilot plant tests the feasibility of a manufacturing process on a reduced scale. Once the main plant is in operation the pilot plant may be superfluous and same shall be valued as surplus to the manufacturing facility at its highest and best use value. However, if the same can be used to develop a new process or effect improvement, then it should not be considered as superfluous but rather a part of research and development and/or quality control.
- 13.3** The market value of PME rests upon the belief that a prudent purchaser would pay no more for an asset or a group of assets than the cost of acquiring (an) equally desirable substitute(s) in the market. In the valuation of PME, the cost of the substitute(s) often includes costs to make the asset(s) productive. These costs are sometimes called make-ready costs. Often included in these costs are associated expenses such as engineering, transportation, installation, attachment to utilities, and start-up.
- 13.4** The particular method to be adopted will depend on the circumstances under which the given PME is most likely to trade in the open market.
- 13.5** All industrial activities are subject to specific legislations and regulations, non-compliance of which may result in cessation of activity pending suit. Cost to cure need to be calculated for non-compliance of regulatory measures.

14.0 Illustrations

Let us consider hypothetical cases for illustrations:

14.1 Illustration – I

Functional obsolescence and imbalance in different production sections.

PME under consideration consists of a spinning section of a mill established 5 years back for spinning of superfine yarn of 100s count as per demand prevailing at that time.

Machines required to make yarn of 100s count installed in the plant, along with replacement cost new, are as under:

<u>Name of machine</u>	<u>Quantity</u>	<u>Replacement cost new (₹ million)</u>
Blow room & mixing	1	9.40
Cards (high production)	4	7.60
Draw frame	2	1.55
Comber preparation	1	1.55
Comber	2	3.30
Speed frame	2	2.84
Ring frame	24	21.60
Winding	2	21.20
Total		69.04

The above machines are five years old. Total economic life of each of the machines is considered to be 20 years; scrap value is considered to be 10% of replacement cost new.

$$\text{Depreciation per annum} = \frac{100 - 10}{20} = 4.5$$

$$\therefore \text{Depreciation for 5 years} = 22.5$$

$$\text{Depreciated replacement cost} = \frac{100 - 22.5}{100} \times 69.04$$

$$= 0.775 \times 69.04$$

$$= \text{₹ 53.5 millions}$$

As the present market condition stands on date of valuation, **yarn of superfine counts of 100s is not in demand** but **yarn of 30s count is in demand.**

In order to manufacture yarn of 30s count, the following additional machines are required.

<u>Name of machine</u>	<u>Quantity</u>	<u>Replacement cost new (₹ million)</u>	<u>Price of second-hand Machines (₹ million)</u>
Cards (high production)	4	7.60	3.80
Draw frame	2	1.55	0.80
Comber	5	8.25	3.00
Speed frame	2	2.84	0.80
Winding	2	21.20	6.00
Miscellaneous expenses for conversion		1.50	1.20
Total		42.94	15.60

In view of the facts mentioned above, a prudent buyer will not pay ₹ 53.5 millions (depreciated replacement cost) as it is not capable of generating income. The machines used to manufacture yarn of 100s count are suffering from **functional obsolescence** and there is also imbalance in different production sections to manufacture superfine yarn of 30s count. In order to generate income, it is necessary to incur an **expense to cure functional obsolescence and imbalance in different production sections** by installing additional machines. This expense is a liability and needs to be deducted from depreciated replacement cost of ₹ 53.5 millions. In order to calculate deduction, the following fact needs consideration:

Proper deduction will depend on future market of 30s count. If market is estimated to be of 5 years duration and second-hand machines are in good condition and also capable of working for the next five years without heavy cost of repairs, then deduction of ₹ 15.6 millions from depreciated replacement cost of ₹ 53.5 millions will be appropriate. If new machines are required, the liability would be ₹ 42.94 millions.

The above illustration establishes that depreciated replacement cost (DRC) worked out by only considering depreciation for wear and tear is not the value.

Note: Important consideration for bankers

Imagine the fate of a bank advancing loan on above machines on DRC of ₹ 53.5 millions! The money is advanced on the machines which are not capable of generating sufficient cash flow. How repayment can be made if cash flow is not sufficient?

14.2 Illustration - II

Valuation on going concern basis for merger/take-over.

Let us consider a hypothetical case of valuation of tangible assets for the purpose of merger/take-over. A manufacturing unit has an installed capacity (on three shifts working basis) of 15,000 tonnes per annum of a particular product.

The unit is 7 years old and after installation, it has never worked in three shifts; on the other hand, it has by and large worked in one shift only.

To build up a manufacturing facility as indicated above, the requirement of land, building and PME are as under:

Land	12,000 sq. m.
Building	6,000 sq. m.
PME	100 number of items

The specifications of buildings required for the above manufacturing facilities are as follows:

R.C.C. frame structure with A.C.C. sheet roof resting on tubular trusses; brick walls of 4 metre height up to tie level; cement concrete paving; m.s. frame glazed windows; cost of such a construction is about ₹ 4,500/- per sq. m.

However, buildings are constructed with superior specifications and reproduction cost new works out to about ₹ 6,500/- per sq. m.

It is observed that reproduction cost new and replacement cost new of building works out to ₹ 6,500/- per sq. m. and ₹ 4,500/- per sq. m. respectively. For the purpose of valuation, replacement cost new at ₹ 4,500/- per sq. m. needs to be considered as no prudent buyer will pay higher amount for same utility.

PME of special nature required are 100 numbers in items.

Market inquiry reveals that the product manufactured by the company will have excellent demand for the next 10 years and assets will be required to be used in three shifts to cope up with the demand in future.

On inspection it is found that the assets held by the company are as under:

Land	15,000 sq. m.
Building	12,000 sq. m.
PME	110 number of items

There are 110 machines installed in the plant. Out of 110 machines, 100 machines are required for manufacturing activity and ten machines are surplus.

Out of 100 machines required for manufacturing activity, a few machines consist of S.S. reaction vessels made out of SS 316L plates. In fact, for the process employed by the company - reaction vessels made out of SS 304 plates can also be used. Price of SS 316L plate is about 30% higher than SS 304 plates. In view of this fact, while computing replacement cost new of SS reaction vessels installed in the plant with SS 316L plates, the price of SS 304 plates need to be considered.

Furnished below is statement showing tangible assets held by the company, assets required for installed capacity of the plant and surplus assets:

	Assets held by the company	Assets required for installed capacity of the plant	Surplus Assets
Land	15,000 sq. m.	12,000 sq. m.	3,000 sq. m.
Buildings	12,000 sq. m.	6,000 sq. m.	6,000 sq. m.
Machinery	110 numbers	100 numbers	10 numbers

‘Part’, ‘Fraction’ and ‘Whole’ Valuation

Value is not always the highest price which a property will bring if exposed for sale in the open market. In periods of business depression, the maximum price which a property will bring is usually far less than the owner will accept, and the bid and asked prices cannot be brought into agreement. To establish a fair price for the rights to all the future benefits of an ownership, a valuer must, among other things, consider the money value of these rights of ownership. **A purchaser exchanges money for benefits and the seller exchanges those benefits for money.** The fair price in money must be equated to the benefits, also expressed in terms of money. These future benefits of ownership are of three kinds:

- Income stream derivable from the property periodically;
- Marketability of the property; and
- Utility of the property for other than monetary returns.

In this illustration valuation of land, buildings and plant & machinery of an industrial undertaking is to be carried out which are the portions of whole business. There are two ways in which portions of whole business in this case land, buildings, plant & machinery can be considered for valuation as under:

- As if physically separated from the whole or independent of the whole – this is known as **‘fraction’**.
- As if integrated with the whole and dependent upon the whole – this is known as **‘part’**.

It is common practice in valuing such a property to itemize each piece of building and PME to determine the cost new of each item from which depreciation is deducted without considering potential profitability and demand and supply. The land is valued by the market approach as if it is vacant. The value of the property consisting of land, building and plant & machinery is then reported as the sum of the values of the portions as below.

Sum of the fractional values i.e. market value for land and depreciated replacement cost (DRC) for buildings and machinery of tangible assets utilised for manufacturing activity of the above company are as under:

Land	12,000 sq. m.	₹ 20,00,000
Buildings	6,000 sq. m.	₹ 60,00,000
Machinery	100 nos.	₹ 2,00,00,000
Total		₹ 2,80,00,000

Can DRC without consideration of potential profitability and demand and supply be considered as Value?

Let us consider two identical plants installed 2 years back at two different locations at an investment of ₹ 1,000 million with all new assets. Out of these two plants, one is located in a place with poor availability of water whereas the other is located where water is available in abundance. Availability of large quantity of water is the primary requirement for the routine operation of the plant. Cost of conveying water to the plant in location with poor availability of water is so high that it is uneconomical to operate the plant. Though the plants are identical their DRC is also the same but their value in existing-use in-situ will vary considerably.

Thus, the depreciated replacement cost is always subject to potential profitability/demand and supply.

By considering every portion separately and independently of the whole while coming to the figure **₹ 2,80,00,000 mentioned above**, each portion has been treated as a fraction, market value of land and DRC of buildings and machinery have been computed scientifically.

Any prudent investor shall consider the return on investment before buying the land, building and machinery valued at ₹ 2,80,00,000/- by considering these assets as fractions.

- (a) If the industry is a successful **going concern** with an earning expectancy more than sufficient to pay fair annual rate of return on the sum of the values of the fraction, then
- Tangible assets may be said to be worth the sum of the values of the fractions.

- There is another part of the whole business (an intangible asset) called “good will” the value of which is obtained by capitalizing the total annual earning expectancy less annual return allocated to tangibles.

AND

- The assemblage of the parts of the whole has possible additional value.
- (b) If the earning expectancy is less than sufficient to pay a fair annual rate of return on the sum of the values of the fractions, then the value of the whole property is either -

- The amount obtained by capitalising this earning expectancy which will of course be less than the sum of fractional values,

OR

- The sum of the liquidating values of physical fractions, whichever is higher.

In case (b) valuation made by summing the fractional values of the physical portions would be higher than the true value and could serve no legitimate purpose as an operation.

There can be no objection to summing the fractional values without taking the ‘goodwill’ into account, provided the valuer has investigated the earning power of the enterprise and in his opinion, it is at least sufficient to support the values reported. If, however, the earning expectancy of the enterprise is not sufficient to support the so-called physical values, then these physical values must be written down accordingly. If there is excess economic support for the underlying identified assets, we conclude that intangible value exists.

It is essential to find out whether fixed assets under consideration are suffering from economic obsolescence as explained in paragraph 10.4. The paragraph 10.4 suggests that when $BE - NWC < FA + IA$, economic obsolescence exists.

The business valuation for estimation of BE and NWC was carried out by business valuers appointed for the purpose and they reported as under:

Business enterprise value (BE)	=	₹ 2,40,00,000 (A)
Required net working capital (NWC)	=	₹ 30,00,000 (B)
Economic support (BE – NWC)		
for FA + IA	= (A) – (B)	= ₹ 2,10,00,000

The economic support is ₹ 2,10,00,000/-.

DRC of the assets is ₹ 2,80,00,000/-.

As the sum of the fractional values of tangible assets ₹ 2,80,00,000/- exceeds ₹ 2,10,00,000/-, it is concluded that economic obsolescence has affected the market value of the whole property. Therefore, it is necessary to bring down the fractional value to the level of economic support indicated above. Thus, the market value of the whole property was determined to be ₹ 2,10,00,000/- and needs to be allocated to the portions as follows:

Land	12,000 sq. m.	₹ 15,00,000
Buildings	6,000 sq. m.	₹ 45,00,000
Machinery	100 nos.	₹ 1,50,00,000
Total		₹ 2,10,00,000

Golden principle of valuation

The value of a business should never be lesser than the value of tangible assets, else the prudent entrepreneur will sell the assets instead of running the business.

₹ 21,000,000/- indicated above does not include following **surplus assets**:

Land	3,000 sq. m.
Buildings	6,000 sq. m.
Machinery	10 nos.

The highest and best use value for above asset is as under:

Particulars of Asset	Unit Rate (₹)	Value (₹)
Land	200/- per sq. m.	6,00,000
Buildings	1,000/- per sq. m.	60,00,000
Machinery 10 nos.	1,00,000/- per no.	10,00,000
Total		76,00,000

Summary of valuation of tangible assets:

Value of assets utilized for production and in turn generating income for the undertaking	₹ 2,10,00,000
Value of surplus assets lying idle and not generating any income for the undertaking	₹ 76,00,000
Total	₹ 2,86,00,000

Note: Going concern is the entity, which generates a fair return on investment. This also satisfies the criteria of willing purchaser in market value definition. Any investor will certainly take into consideration the return on investment available and it must be able to generate fair return as quickly as possible. The above illustration takes into consideration this aspect. This is an example of Going Concern Value.

An interesting **case came up before the Bombay High Court** in which a public limited company got valuation of business carried out through a reputed firm of business valuers. The value of the business was estimated at ₹ 120 millions and based on this valuation the company decided to sell the business at ₹ 120 millions.

One of the minority shareholders objected the sale on the ground that value of the business worked out at ₹ 120 millions is too less as the value of the fixed asset itself is more than ₹ 2000 millions (**almost 16 times the value of business**). The company contended that value of business indicates value of net current assets, net fixed assets and goodwill if any. The argument of the minority shareholder was that when a value of business is worked out by discounted cash flow method (by discounting the future income), the value of fixed assets included in the value of business is **only the fixed assets utilized in manufacturing activity (in other words productive assets)** which in turn generates income but it does not include **surplus assets (non-productive assets)**, which do not contribute to income generation.

The argument advanced by the minority shareholder is absolutely correct.

Out of court settlement had taken place in the matter.

The value of business means value of net current assets, net fixed assets utilised for manufacturing activity and good will, if any. Surplus fixed assets are to be valued separately on highest and best use basis and to be added with the value of business.

14.3 Illustration – III

In this illustration, the following issues are considered.

(a) Identification of non-productive/surplus assets

Comparison of assets held by the company and assets required for installed capacity will lead to identification of non-productive / surplus assets.

(b) Identification of off-balance sheet assets

Off-balance sheet assets mean the assets which are not appearing in the balance sheet; these include:

- Premises occupied as tenants under Rent Control Acts;
- Entire cost of equipment is debited under the 'revenue expenses' account in good times instead of capitalizing and hence do not appear in fixed asset register. However, such machinery are installed in the plant but not reflected in the balance sheet should also be included in valuation as it falls under the category of 'off-balance sheet' assets;

- Equipment fabricated by an enterprise consuming its own material and labour, at times are not logged in the fixed asset records maintained by the company.

Let us consider the hypothetical case of a company having following data as on date of valuation as per the balance sheet.

₹ millions			
Assets	G.B.V.	Depreciation	N.B.V.
(a) Land			
Freehold 1 hectare	5.00	-	5.00
Lease-hold 4 hectares	2.00	-	2.00
(b) Buildings 30,000 sq. m.	150.00	35.00	115.00
(c) PME 100 nos.	600.00	200.00	400.00
Total	757.00	235.00	522.00

Note: G.B.V. ~ Gross Block Value, N.B.V. ~ Net Block Value

Out of the above assets, productive assets (P) and non-productive/surplus assets (NP) are separately listed as below:

Productive assets (P)

₹ millions			
Assets	G.B.V.	Depreciation	N.B.V.
(a) Land :	5.00	-	5.00
Freehold 1 hectare			
(b) Buildings 24,000 sq. m.	120.00	28.00	92.00
(c) PME 80 nos.	500.00	165.00	335.00
Total (a)	625.00	193.00	432.00

Non-productive assets (NP) / surplus assets

₹ millions			
Assets	G.B.V.	Depreciation	N.B.V.
(a) Land :	2.00	-	2.00
Lease-hold 4 hectares			
(b) Buildings 6,000 sq. m.	30.00	7.00	23.00
(c) PME 20 nos.	100.00	35.00	65.00
Total (b)	132.00	42.00	90.00

Determination of the value of above assets (P and NP) will not be sufficient though they are as per balance sheet because these assets do not include the off-balance sheet assets mentioned earlier. Therefore, in order to estimate value, the '**productive assets**' and '**non-productive assets**' as well as the '**off-balance sheet assets**' are required to be considered.

Additional issues to be taken into consideration in valuation for disinvestment, mergers and acquisitions:

The main purpose of valuation exercise for disinvestment, mergers and acquisitions for an enterprise is to derive maximum value and therefore if following exercise is undertaken prior to sale/merger it will lead to better realization.

- There is a saying that 'possession' is nine points in law.

In the instant case, the lessee company is in possession of land and if it is profitable to sell the assets as a free holder then it is desirable to acquire the lessor's interest first and then to sell the company as a freeholder, this will be beneficial to enterprise and it will gain considerably as explained hereinafter.

Let us consider that market value of lessor's interest is ₹ 3 millions and the lessee acquires freehold interest by paying ₹ 3 millions to the lessor.

Market value of freehold interest in land is ₹ 16 millions indicating considerable increase in value from ₹ 3 millions to ₹ 16 millions which is really good.

- Let us assume that the company has occupied office premises as tenants and they are located throughout the country. The built-up area of such premises is say 500 sq. m. and they are not appearing in the balance sheet, as the enterprise is not the owner. As a protected tenant, these premises can be acquired at a very low price, say ₹ 5 millions. After acquiring ownership right, they can be sold for say ₹ 50 millions. These tenanted premises are known as **off-balance sheet assets**.

As these premises are not purchased by the entity, they do not appear in the fixed asset register of the company. As no capital expenditure is incurred to acquire the tenancy rights, it is not reflected in balance sheet as a capital asset. Rent paid is shown as revenue expense, but it creates a legal right, and value of this legal right depends on how it is traded in the market. These assets are not used in manufacturing process and hence are termed as off balance sheet non-productive assets.

- Off-balance sheet assets under category of PME are assets which are manufactured by employing company's own material and labour and not capitalised. If they are used in production then they are known as productive assets (P) and if they are surplus then they fall under the category of off balance sheet non-productive assets (NP). The surplus off-balance sheet assets are to be valued on highest and best use.

Let us assume that company has off balance sheet productive assets (building + PME) having replacement cost new (R.C.N.), depreciation and depreciated replacement cost (D.R.C.) as under:

R.C.N.	-	₹ 120 millions
Depreciation	-	₹ 70 millions
D.R.C.	-	₹ 50 millions

The company under consideration re-valued the tangible assets and result is given below:

(I) **DRC of productive assets (P) appearing in balance sheet**

₹ Millions			
Assets	R.C.	Deprecia - tion	D.R.C.
(a) Land at Market Value Freehold 1 hectare	10.00	-	10.00
(b) Buildings 24,000 sq. m.	150.00	50.00	100.00
(c) PME 80 nos.	700.00	60.00	640.00
Total (I)	860.00	110.00	750.00

(II) **DRC of off balance sheet productive assets not appearing in the balance sheet**

₹ Millions			
Assets	R.C.	Depreciation	D.R.C.
(a) Buildings	35.00	15.00	20.00
(b) PME	85.00	55.00	30.00
Total (II)	120.00	70.00	50.00

Sum of productive assets (P) (I) + (II)

₹ Millions			
Assets	R.C.	Depreciation	D.R.C.
(a) Land	10.00	-	10.00
(b) Buildings	185.00	65.00	120.00
(c) PME 80 nos.	785.00	115.00	670.00
Total (x)	980.00	180.00	800.00

Surplus assets (which are appearing in the balance sheet but not used for production) as well as off balance sheet asset which are not used for production fall under the category of non-productive assets.

Thus, we have two categories of non-productive assets:

- (a) Surplus assets appearing in balance sheet
- (b) Off balance sheet assets which are surplus but not appearing in the balance sheet

These assets are to be valued on the basis of highest and best use as these assets can be sold as they are surplus.

Market value of surplus non-productive assets

Assets	₹ Millions
Assets	Market Value
(a) Lease-hold land converted to Freehold Area = 4 hectares	16.00
(b) Buildings 6,000 sq. m.	60.00
(c) PME 20 nos.	160.00
Total (y)	236.00

Market value of off-balance sheet non-productive assets is given hereafter. They are valued on highest and best use.

Market value of off-balance sheet non-productive assets are:

Assets	₹ Millions
Assets	Market Value
(a) Buildings	50.00
(b) PME	20.00
Total (z)	70.00

Note: If any building is constructed by employing company's labour and material but not capitalised will also fall under the category of off balance sheet asset. Its treatment will be based on the category under which it falls P or NP.

The DRC of productive assets including off balance sheet productive assets is subject to potential profitability, as any investor will certainly take into consideration the earning potential of the assets utilized in production process.

- (c) In above case, DRC of productive assets is $750 + 50 = \text{₹ } 800 \text{ millions (x)}$

Now let us find out whether these fixed assets are capable of generating sufficient return.

The value of business (BE), NWC of the company etc. are as under on the date of valuation.

BE	=	₹ 1,200 millions
NWC	=	₹ 200 millions
DRC of FA	=	₹ 800 millions
BE - NWC	=	FA + IA
∴ 1,200 - 200	=	800 + IA
∴ IA	=	₹ 200 millions

This indicates DRC is the value and company has intangible assets.

Let us assume that BE is ₹ 920 millions instead of ₹ 1,200 millions

NWC as on valuation date	=	₹ 200 millions
BE - NWC	=	FA + IA
920 - 200	=	800 (DRC of FA) + IA
BE - NWC < DRC of FA	=	₹ 720 millions

This indicates that there are no intangible assets and economic obsolescence exists and therefore, DRC worked out at ₹ 800 millions for productive assets (P) need to be brought to level of ₹ 720 millions by applying deduction factor of 10%.

Productive assets	₹ millions
Land	9.00
Buildings	108.00
PME	603.00
Total 90% of (x)	720.00

Table showing value (₹ millions) of productive assets, surplus non-productive assets and surplus off-balance sheet assets:

	*Productive assets	Surplus non-productive assets	Surplus off-balance sheet assets	Total
Land	9.00	16.00	-	25.00
Buildings	108.00	60.00	50.00	218.00
PME	603.00	160.00	20.00	783.00
Total	720.00	236.00	70.00	1026.00
	(90% of x)	(y)	(z)	

* This includes off-balance sheet productive assets

The above valuation is carried out without considering the effect of imbalance in different production sections and non-compliance of regulatory measures.

- (d) After a plant is put up, a lot of additions and deductions in the assets take place over the years. To accrue benefit in future, a product to be manufactured has to be in line with the future demand. The existing process may have imbalance in different production sections and thus may be incapable to cater to the needs envisaged. For this purpose, it may be necessary to incur an expense for installation of balancing equipment which will in turn, increase the turnover.

The cost of cure for imbalance in different production sections works out to say, ₹ 50 millions in this case.

(e) Effect of non-compliance of regulatory measures:

The plant suffers on account of the following issues:

- Power factor of the plant is less than required under applicable Electricity Act;
- The plant draws power from its adjoining sister concern; (It is illegal to draw power in this manner)
- Effluent discharged is in violation of the norms prescribed by the State Pollution Control Board.

Non-compliance of the above may even result in the closure of the unit or else the company will have to pay a penalty. The estimated cost for rectification of above irregularities is say, ₹ 20 millions.

∴ The value of tangible assets work out to -

$$= 1026.00 - 50.00 - 20.00$$

$$= \mathbf{₹ 956.00 \text{ million}}$$

Issues in valuation for

- Insurance**
- Impairment**
- Bank Finance**
- Liquidation**

15.0 Issues in valuation for insurance, impairment, bank finance and liquidation:

15.1 Insurance

- (A) **Fire Insurance Policy** is a contract of indemnity with a view to place the Insured in same or similar pre-damage position. Thus, at the time of loss or destruction of any used asset, the insured is able to obtain a depreciated value by way of a claim from the Insurers which is value as new at the time of damage less depreciation for the use made over the years of usage. The quantum of depreciation provided in the books of account is not of any consequence; as such depreciation is charged on the original cost (purchase price) and moreover repairs and maintenance carried out by the owner is not reflected in the depreciation calculation. The value as new at the time of damage, due to price rise and inflation is much higher than the original cost. Further, the amount of depreciation charged in the account books is never kept aside in cash form or separately funded and is used up in the industrial operation or expansion, i.e., either in working funds or in capital assets. As a result, the insured had to find a fresh flow of funds to reinstate the destroyed assets to the extent of the depreciation deducted in the claim. If there is any under-insurance, the proportionate loss is borne by the insured and the amount of depreciation together in aggregate would be the fresh funds requirement. In the absence of such funds availability, the insured would normally be forced to give up the rehabilitation or replacement of the destroyed asset. This is the drawback of market value policy.

Keeping the above factors in mind and to meet the varying needs of different types of industries and trade, special types of policies have been designed with certain changes in the basis of indemnity under fire insurance policy by providing **variations to Principle of Indemnity**. The **Reinstatement Value (RIV)** is one of such variations. RIV policy is discussed in detail later.

(B) Insurance valuation under Indian context

(i) Contract of insurance

All insurance contracts are inter alia contracts of indemnity except personal accident, i.e. the Insurer undertakes to place the Insured in the same position before the damage subject to adequate sum insured and subject to policy conditions, clauses, warranties.

(ii) Fire insurance covers

The standard fire and special perils policy covers fire and allied perils like:-

- Fire
- Lightning
- Explosion / Implosion
- Aircraft damage
- Riot, strike, malicious damage
- Storm, cyclone, typhoon, tempest, hurricane, tornado, flood and inundation
- Impact damage
- Subsidence and landslide including rock slide
- Bursting and/or overflowing of water tanks, apparatus and pipes
- Missile testing operations
- Leakage from automatic sprinkler installations
- Bush fire

The above policy also covers following costs:-

- Architects' consultants' and surveyors' fee up to 3% of admissible claim amount
- Debris removal up to 1% of admissible claim amount

The cost for Architects' fee (above 3%) and debris removal (above 1%) can be insured at additional premium.

Earthquake and terrorism damage are not included in the standard policy referred above. However, an add-on cover for these can be taken separately as add on covers at extra premium.

- (iii)** In case of sum insured for building, machinery and stock exceeds ₹ 100 crores **Industrial All Risk Policy (IAR)** can be availed. Now in de-tariffed scenario the limit of ₹ 100 crores is relaxed and many insurers are giving IAR cover for sum insured of ₹ 50 crores. This policy covers fire and all special perils including flood, earthquake, burglary, machinery break-down, boiler explosion and electronic equipment insurance. The policy covers business interruption (fire & special perils) i.e. fire loss of profit cover. The policy provides option to cover business interruption due to machinery break-down i.e. machinery break-down loss of profit. The amount of ₹ 50 crores or any limit for IAR fixed by the insurer is not limited to one location but for any number of locations in India under single ownership.

The advantages of this policy are:-

- It includes covers for earthquake, burglary, machinery break-down, boiler explosion & electronic equipment.
- Lower rate of premium
- Machinery break-down risk is covered on single sum insured i.e. total value of plant and machinery in a plant and it is not required to specify each & every machinery with its value/sum insured.

(C) Indemnity

(i) Principle of indemnity:

Indemnity is compensation for actual material loss or damage sustained due to an insured peril. The indemnity is to secure against loss or damage and make good the loss as per policy terms and conditions. It is imperative to bear in mind that fire insurance contract is a contract of indemnity.

Insurers undertake to place the insured after the loss due to an insured peril in the same financial position as he was before the loss, neither better nor worse; profit of any kind out of insurance taken is not permissible under a fire policy. If it was possible to derive profit, abuse and malpractices would result.

Lord Mansfield states in a judgement as under:

“Fire Insurance was considered as an indemnity only, in case of a loss; and therefore the satisfaction ought not to exceed the loss. The rule of indemnity was calculated to prevent fraud, lest the temptation of gain should occasion unfair and willful losses”.

That a contract of fire insurance is one of indemnity cannot be too strongly emphasized. A contract of fire insurance is fundamentally one of indemnity, since its object is to make good, within the limits of the amount of insurance, and subject to terms and conditions of the policy, the actual loss sustained and nothing more.

(ii) Insurable interest

It is necessary for the insured to have insurable interest in the insured property at time of loss in order to observe the principle of indemnity. Policy does not only insure property itself, but also the insured's interest in the property and measurement of loss is the extent of such interest in property damaged or destroyed by an insured peril.

The following items constitute insurable interest –

- * Existence of a property capable of being damaged or destroyed by fire or an insured peril.
- * Such property should be the subject matter of insurance.
- * The proposer must stand in some legal relationship with this object, whereby he benefits by its safety or be prejudiced by its loss.

Mere expectancy of interest is not sufficient.

(D) Utmost Good Faith

In addition to the general law of contract, the insurance contract is also subject to certain special principles under common law like utmost good faith.

In insurance contracts, the legal doctrine of “utmost good faith” applies. This casts on the insured, the positive duty to disclose all material facts which have bearing on the insurance. A breach of this duty may make the contract void or voidable depending upon the nature of the breach.

Material facts are those which would influence a prudent insurer in his decision as to acceptance of insurance or in fixing premium, and terms and conditions of acceptance.

Duty of disclosures continues throughout preliminary negotiations leading up to the contract, but ceases when contract is complete. It applies again at renewal which is tantamount to making a fresh contract and the insured should make necessary disclosure of any new material fact.

Over and above utmost good faith Insurable Interest and Indemnity also apply in insurance contracts.

(E) Various add on covers/clauses are available and for each such cover there are applicable clauses. However, for valuer's and insured's point of view the following add on covers/clauses are important:

- (i)** Add on cover for omission to insure additions, alterations or extensions
- (ii)** Add on cover for start-up expenses
- (iii)** Designation of property clause
- (iv)** Reinstatement Value clause
- (v)** Local authorities' clause
- (vi)** Escalation clause
- (vii)** Architects', Surveyors' and Consulting Engineers' fees (up to 3% of the admissible claim amount) clause
- (viii)** Removal of debris clause (up to 1% of the admissible claim amount)

Explanation to above add on covers/clauses

(i) Add on cover for omission to insure additions, alterations or extensions clause (this is to be incorporated if opted at additional premium)

“The Insurance by this policy extends to cover buildings and / or machinery, plant and other contents as defined in columns ... hereof which the insured may erect or acquire or for which they may become responsible -

(a) at the within described premises,

(b) for use as factories.

- * The liability under this extension shall not exceed in respect of (a) above, 5% of the sum insured by each item, in respect of (b) above, 5% of the sum insured by item No.(---).
- * The insured shall notify the insurer of each additional insurance as soon as it shall come to their knowledge and shall pay the appropriate additional premium thereon from the date of inception.
- * Following the advice of any additional insurance as aforesaid, cover by this extension shall be fully reinstated.
- * No liability shall attach to the insurers in respect of any building, machinery, plant or other contents while such property is otherwise insured.”

N.B.

- * All new additions to building and/or machinery and plant not specifically insured/included during the currency of the policy should be declared at the end of the year and suitable additional premium paid on *pro rata* basis from the date of completion of the construction/erection of additions subject to adjustment against the advance premium collected.
- * If the insured fails to declare the values of such additions within 30 days after the expiry of the policy, there shall be no refund of the advance premium collected.
- * “Other contents” in the above clause shall mean ‘furniture and fittings’ and does not include stocks.

(ii) Add on cover for Start-up expenses (this is to be incorporated if opted at additional premium)

“It is hereby agreed and declared that this policy extends to cover start-up costs necessarily and reasonably incurred by the insured consequent upon a loss or damage covered by this policy.”

A separate sum insured may be mentioned for this clause if included.

(iii) Designation of property clause

“For the purpose of determining, where necessary, the item under which any property is insured, the insurers agree to accept the designation under which the property has been entered in the insured’s books.”

(iv) Reinstatement Value Clause/Policy (if reinstatement basis is opted):

This extension of cover is usually granted on buildings, machinery, furniture, fixtures and fittings only. It is not granted for stocks in trade or merchandise.

To safeguard and uphold the principle of indemnity, it is provided that Reinstatement Value Clause shall have no effect, if the insured fails to replace or reinstate the property damaged or destroyed, or the insured is unwilling to replace or reinstate the property destroyed or damaged on the same or another site.

Reinstatement Value Clause reads as under:

“ It is hereby declared and agreed that in the event of the property insured under (Item Nos.____) of the within policy being destroyed or damaged, the basis upon which the amount payable under (each of the said items of) the policy is to be calculated, shall be the cost of replacing or reinstating on the same site or any other site with property of the same kind or type but not superior to or more extensive than the insured property when new as on date of the loss, subject to the following Special Provisions and subject also to the terms and conditions of the policy except in so far as the same may be varied hereby.”

Special Provisions

- * The work of the replacement or reinstatement (which may be carried out upon another site and in any manner suitable to the requirements of the insured subject to the liability of the Company not being

thereby increased) must be commenced and carried out with reasonable dispatch and in any case must be completed within 12 months after the destruction or damage or within such further time as the company may (during the said 12 months) in writing allow, otherwise no payment beyond the amount which would have been payable under the policy if this memorandum had not been incorporated therein shall be made.

- * Until expenditure has been incurred by the insured in replacing or reinstating the property destroyed or damaged, the company shall not be liable for any payment in excess of the amount which would have been payable under the policy if this memorandum had not been incorporated therein.
- * If at the time of replacement or reinstatement the sum insured representing the cost which would have been incurred in replacement or reinstatement if the whole of the property covered had been destroyed, exceeds the sum insured thereon at the operation of any of the insured perils or at the commencement of any destruction of or damage to such property by any other peril insured against by this policy, then the insured shall be considered as being his own insurer for the excess and shall bear a rateable proportion of the loss accordingly. Each item of the policy (if more than one) to which this Memorandum applies shall be separately subject to the foregoing provision.

This Memorandum shall be without force or effect if -

- * “the insured fails to intimate to the company within 6 months from the date of destruction or damage or such further time at the Company may in writing allow, his intention to replace or reinstate the property destroyed or damaged.
- * the insured is unable or unwilling to replace or reinstate the property destroyed or damaged on the same or another site”.

Important considerations / variations etc.

- (a) Valuation of plant for fire insurance purpose is the estimation of possible financial loss by reference to machinery of comparable output, productivity and quality at a given point of time, seen in the background of policy terms and conditions. Valuation is carried out to decide the “Value at Risk” of plant. This is the maximum possible loss of value of a physical asset measured against policy terms and conditions. Reinstatement Value is the amount payable under the policy to be calculated and shall be the cost of replacing or reinstating on the same site or any other

site with property of the same kind or type but not superior to or more extensive than the insured property when new as on date of loss. It is a standard provision of insurance policies that in the event of the loss the insured will take all reasonable steps to minimize his loss. It is common for the insured to attempt to replace the plant as quickly as may be prudent in order to minimize any loss of turnover to the business and goodwill of his added advantage of minimizing any loss-of-profit claim on insurers if such insurance is there.

Reinstatement Value is inclusive of machinery foundation. So, while instructing insurer it should be made clear in writing that the plant and machinery are insured inclusive of their foundations.

(b) The important variations which flow from the Insurer's Reinstatement Value clause compared to the Market Value (Depreciated Value) policy are set out hereafter.

(i) Damaged / destroyed / irreparable property to be replaced by new property of "the same kind or type but not superior to or more extensive than the insured property" and the monetary claim to be **allowed on value as new basis without deducting depreciation.**

For damage to repairable property, the full cost of repairs including replacement of parts would be payable without deduction of any depreciation, subject to the repairs / replacement of parts are of the "same kind or type."

(ii) Such monetary claim is to be paid only after actual repairs / replacement of parts / reinstatement has been completed and then payment shall be made for claims made by the insurer, as per terms and conditions of relevant policy.

(iii) The important aspects to be borne in mind by the insured are set out hereafter.

(a) The insured has the option to reinstate or not and the said option has to be exercised within 6 months of the damage or any further time limit which may be allowed by the insurer in writing.

(b) The reinstatement may be done at the same site or at any other site.

(c) The reinstatement has to be completed within 12 months of the date of damage. Extension of time, may be allowed by the insurer.

(d) To obtain full coverage and claims, the sum insured has to be adequate to cover the value of insured property **at the time of reinstatement of the damage.**

(iv) To get full advantage of maintaining an undisturbed cash flow and of getting a new asset against the old asset destroyed, it is abundantly clear that full insurance on RIV basis is absolutely essential.

Example on reinstatement value and condition of average:

A machine was purchased in 2004 for ₹ 50,000/-. If it is to be replaced today, it will cost say ₹ 5,00,000/- (a). The physical depreciation for 10 years is say ₹ 2,25,000/- (b). In this example,

Actual cost (historical cost) = ₹ 50,000/-

Reinstatement value
(replacement
cost) on date of loss or
damage = ₹ 5,00,000/- (a)

Depreciated replacement cost
(a) – (b) = ₹ 2,75,000/-

Thus, if the machinery is totally damaged due to an insured peril and is insured for reinstatement, the insured will get a sum of ₹ 5,00,000/- even if the machine is worth only ₹ 2,75,000/- in the market at the time of total loss, provided the actual reinstatement of the damaged machinery is accomplished, as per Reinstatement Value Clause.

If it is desired to take benefit of the escalation clause, with 25% escalation, the insurable value will work out to:

$$5,00,000 + \frac{25}{100} \times 5,00,000 = ₹ 6,25,000/-$$

If there is a total loss during the year, the maximum amount payable to the insured for the reinstatement of the machinery will be ₹ 6,25,000/- provided reinstatement cost incurred is ₹ 6,25,000/- and provided the loss has taken place on the last day of the period of insurance. (Please see Escalation clause under paragraph

(vi) later). In all such cases, salvage, if any, of the damaged property will always belong to the Insurance Company.

Condition of Average

If the amount of insurance is less than the value of the machinery damaged or destroyed, on the date of damage, due to an insured peril, the condition of average will operate, and the insured will proportionately receive less than the actual loss suffered.

A loss payable as per condition of average is worked out as under:

$$\frac{\text{Sum insured}}{\text{Value of machinery at the time of loss}} \times \text{Loss} = \text{Claim amount payable}$$

- (c) However, the manner in which the **condition of average** is applied with particular reference to the sum insured at the time of damage being required to be equivalent to value as new of the insured property item-wise at the time of reinstatement / reconstruction, to ensure full insurance is a very difficult task. The changing factors of prices, local taxes, excise duty, sales tax, customs duty, and fluctuations in the rate of foreign exchange, makes the task almost impossible. Even if the sum insured is fixed adequately at the time of inception or renewal of the insurance policy, no insured can forecast when the damage will take place during the 12 months period of the policy or the type of loss that will take place or the time or period required for reinstatement. In case of a major catastrophic loss involving special purpose imported machinery, such period of reinstatement could exceed two or three years. Alternatively, in small loss or if required spares are available in stock, the period of repairs / reinstatement may be a week or two or even less. The various factors which build up the cost or value may fluctuate after the loss also leading to more difficulty. Unfortunately there is no provision for adjustment of the Sum Insured after the loss. Escalation takes care of inflation up to policy period. If reinstatement extends beyond expiry of policy there is no remedy available for increase in price from the date of expiry of policy to the completion of reinstatement except to over insure. How much to over insure will depend on the facts and in the circumstances of each individual case.

In view of the above, it is evident that there is no tailor-made exact solution to the problem of how to determine the Reinstatement Value in advance and this is known and recognized by the insurers world-wide.

(v) Local authority's clause:

Reinstatement value policy can be extended to cover additional cost of re-instatement solely by reason of the necessity to comply with the regulations of local authority by incorporating the following clause in the policy.

“The insurance by this policy extends to include such additional cost of reinstatement of the destroyed or damaged property hereby insured as may be incurred solely by reason of the necessity to comply with the Building (or other) Regulations under or framed in pursuance of any Act of Parliament or with bye-laws of any municipal or local authority provided that :

The amount recoverable under this extension shall not include:

- The cost incurred in complying with any of the aforesaid Regulations or bye-laws,
 - * in respect of destruction or damage occurring prior to the granting of this extension,
 - * in respect of destruction or damage not insured by the policy,
 - * under which notice has been served upon the insured prior to the happening of the destruction or damage,
 - * in respect of undamaged property or undamaged portions of property other than foundations (unless foundations are specifically excluded from the insurance by this policy) of that portion of the property destroyed or damaged.
- The additional cost that would have been required to make good the property damaged or destroyed to a condition equal to its condition when new had the necessity to comply with any of the aforesaid Regulations or bye-laws not arisen.
- The amount of any rate, tax, duty, development or other charge or assessment arising out of capital appreciation which may be payable in respect of the property or by the owner thereof by reason of compliance with any of the aforesaid Regulations or bye-laws.

- * The work of reinstatement must be commenced and carried out with reasonable dispatch and in any case must be completed within twelve months after the destruction or damage or within such further time as the insurers may (during the said twelve months) in writing allow and may be carried out wholly or partially upon another site (if the aforesaid Regulations or bye-laws so necessitate) subject to the liability of the insurer under this extension not being thereby increased.
- * If the liability of the insurer under (any item of) the policy apart from this extension shall be reduced by the application of any of the terms and conditions of the policy then the liability of the insurers under this extension (in respect of any such item) shall be reduced in like proportion.
- * The total amount recoverable under any item of the policy shall not exceed the sum insured thereby.
- * All the conditions of the policy except in so far as they may be hereby expressly varied shall apply as if they had been incorporated herein.”

No additional premium is charged for inclusion of this clause in the policy.

(vi) Escalation clause (if opted at additional premium)

“In consideration of the payment of an additional premium amounting to 50% of the premium produced by applying the specified percentage to the first or the annual premium as appropriate on the under noted item(s) the sum(s) insured thereby shall, during the period of insurance, be increased each day by an amount representing $1/365^{\text{th}}$ of the specified percentage increase per annum.

Unless specifically agreed to the contrary the provisions of this clause shall only apply to the sums insured in force at the commencement of each period of insurance.

At each renewal date the insured shall notify the insurers:-

- * The sums to be insured under each item above, but in the absence of such instruction the sums insured by the above items shall be those stated on the policy (as amended by any endorsement effective prior to the aforesaid renewal date) to which shall be added the

increases which have accrued under this clause during the period of insurance up to that renewal date.

- * The specified percentage increase(s) required for the forthcoming period of insurance, but in the absence of instructions to the contrary prior to renewal date the existing percentage increase shall apply for the period of insurance from renewal.

All the conditions of the policy in so far as they may be hereby expressly varied shall apply as if they had been incorporated herein.”

It will be in order for insurers to allow automatic regular increase in the Sum Insured throughout the period of the policy in return for an additional premium to be paid in advance. The terms and conditions for this extension are as follows:

- The selected percentage shall not exceed 25% of the sum insured.
- The additional premium, payable in advance, will be at 50% of the final rate, to be charged on the selected percentage increase.
- The sum insured at any point of time would be assessed after application of the Escalation Clause.
- Escalation Clause will apply to policies covering building, machinery and accessories only and will not apply to policies covering stock.
- Escalation Clause will apply to all policies and is not restricted to policies issued on reinstatement value basis.
- *Pro rata* Condition of Average will continue to apply as usual.
- The automatic increase operates from the date of inception up to the date of operation of any of the insured perils.

(vii) Architects', Surveyors' and Consulting Engineers' fees (up to 3% of the admissible claim amount) clause

“It is hereby declared and understood that the expenses incurred towards Architects', Surveyors' and Consulting Engineers' fees for plans, specifications, tenders, quantities and services in connection with the superintendence of the reinstatement for the building, machinery, accessories and equipment insured under this policy is covered up to 3% of

the adjusted loss, but it is understood that this does not include any costs in connection with the preparation of the insured's claim or estimate of loss in the event of damage by insured perils."

The insurers may cover Architects' fees up to further 4.5% in addition to 3% which is already covered under the policy as per above clause subject to appropriate additional premium payable.

(viii) Removal of debris clause (up to 1% of the admissible claim amount)

"It is hereby declared and agreed that the expenses incurred up to 1% of the admissible claim amount is included in the sum insured on:

- (a) removal of debris from the premises of the insured;
- (b) dismantling or demolishing;
- (c) shoring up or propping."

Note: (b) and (c) above should be deleted when neither building nor machinery are covered.

The insurers may cover removal of debris charges for higher amount, over and above 1% up to 10% of sum insured subject to additional premium payable.

(F) Other types of insurance policies

(i) Machinery break-down policy:

(a) The Insurance Policy covers "Unforeseen and sudden physical damage" subject to certain exclusions. The insured has the choice to select specific machinery for insurance. While a deductible of 1% of the Sum Insured is common, this can be increased at the insured's option with a reduction in premium.

(b) The **Sum Insured "shall be equal to the cost of reinstatement of the insured property by a new property of the same kind and capacity."** If the item-wise Sum Insured "is less than the amount required to be insured as per above provision, the Company will pay only in such proportion as the Sum Insured bears to the amount required to be insured."

(c) The provisions for settlement of claims are briefly stated hereafter.

(i) If the damage can be repaired, then full cost of repairs to restore the machine to pre-damage condition is payable. No depreciation will be deducted on the value of parts replaced unless such parts are of limited life. However, if the cost of repairs exceeds the actual pre-damage value of the property, i.e., depreciated value, settlement of claim will be limited to actual pre-damage value after taking account of salvage.

(ii) If the insured property is destroyed, the Insurance Company will settle the claim for actual pre-damage value, i.e., depreciated value, after taking into account value of salvage.

(iii) In both the above situations, the Insurance Company will make payments only after being satisfied that the repairs have been effected or replacements have taken place.

(d) It is evident from the above provisions that the Sum Insured has to be equal to the replacement cost while the maximum settlement of any claim for repairs or replacement would be on the basis of actual value net of depreciation and salvage. Further payment of any claim will be made only after repairs or replacements are carried out.

(e) The problems of determining the reinstatement value and the Sum Insured are identical to what has been narrated earlier.

(ii) Boiler and pressure plant insurance policy:

This policy covers explosion/implosion (including flue gas explosion) and collapse damage to boiler and pressure plants wherein steam is being generated.

G. Illustration on computation of Insurable Value (Hypothetical Case)

Insurable value is based on market value or reinstatement value. Both these values are discussed earlier and out of two, reinstatement value is desirable though premium payable is high but the benefits derived are more in the event of loss.

Computation of reinstatement value of a machine installed in a plant.

The plant manufactures seafood products by cooking / blanching or raw. The raw materials used are sea caught shrimps, cephalopods (Squids, Octopuses and Cuttlefish) and fishes. The aquaculture shrimps are also used as raw material. The product is either individually quick frozen in IQF freezer or block frozen in plate freezer. The product is also semi IQF in the air blast freezer. Ammonia gases are used as refrigerant. The product is stored in the frozen store below -18°C temperature. The finished product is transported in refrigerated container for shipment.

The machine to be insured is located in a plant in Kerala where the company produces IQF and other frozen products in the unit. The capacity of the IQF plant is 3500 TPA with 3 shift operation, Block plant is 3500 TPA and Blast is also 3500 TPA. Current capacity utilization is around 60 to 70% for IQF and Block. The total manpower of the plant is 300 which includes managers, officers, staff and workmen. Pre-processing, cold store and packaging material facilities are created for facilitating better consumer safety.

The product profile of the plant is given below:

- Raw / blanched / cooked IQF shrimps
- Block / blast frozen shrimps
- Raw / blanched / cooked IQF cephalopods
- Block / blast frozen cephalopods
- IQF raw / blanched / cooked sea food mix
- Blast frozen fishes / fish fillet

The process employed by the plant:

- IQF freezing (ammonia refrigeration)
- Plate freezing (ammonia refrigeration)
- Blast freezing (ammonia refrigeration)
- Cooking / blanching through steam generation from non IBR boiler
- Cold storage (ammonia refrigeration)

Valuation procedure

First step is to inspect the machine and collect the data so that the current cost of brand new machine can be estimated and supplier of machine can quote current price without any further query.

The details collected for machine under consideration are as under:

Plant, machinery and equipment to be valued: IQF Hardening – Tunnel

Single belt tunnel for individual quick freezing (hardening) of products.

On a plastic modular belt the product is led past the high velocity airflow called Arctic Flow®, which blows the air across the belt and past the product and then continuously blows through the evaporator.

The rapid horizontal Arctic Flow® and the ultra-low temperature ensure a quick and homogenous freezing within a minimum of time. Thus, ensuring a good quality finished product, with an equalized core temperature of minimum -18° C within a minimum of time.

Features

- Plastic modular belt, suitable for small and large products.
- Belt frame and support, in-feed/outlet and guiding plates are in stainless steel in an open design, to ensure easy cleaning and a long life without corrosion.
- In-and-Out – feed openings are fully covered by 2 x double layer silicon strip curtains to minimize air/moisture entering the cabinet, which prevents frosting built-up on the evaporator and prolongs the time in between defrosting periods.
- Self-adjusting mechanically operated belt tension system to slacken or tighten belt.
- Long durable UHMW polyethylene wears rails on frame and belt support, to ensure long belt life.
- Electrically operated ventilators to ensure optimal air circulation from evaporator to product for quick and uniform freezing.
- Evaporator.
- Fully insulated cabinet made of 125 mm sandwich panels, insulated with polyurethane and plated with 0.6 mm galvanized steel plate, coated with 150 μ m white PVC.
- Fully welded stainless steel floor with center mounted gully and hatch for water outlet when defrosting and cleaning.
- The cabinet is equipped with access door mounted with electrical door heaters to prevent ice bounding of panel.
- Additional emergency breakers mounted next to in-feed conveyor and inside cabinet for full personnel security.
- Internal electrical neon lights mounted in ceiling for clear view when freezing, cleaning or maintenance.

Technical data

Cabinet dimension (L x W x H) (external)	:	3,900 x 2,300 x 2,700 mm
Belt type	:	Plastic modular
Belt width effective/overall	:	850 mm effective, 900 mm
Conveyor length	:	3,600 mm
Belt speed - minutes per cycle	:	Adjustable from 2 to 10
No. of belt	:	1
Maximum product height	:	750 mm
Product in-feed height	:	1,100 mm
Product outlet height	:	750 mm
Refrigeration duty to product	:	10 kW
Coolant supply to evaporator	:	15 kW
Suction temperature	:	Minus 40 ⁰ C, at evaporator
Air temperature	:	Minus 35 ⁰ C
Cooling medium system	:	R-717 or R-22 pump
Cooling pump flow rate	:	4-5 times evaporated liquid
Installed fan power	:	3.3 kW
Power supply	:	6 kW
Voltage	:	3 x 380 V 50 Hz
Year of installation	:	January, 2013
Date as on which valuation is made	:	31 st December, 2014
Gross Book Value	=	₹ 1,25,00,000/-
Depreciation	=	₹ 14,25,000/-
Net Book Value	=	₹ 1,10,75,000/-

The figures indicated in this case are hypothetical.

The identical machine is available from the same manufacturer.

The computation of RIV based on the quotation received is as under:

Particulars	Amount in ₹
Ex-works price at manufacturer's site.	1,05,00,000 (a)
C I F (custom duty, insurance and freight)	35,00,000 (b)
Landed cost at Indian port	1,40,00,000 (a) + (b) = (c)
Clearing, forwarding and transit insurance from port to the plant	3,00,000 (d)
Handling charges at plant	50,000 (e)
Costs of foundation, erection and installation	6,50,000 (f)
Total	1,50,00,000 (c) + (d) + (e) + (f)

(a) The insurance policy is for the period of one year.

(b) ₹ 1,50,00,000/- is value on first day of policy.

(c) Suppose something happens on last day of policy – what about increase in the price from day one to last day. Let us assume that increase in the price is likely to be 10%.

Therefore, insurable value after considering escalation will work out to ₹ 1,65,00,000/-.

Note: (i) The question of computation of depreciation does not arise as policy recommended is not market value policy but reinstatement value policy (RIV).

(ii) Even if the policy is taken at ₹ 1,65,00,000/- based on scientific valuation carried out by the valuer, the insurance company will issue RIV policy and collect premium on the basis of ₹ 1,65,00,000/- but shall not commit to pay ₹ 1,65,00,000/- in the event of total loss because the question of adequacy of insurable value shall be considered at the time of reinstatement.

H The approach to valuation for computation of insurable value is dependent on the type of the policy, i.e. whether policy is on RIV basis or market value basis. However, in both the cases the first step is to estimate current cost of brand new similar item. These costs include following:

A. For indigenous machine

- (i) Ex-works price of machine
- (ii) Packing and forwarding charges
- (iii) Excise duty
- (iv) VAT (Value added tax)
- (v) Handling charges
- (vi) Transportation charges
- (vii) Transit insurance cost
- (viii) Foundation, erection and installation costs

B. Imported machine

As per Illustration for valuation for insurable value given earlier.

Note: Taxes and duties mentioned above are non-recoverable tax i.e. effective taxes.

If the policy is with the escalation clause then amount worked out by considering above factors would be increased depending upon the escalation amount.

Let us consider the case of a process plant established 5 years back to manufacture a particular product. It has an installed capacity of X unit. The unit has 100 machines. All the machines are to be insured on RIV basis without escalation.

The RIV of each individual machine as on date of taking new policy is say ₹ 1.00 Crore giving a total of ₹ 100.00 Crores.

The latest plant to manufacture same product with an installed capacity of X unit can be established with 75 machines, RIV of such entire plant is ₹ 80 Crores. The latest plant is economical to operate also.

Let us consider the following two situations due to any insured peril:

- (a) One of the machines is damaged in such a way that it cannot be repaired.

In this case insurance company will approve the claim for ₹ 1.0 Crore because RIV of damaged machine is ₹ 1.0 Crore.

- (b) All the machines of plant are damaged and all the machines are beyond repair.

In this case insurance company will not approve the claim for ₹ 100 Crores as RIV for all the machines as per current technology is ₹ 80 Crores.

There are differences between the valuation of PME for reinstatement insurance value and replacement cost new for financial reporting. The lack of provision for interest charges in valuation for insurance is one of these. For computation of replacement cost new the finance charges are to be considered. In the case of some large plants, this may represent a significant percentage of the overall cost. In insurance valuation, provisions for the finance charges is incorrect and will lead to the statement of inflated values.

15.2 Impairment

15.2.1 What is impairment?

The Chambers Everyday dictionary has defined 'impair' as under:

- To diminish in quantity, value or strength
- To injure
- To weaken

15.2.2 Impairment loss from accounting view point

An impairment loss is the amount by which the carrying amount of an asset exceeds its recoverable amount.

Impairment loss = carrying amount - recoverable amount.

Carrying amount means the amount at which an asset is recognized in the balance sheet after deducting any accumulated depreciation (amortization) and accumulated impairment loss thereon.

Let us consider the hypothetical case of a company which purchased a machine for ₹ 1,00,000/- three years back. The depreciation for 3 years as per Income-Tax Rules is say ₹ 60,000/- Carrying amount is ₹ 40,000/- but its market value is ₹ 10,000/- then recoverable amount is ₹ 10,000/- and impairment loss = $40,000 - 10,000 = ₹ 30,000/-$. This is the approach in case of individual machine. For cash generating unit illustration is given later.

15.2.3 International Accounting Standard (IAS 36) and Indian Accounting Standard (AS 28) deal with Impairment of Assets.

This lays down that impairment is to be measured and recognized on a consistent basis so that assets are not reported at more than their recoverable amount.

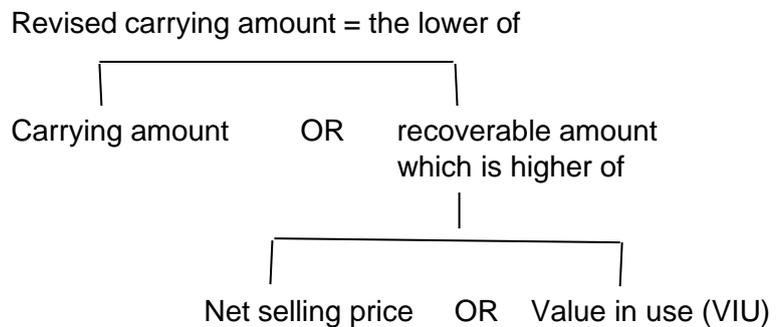
It also sets out the principles and methodology for accounting impairment of assets. Where possible, individual asset should be tested for impairment. However, where cash flows do not arise from the use of a single asset, impairment is measured for the smallest group of assets which generates income that is largely independent of the company's other income streams. This smallest group is referred to as Cash Generating Unit (CGU).

Impairment of an asset, or CGU (if assets are grouped), occurs when:

- The carrying amount of an asset, or CGU is greater than its recoverable amount; where

- Carrying amount is the depreciated historical cost (or depreciated revalued amount);
- Recoverable amount is the higher of net selling price and value in use; where
 - Net selling price is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.
 - Value in use is the present value of the future cash flows obtainable as a result of an asset's continued use, including those resulting from its ultimate disposal.

When impairment occurs a revised carrying amount is calculated for the balance sheet as follows:



Value in use is the **present value** of the **future cash flows** obtainable as a result of an asset's **continued use**, including those resulting from its ultimate disposal. For computing value in use, there is a need for choosing **an appropriate discount rate**. In computation of impairment of assets it is necessary to understand meaning of the following terms used in definition of Value in Use.

Assets – the assets mean

- **Tangible assets like** - urban real estate; plant & machinery; rural property comprising agricultural land, orchard, plantation, forest; wasting assets like mines and minerals; gem and jewellery.
- **Intangible assets like** - intellectual property, know-how and goodwill.
- **Financial assets like** - stock, share, debenture and other forms of receivables.

Continuing use – To define this term following examples are worth studying:

Let us consider a situation mentioned under paragraph 3.13. The plant was installed at a particular place and it was impaired at that place because the plant could not be operated at same location as

the abundant water required to operate the plant was not available at that location and cost of bringing the water makes plant uneconomical. Therefore management decided to relocate the plant at the site where abundant water required to operate the plant is available and net effect is such that the plant becomes viable. Does this situation fall under continuing use or not?

Let us also consider the another situation given under paragraph 14.1 where in the plant, machinery and equipment utilised for manufacture of yarn of 100s count are impaired as the demand for 100s count has considerably reduced. But by adding certain machinery another product of 30s count is made which has demand and the net effect is that assets are not impaired. Does this situation fall under continuing use or not?

Both the above situations fall under the category of continuing use.

Value in use – is a subjective term – it means worth to a specific user as explained in paragraph 3.14.

Present value of estimated future cash inflows at an appropriate discount rate:

It means finding out value to the owner by DCF technique.

The fundamental concept/principle of balance sheet is that it must provide true and fair view.

Now let us examine the pitfalls of DCF technique.

DCF theory holds that the value of all cash flow generating assets – from fixed-income to investments to an entire company - is the present value of the expected cash flow stream at an appropriate discount rate. The formula for this is usually given something like this:

$$PV = CF_1 / (1+k) + CF_2 / (1+k)^2 + \dots [TCF / (k - g)] / (1+k)^{n-1}$$

Where:

PV = present value

CF_i = cash flow in year i

k = discount rate

TCF = the terminal year cash flow

g = growth rate assumption in perpetuity beyond terminal year

n = the number of periods in the valuation model including the terminal year

Problems with DCF

Operating Cash Flow Projections

The first and most important factor in calculating the DCF is estimating the series of operating cash flow projections. There are a number of inherent problems with earnings and cash flow forecasting that can generate problems with DCF analysis; some of them are:

- All the input costs including fluctuations in foreign exchange and oil price
- Inflation
- Interest rate
- Sales realization of the products
- Discount rate and the growth rate assumption.

Small, erroneous assumptions in the first couple years of a model can amplify variances in operating cash flow projections in the later years of the model.

Capital Expenditure Projections

Capital expenditures can be largely discretionary; in a recessionary year, a company's management may rein in capital expenditure plans (the inverse may also be true). Capital expenditure assumptions are, therefore, usually quite risky. While there are a number of techniques to calculate capital expenditures, such as using fixed asset turnover ratios or even a percentage of revenues method, small changes in model assumptions can widely affect the result of the DCF calculation.

Discount Rate and Growth Rate

Perhaps the most contentious assumptions in a DCF model are the discount rate and growth rate assumptions. There are many ways to approach the discount rate in an equity DCF model; one of them is weighted average cost of capital of the firm. This approach is quite theoretical and may not work well in real world investing applications. When choosing a method to estimate the discount rate, there are typically no sure-fire (or easy) answers.

Perhaps the biggest problem with growth rate assumptions is when they are used as a perpetual growth rate assumption. Assuming that anything will hold in perpetuity is highly theoretical. It is common to see a long-term growth rate assumption of around 4%. In addition, a company's growth rate will change, sometimes dramatically, from year to year or even decade to decade. Seldom

does a growth rate gravitate to a mature company growth rate and then sit there forever.

Thus, DCF valuation is very sensitive to assumptions connected with perpetual growth rate and discount rate. A minor change in assumptions can considerably vary as mentioned before, the results of DCF valuation and the value so generated will not be proper.

It is suitable only when there is a high degree of assurance about upcoming cash flows. But if the company's operations lack discernibility, it becomes problematic to forecast sales, operating expenses and capital investment with certainty. While projecting cash flows for the next few years is difficult, pushing them out perpetually (obligatory for DCF valuation) becomes practically impossible. However, the probability assigned future values are often used to take care of this problem though it is not giving the accurate values. As such, DCF method is liable to be guesstimate rather than estimate.

One major concern of DCF is that the terminal value includes far too much of the total value. Even a slight variation in the assumptions on terminal year can have a major effect on the final valuation.

DCF valuation is an ever-changing goal that demands constant care and modification. If any prospects about the company change, the fair value will change accordingly.

It is rightly said that DCF technique can give a value that one desires but what is important is how much it fetches in the market. Again, the value of same asset worked out by different experts may considerably differ. Then question arises, does this approach give true and fair picture of the balance sheet?

Under the circumstances when DCF model is used it is essential to review the calculations at the end of each year to find out variance in what was estimated for the year and actual performance during the year.

These guidelines are for the assets falling under the category of tangible assets – plant and machinery.

If we look at the definition of continued use given above then there are following four scenarios for plant & machinery and therefore it becomes essential to look value in use under all the four scenarios if one strictly follows the requirement:

- Existing use in-situ
- Existing use ex-situ

- Alternative use in-situ
- Alternative use ex-situ

Such an exercise requires lot of input and it is also time consuming as well as expensive.

Again the question arises on completion of valuation under all the scenarios which of the scenario to be adopted? The one which brings least impairment loss must be adopted. This view is supported by following decision of Supreme Court of India.

Supreme Court of India in case of C.I.T. vs. Vegetable Products Ltd. (reported at 88 ITR 192) and C.I.T. vs. Naga Hills Tea Co. Ltd. (reported at 89 ITR 236) have held that if the language of a taxing provision is ambiguous or capable of more meaning than one, then the court has to adopt that interpretation which favours the assessee.

C.I.T. means Commissioner of Income Tax
88 means Volume no.88
ITR means Income Tax Reports
192 means page no. of a volume of ITR

The above view is appropriate for estimation of impairment of plant and machinery under four scenarios referred above.

Now let us go to the ground reality.

The members of the PME guidelines committee have experience varying from 15 years to 44 years in plant and machinery valuation in valuing wide spectrum industries for various purposes and in their practice they have experienced that the existing use in situ is the current use and the same is highest and best use and not the other three uses. They have not come across a situation in career to carry out valuation other than existing use in-situ.

Therefore, it is necessary that in case of assets like plant and machinery instead of using the words 'value in use', the words 'existing use in-situ' or 'highest and best use' be used. The clients will decide which of the uses is highest and best use and instruct the valuer accordingly.

Plant and machinery is one of the tangible assets out of the tangible assets referred above and the balance tangible assets held by the companies established under Companies Act, 2013 are:

- urban real estate
- rural property comprising agricultural land, orchard, plantation and forest

- wasting assets like mines and minerals
- gems and jewellery

It is also necessary to take the opinion of experts from the above fields so that the balance sheets are presented at true and fair view.

Kindly refer to paragraph 15.2.5 for suggestion on objective method of estimation of impairment of plant and machinery.

15.2.4 Identification of impairment

A review for impairment is required when there is an indication that impairment has actually occurred. The following are indicators of impairment:

- (a) During the period, market value of an asset has declined significantly more than would be expected as a result of the passage of time or normal use;
- (b) Significant changes with an adverse effect on the enterprise have taken place during the period, or will take place in the near future, in the technological, market, economic or legal environment in which the enterprise operates or in the market to which an asset is dedicated;

(Ref. page numbers 573 and 574 AS 28 (issued 2002) Impairment of Assets published by Institution of Chartered Accountants of India).

Examples on some of the above factors are given below by CVSRTA:

Custom duties in India for certain machinery were as high as 100 - 150% prior to 1991 and in 1991-92 they were drastically reduced. This resulted in impairment due to legal changes.

Sudden downward or upward movement of exchange rate of machinery purchased from overseas may lead to impairment.

- (c) Market interest rates or other market rates of return on investments have increased during the period, and those increases are likely to affect the discount rate used in calculating an asset's value in use and decrease the asset's recoverable amount materially;

Note by CVSRTA:

In this situation the discount rates are likely to affect. This is due to market situation and which is a reality.

As explained earlier even small change in adoption of a discount rate makes a lot of difference under DCF technique.

The change in discount rate in (c) above is a market reality whereas adopting the discount rate of once choice in DCF is not due to market reality.

- (d) Evidence is available of obsolescence or physical damage of an asset;
 - (e) Significant changes with an adverse effect on the enterprise have taken place during the period, or are expected to take place in the near future, in the extent to which, or manner in which, an asset is used or is expected to be used. These changes include plans to discontinue or restructure the operation to which an asset belongs or to dispose of an asset before the previously expected date;
- and
- (f) Evidence is available from internal reporting which indicates that the economic performance of an asset is, or will be, worse than expected.

If there is such an indication, it is necessary to compare the depreciated historical cost of a single asset or the net assets employed of a CGU with the net selling price and value in use.

15.2.5 For adopting DCF technique for estimation of value in use, there are various issues as discussed in forgoing paragraphs.

Now the question arises if DCF technique is not the objective method and does not give true and fair view of balance sheet then which is the objective method?

In our considered opinion market value of plant and machinery in highest and best use is the only objective method.

Note: It is pertinent to point out that Guidelines/Standards are framed by the professional societies for the use by their members. While using these Guidelines/Standards member of the professional society is of opinion that particular Guideline/Standard is not applicable to a particular situation then member can give an explanatory note on the situation and why he/she is deviating from Guidelines/Standards. In support of this, views expressed by Honourable David Laro of United States Tax Court,

Washington, D.C. on valuation are relevant:

“Anyone approaching the subject of valuation should be aware of certain truisms as a frame of reference. They are:

- * Each valuation case is unique. Although guidance can be obtained from earlier cases, each case is unique. One case is rarely on point with another, and a significant differentiation of the facts can usually be made.
- * Courts strive to arrive at the “right” answer and generally do. However, courts are fallible and have no monopoly on wisdom. Justice Jackson once said “We are final not because we are infallible, but we are infallible only because we are final.” “Brown vs. Allen, 344 U.S. 443, 540 (Jackson, J., concurring in result).”

15.2.6 Illustration

Let us consider a hypothetical case of plant, machinery and equipment (PME) utilized for manufacture of two products A and B which are to be valued in existing use in-situ to establish whether these assets are impaired.

- (a) The company was established in the year 2010-2011.

The company invested INR 20,00,00,000 in PME.

The entire plant with brand new PME went into commercial production in the beginning of the year 2012.

- (b) The statement showing Gross book value, Depreciation and Net book value as at 31-03-2014 for PME is as under:

Gross book value	₹ 20,00,00,000
Depreciation	₹ 6,00,00,000
Net book value	₹ 14,00,00,000

- (c) The terms of reference are to carry out valuation of above assets as on 31-03-2014 ***in existing use in-situ*** for establishing whether the above assets are impaired and if they are impaired then to what extent. The terms and reference are to carry out valuation in existing use in situ because according to the company it is highest and best use.

The assets under consideration fall under the category of specialized assets as defined by IVSC as under.

Specialized, special purpose or specially designed property, which is rarely, if ever sold in the open market, except by way of sale of the business of which it is a part, due to its uniqueness arising from the design, size, location.

DRC is considered as an acceptable surrogate method used to estimate market value of specialized and limited market properties.

The statement showing Reproduction cost new/ Replacement cost new (RCN), Depreciation for wear and tear and Depreciated replacement cost (DRC) (difference of RCN and Depreciation) is as under.

RCN	₹ 20,89,00,000
Depreciation	₹ 4,77,50,000
DRC	₹ 16,11,50,000

Note: In this case,
Reproduction cost new = Replacement cost new

(d) While going through the performance of the company since inception till date of valuation following vital data were collected:

(i) Installed capacity of plant:

<u>Installed capacity</u>	<u>Tonnes per annum (TPA)</u>
A	8000
B	3000

(ii) Capacity utilization of the plant for the years 2012 and 2013 was as under.

<u>Year</u>	<u>Capacity utilization</u>
2012	15%
2013	20%

The low capacity utilization was due to demand of products which was far below what was envisaged while setting up the plant.

Plant was not suffering from technological and functional obsolescence. All the equipment are latest.

- (e) It is pertinent to point out that the plant was not having adverse effect on account of following factors:
- Technological and functional obsolescence
 - Finite raw material
 - Unexpired period of lease of land less than the balance life of the equipment as well as buildings
 - Imbalance in different production sections
 - Planning consent
 - Non-compliance of regulatory measures

Moreover, there were no surplus assets.

- (f) The carrying amount and DRC (without consideration of economic obsolescence) as on date of valuation were as under:

Carrying amount	=	₹ 14,00,00,000
DRC (without consideration of economic obsolescence)	=	₹ 16,11,50,000

The prudent purchaser will definitely take into consideration return on investment.

- (g) The capacity utilization of the plant was less than 25% for consecutive two years. The assets were latest and in good condition and not adversely affected on account of factors mentioned under paragraph (e) above.
- (h) As technological and functional obsolescence are concerned, the assets installed are latest.

In view of the facts mentioned above, prima-facie it was felt that the plant suffers from economic obsolescence and the services of financial consultants were deployed.

They reported as under:

Value of business (BE)	=	₹ 13,26,93,000
Net current asset as on valuation date (NWC)	=	₹ 50,71,000

$$BE - NWC = FA + IA$$

As the company was not generating sufficient income for breakeven, it has no intangibles.

Therefore,

$$\begin{array}{lcl} \text{As} & \text{IA} & = \text{O} \\ & \text{FA} & = \text{BE - NWC} \end{array}$$

$$\begin{array}{lcl} \text{Net fixed asset (FA)} & = & 13,26,93,000 - 50,71,000 \\ & = & ₹ 12,76,22,000 \\ & \text{Say} & ₹ 12,76,00,000 \end{array}$$

$$\begin{array}{lcl} \text{DRC (without economic} & & \\ \text{obsolescence) of tangible} & & \\ \text{assets} & = & ₹ 16,11,50,000 \end{array}$$

$$\begin{array}{lcl} \text{Reduction in value due to} & & \\ \text{Economic obsolescence} & = & 16,11,50,000 - 12,76,00,000 \\ & = & ₹ 3,35,50,000 \end{array}$$

$$\text{Economic obsolescence} = 20\%$$

The statement showing RCN, depreciation for wear and tear, DRC and value after considering economic obsolescence as on 31-03-2014 is as under:

RCN	₹ 20,89,00,000	(a)
Depreciation	₹ 4,77,50,000	(b)
DRC	₹ 16,11,50,000	(c)
Economic obsolescence	20%	(d)

$$\begin{array}{lcl} \text{Value} & = & C \times \frac{100 - 20}{100} \\ & = & ₹ 12,89,20,000/- \end{array}$$

The PME is impaired as under:

$$16,11,50,000 - 12,89,20,000 = ₹ 3,22,30,000/-$$

The impairment loss reduces the tax liability of profit making company. Therefore, it is a tax shield for such companies. For loss making company it increases the carry forward loss.

15.3 Bank finance (security against loan)

Valuation for security against loan must satisfy S.5(n) of Banking Regulation Act, 1949.

Secured loan or advance has been precisely defined in clause (n) of Section 5 of Banking Regulation Act, 1949 as:

“a loan or advance made on the security of the assets the **market value** of which is not at any time less than the amount of such loan or advance.”

Issues to be taken in to consideration for estimation of market value are exhaustively dealt earlier. Issues to be taken into consideration for liquidation and forced sale value are given hereinafter.

15.3.1 Liquidation value

(a) Auction sale

Where the auction sale is by banks or financial institutions, courts, etc. to recover dues, there is an element of distress, a cloud regarding title, and a chance of litigation, which have the effect of dampening the enthusiasm of bidders and making them cautious, thereby depressing the price.

On the other hand when purchasers start bidding, an element of competition enters into the auction. Human ego, and desire to do better and excel other competitors, leads to competitive bidding, each trying to outbid the others. Thus in a well-advertised auction sale, where a large number of bidders participate, there is a tendency for the price of the auctioned property to go up. This is true in case of real estate. But in case of plant & machinery the situation is different. It is rare that the price realized in auction is higher than the market value mainly because the buyers are bidding only with an intention to earn fair return on investment made after taking into consideration risk involved and capacity of plant & machinery to generate future cash flow.

(b) Let us consider a hypothetical case of valuation of apartments located in a multi storied building having construction on ground plus 10 upper floors. There are five apartments per floor. The single owner of 5 apartments has offered all his five flats as a security to the bank. While taking these apartments as a security the bank requested valuer to report market value, orderly liquidation value and forced sale value.

The local inquiry revealed that one week prior to the date of valuation, the flats on 4th and 5th floor of same building

(total 10 nos.) are sold on same day as per rates indicated below:

- 5 numbers of flats (a to e) are sold in the range of ₹ 5,000/- to ₹ 5,500/- per sq. ft.
- 3 numbers of flats (f to h) are sold in the range of ₹ 4,000/- to ₹ 4,500/- per sq. ft.
- 2 numbers of flats (i and j) are sold in the range of ₹ 3,000/- to ₹ 3,500/- per sq. ft.

In order to ascertain whether the transactions referred above satisfy the definition of market value local inquiry was made and even sellers and purchasers were also contacted. Local inquiry revealed that:

- Flat numbers a to e were sold with proper marketing and large number of buyers interacted and sellers were not prepared to sell at any price.
- In case of flat numbers f to h marketing time was not sufficient as seller was in little hurry.
- In case of flat numbers i and j the seller had given only 15 days to broker to find a buyer.

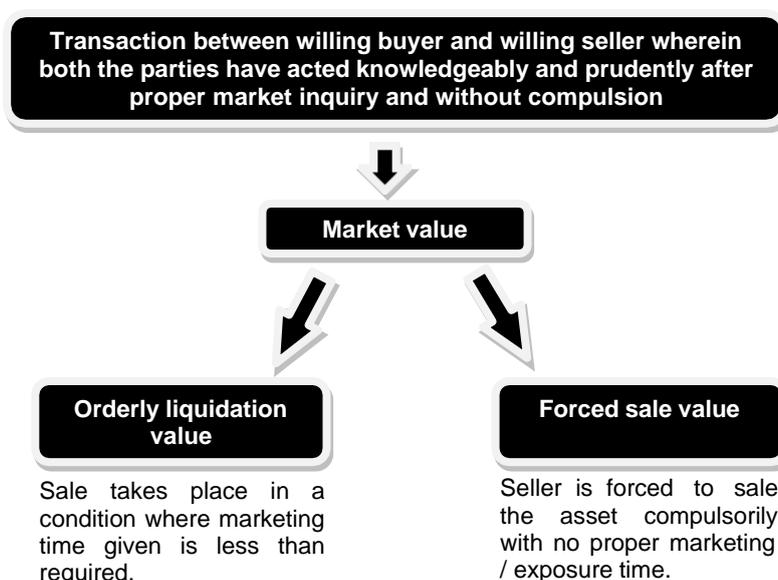
We can conclude from above as under:

- Market value is in the range of ₹ 5,000/- to ₹ 5,500/-
- Orderly liquidation value is in the range of ₹ 4,000/- to ₹ 4,500/-
- Forced sale value is in the range of ₹ 3,500/- to ₹ 4,000/-

In case of flats (i) and (j) instead of 15 days, only 5 days were given to broker then in that case the price realized could have been in the range of ₹ 3,000/- to ₹ 3,500/- or even less. This gives the idea about situation under forced sale.

The above transactions give proper idea about the difference amongst market value, orderly liquidation value and forced sale value. **But in practice it is practically impossible to get the data for sale as above even for real estate. Then in the case of plant & machinery situation is worse for general purpose machinery and worst for specialized machinery.**

- (c) Chart showing difference amongst market value, orderly liquidation value, and forced sale value.



Orderly liquidation value is an estimate of the gross amount that the tangible assets would fetch in an auction-style liquidation with the seller needing to sell the assets on an as-is, where-is basis. The term 'orderly' implies that the liquidation would allow for a reasonable time to identify buyers, and the seller would have control of the sale process. The marketing time is less than required for a sale as per market value definition and more than required under forced sale condition.

Forced sale value is an estimate of the gross amount that the tangible assets would fetch when the seller is forced to sell the assets compulsorily without proper marketing time/ exposure time. There is urgency to sell and the seller does not have control of sale process (generally the banks/ courts/receivers, etc. do).

Note: So far as price obtainable in the forced sale condition is concerned, it is very difficult to predict because one is attempting to define a moving target. Is forced sale the one which is expected to take place within 3 months, 2 months, 1 month, 1 week or 1 day?

- (d) For plant and machinery there is no exact science to estimate liquidation value. It is mainly an art and therefore there is a wide variation in liquidation value estimated by different valuers for a same machine. This is mainly due to lack of data to form an opinion. Therefore, this write up highlights factors to be borne in mind in estimating liquidation values.

- (e) There are certain plant and machinery assets so difficult to isolate from other installed assets. The only rationale or practical way to liquidate them would be to sell as a single lot, with the express implication that a new buyer would continue existing use in-situ.

Orderly liquidation value in-situ is an opinion on value (before any sale expenses) which the assets could realize if sold by negotiated price (private treaty), sale at a properly advertised and professionally managed liquidation sale, by a seller obligated to sell, over an extended period of time depending on nature of specialization. However, the marketing time is less than required for a sale as per market value definition and more than required under forced sale condition. Orderly liquidation value in-situ assumes consideration of the present economy and viability of the entire facility being sold intact, along with all related equipment necessary to continue present processing operations. It further considers that market value, as normally defined, could not be obtained owing to restrictions of time and probable conditions of the business under a forced sale environment.

Industrial or processing machinery that is so integrated or specialized that removal and sale on a piece meal basis would be highly impractical and result in an extreme degeneration of recoverable value in a liquidation situation; application of estimating value on an orderly liquidation in-situ basis is suitable under such circumstances. Facilities where this approach may be viable include certain types of food processing plants, grain handling facilities, industrial plating or metal finishing, and other such specialized industries. These types of operations typically have a large amount of peripheral equipment such as pneumatic conveying, steam and water lines, conveyors, pumps, dust collection, and filtration systems. All these play a significant role in the production process and add significant cost to purchase and install, yet would have negligible resale potential if sold, disassembled and separated from the primary process machinery.

With highly integrated equipment lines, the only way to recover value might be selling the assets as a single lot in their entirety. To make that approach possible, however, several key factors as mentioned below come into play:

- The state of technology and overall condition of the installed plant, machinery and equipment must be viable to make economic sense for a prospective buyer to invest in the assets.

- The seller should be in a position and be willing to cover expenses associated with holding the plant and machinery for the extended period of time necessary to find a buyer. These costs could include utilities, insurance, maintenance, security, debt service and other relevant expenses.
- A buyer must be able to acquire continued occupancy in the real estate associated with the operation, either by means of purchasing the real estate housing plant and machinery at market value and with favorable terms, by placing financing to purchase, or by means of a long term lease on the premises in a length of term appropriate to make the purchase economically feasible.

(f) Some machinery, equipment and facilities are custom built and specialized. These machines are hardly sold in the open market; but they are sold by way of a sale of the entity of which they are part and parcel (this is also known as business in occupation). This is mainly due to their uniqueness arising due to following factors:

- Specialized nature
- Design
- Configuration
- Size
- Location, or
- any other relevant factors

Examples of these are:

- Refineries
- Power stations
- Specialized manufacturing facilities like cement plants etc.
- Machinery located in particular geographical location for operational/business reasons like mining equipment.

The specialized machinery suffer from limited marketability and same is dependent on specialized nature, design, configuration etc.

(g) Having discussed basic terms in the realm of liquidation value let us examine the same for valuation of plant & machinery.

The value of plant & machinery depends on its capacity to generate income in highest and best use. There are following basis under which highest and best use value can be estimated for plant and machinery:

- Existing use *in-situ*
- Existing use *ex-situ*
- Alternative use *in-situ*
- Alternative use *ex-situ*

Note: Generally, existing use in-situ represents highest and best use; but under some circumstances it becomes necessary to use other basis depending on facts and circumstances of the case.

In case of liquidation value the valuation mainly under following two scenarios is relevant.

- Existing use *in-situ*
- Existing use *ex-situ*

(h) Purchase price (Gross book value without depreciation) of a machine is inclusive of the following items.

A. For indigenous machine

- (i) Ex-works price of machine
- (ii) Packing and forwarding charges
- (iii) Excise duty
- (iv) VAT
- (v) Handling charges
- (vi) Transportation charges
- (vii) Transit insurance cost
- (viii) Foundation, erection and installation costs etc.
- (ix) Pre-operative expenses/finance charges

B. Imported machine

- (i) Ex-works price at manufacturer's site
- (ii) C.I.F. (custom duty, insurance and freight)
- (iii) Landed cost in Indian port
- (iv) Clearing, forwarding and transit insurance from port to plant
- (v) Handling charges at plant
- (vi) Costs of foundation, erection, installation etc.
- (vii) Pre-operative expenses/finance charges

Note: Taxes/duties to be considered mentioned above are non-recoverable taxes i.e. effective taxes.

Let us consider the case of an indigenous machine.

If X is the ex-works price of a machine then cost of (ii) to (ix) works out to about 30 to 40% of X depending on circumstances of individual case.

Let us consider a case of a machine having ex-works price ₹ 1,00,000/- and all the expenses (ii) to (ix) are amounting to ₹ 40,000/- giving a purchase price ₹ 1,40,000/-.

- (i) The machinery can be classified broadly in following categories:
- (a) General purpose machinery for which there is always a demand, the market exists for second hand machines and are not suffering from limited marketability.
 - (b) Specialized machinery suffering from limited marketability and demand.

Let us consider a hypothetical case of a **general purpose machine** having following data:

Ex-works price	₹ 1,00,000/-	
Taxes and other costs @ 40% of ex-works price	₹ 40,000/-	
Gross book value	₹ 1,40,000/-	(a)
Age	5 years	
Scrap value	Nil	
Depreciation per annum = 10% for 5 years (50%)	₹ 70,000/-	(b)
Net book value (a) – (b)	₹ 70,000/-	
Ex-works price of brand new identical machine	₹ 1,30,000/-	
Taxes etc. is also 40% of Ex-works price	₹ 52,000/-	
RCN	₹ 1,82,000/-	
Depreciation of wear and tear for 5 years at 10% (50%)	₹ 91,000/-	
Technological, functional and economical obsolescence	Nil	
Condition of machine	Good	
DRC	₹ 91,000/-	

Similar second hand machine is available in the market for ₹ 60,000/-.

The cost of bringing the machine into operation is ₹ 15,000/-.

The market value of second-hand machine in-situ is 60,000 + 15,000 = ₹ 75,000/-

DRC worked out is ₹ 91,000/-

Therefore, buyer will not buy at DRC (₹ 91,000/-).

If the buyer is aware that the owner is in the urgency to sell then in that situation he will make an offer to buy at say, ₹ 60,000/-. The seller will be ready to sell for ₹ 60,000/- as it is closed to net book value of ₹ 70,000/- and it is 20% less than the market value (₹ 75,000/-).

The statement showing net book value, DRC, **market value in existing use in-situ and price realized** is given below:

Net book value	₹ 70, 000/-
DRC	₹ 91, 000/-
Market value in existing use in-situ	₹ 75, 000/-
Price realized	₹ 60, 000/-

Now suppose the same machine is to be sold ex-situ.

The price of the second hand machine is ₹ 60,000/-.

The cost of bringing the machine in to operation is ₹ 15,000/-.

The buyer who is going to use the machine at different location will certainly consider cost of installation which is ₹ 15,000/-.

Therefore, buyer will bargain to buy machine available in-situ for ₹ 45,000/-.

The seller is aware that second-hand machine is available for ₹ 60,000/-. As seller is in urgency to sell, he will be prepared to sell in the range of ₹ 45,000 to ₹ 50,000/-. Let us assume that deal takes place at ₹ 45,000/-.

In case of sale in ex-situ machine is to be removed from one place and to be installed at other place which is going to cost ₹ 15,000/- therefore DRC will be reduced to that extent to 91,000 -15,000 = ₹ 76,000/-.

The statement showing net book value, DRC, **market value in existing use ex-situ and price realized** is given below:

Net book value	₹ 70, 000/-
DRC	₹ 76, 000/-
Market value in existing use ex-situ	₹ 60, 000/-
Price realized	₹ 45, 000/-

The comparison of different values in existing use in-situ (EUI) and in existing use ex-situ (EUE)

	EUI in ₹	EUE in ₹	% Difference
Net book value	70,000/-	70,000/-	Nil
DRC	91,000/-	76,000/-	15
Market value	75,000/-	60,000/-	20
Price realized	60,000/-	45,000/-	25

Note: The above figures are only for illustrative purposes. In reality, it will be different in each case.

If this machine had been offered as a security when it was one year old, the RCN, Depreciation and DRC would have been as under:

Ex-works price when machine was one year old	₹ 1,10,000/-
Taxes etc. @ 40% of ₹ 1,10,000/-	₹ 44,000/-
RCN	₹ 1,54,000/-
Depreciation for one year @ 10% of ₹ 1,54,000/-	₹ 15,400/-
DRC (1,54,000 – 15,400)	₹ 1,38,600/-

It is the duty of the valuer to cross check the DRC with price at which similar second-hand machine is available in the market and also to retain all the material on market inquiry made to substantiate the basis of coming to the conclusion of value in future if situation arises; so that it can be proved that entire exercise was carried out systematically and scientifically. In some cases even price of second-hand machine may not be available, then in that case it is essential for valuer to justify economic balance life adopted for computation of DRC and effect of limited marketability if any or any other relevant factor on DRC worked out.

In case of special purpose machine and in case of any other machine if there is no second hand market then in that case his

view on following is necessary:

- (a) If a machine is specially designed then degree of speciality
- (b) Does it suffer from limited marketability? If yes, how much?
- (c) Likely difference in realizable price if purchaser is going to use at the same place and at different location.

If the borrower becomes defaulter after 5 years then the price realized in existing use in-situ will be ₹ 60,000/- which is about 43% of DRC (₹ 1,38,600/-) and in existing use ex-situ will be ₹ 45,000/- which is about 32% of DRC (₹ 1,38,600/-).

Under the circumstances valuer cannot be held responsible on the ground that the price realized is less than ₹ 1,38,600/- estimated by him. This is because the market situation at the time of valuation and sale are different.

The price realized depends on bargaining capacity, eagerness of parties to transaction to complete the transaction.

In above illustration, the machine is not suffering from any form of obsolescence.

The factor for urgency of seller considered is not unreasonable; but in practice it varies from case to case and generally it is much more if seller is desperate to sell. If the buyer is in urgency to buy and he perceives the utility then the price realized could be higher but such a situation is very rare.

Moreover, the above illustration is for a general purpose machine in both the scenario in existing use in-situ and ex-situ.

If the machine is a special purpose machine then the price realized will vary considerably depending on following factors:

- Sale is in existing use in-situ or ex-situ
- Bargaining capacity of buyers and sellers
- Eagerness of parties to complete the transaction.
- Uniqueness arising due to following factors:
 - specialized nature
 - design
 - configuration
 - size
 - location, or
 - any other relevant factors

The values worked out for special purpose machinery will be generally less than the values worked out for general purpose machinery mentioned above. How much less will depend on facts and circumstances of the case.

It is noteworthy to mention here that in case of certain machines/equipment/assets made out of R.C.C. construction like silos in cement plants, tanks in chemical plants or any other such structures have no existing use in ex-situ and such machines/equipment/assets become liability at the time of sale in ex-situ.

15.3.2 The price realized under orderly liquidation scenario and also under forced sale scenario are subjective and therefore instead of terms orderly liquidation value and forced sale value the terms price realized under orderly liquidation condition and price realized under forced sale condition are appropriate.

15.3.3 Under the circumstances it is advisable to report range of values for orderly liquidation and forced sale conditions.

16.0 Check-list for Users of Service of PME Valuers

16.1 Report for plant and machinery shall contain:

16.1.1 The purpose of valuation

16.1.2 Statement of PME under consideration:

- (a) Statement showing list of plant, machinery and equipment along with technical specifications, year of installation, year of manufacture, reproduction cost new/replacement cost new, depreciation, depreciated reproduction/replacement cost (DRC) with obsolescence if any with value estimate **under cost approach.**
- (b) Statement showing list of plant, machinery and equipment along with technical specifications, year of installation, year of manufacture with market value **under market approach.**
- (c) Statement showing list of plant, machinery and equipment along with technical specifications, year of installation, year of manufacture with market value under **income approach.**

16.1.3 Basis of valuation

Existing use in-situ/ex-situ
Alternative use in-situ/ex-situ

16.1.4 Approaches to value

(a) Cost approach

- (i) The statement of quotations received from suppliers of machinery for current cost of brand new machine/details of inquiry made with details of persons contacted or any other source of obtaining current prices.
- (ii) Basis of estimation of depreciation and obsolescence, if any.

(b) Market approach

The statement of quotations received from suppliers of second-hand machinery / statement showing research carried out to find out second-hand prices.

(c) Income approach

The statement showing basis of estimation of income, YP/discount rate adopted

- 16.1.5** Assessment of present condition, basis of adopting total economic life, estimated economic balance life.
- 16.1.6** Assessment of technological, functional and economic obsolescence if any.
- 16.1.7** Comments on compliance of regulatory measures.
- 16.1.8** In case of production plants – comment on efficiency of plant

Layout-whether there is any imbalance in different production sections.
- 16.1.9** Approach to valuation if –
 - (a) Estimated economic balance life of plant and machinery is more than estimated economic balance life of buildings in which they are installed.
 - (b) Estimated economic balance life of plant and machinery is more than unexpired of lease of land/building and there is no renewal clause.
- 16.1.10** Assumptions and limiting conditions.
- 16.2** Any other relevant information