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IAS® Standard 16 Property, Plant and Equipment






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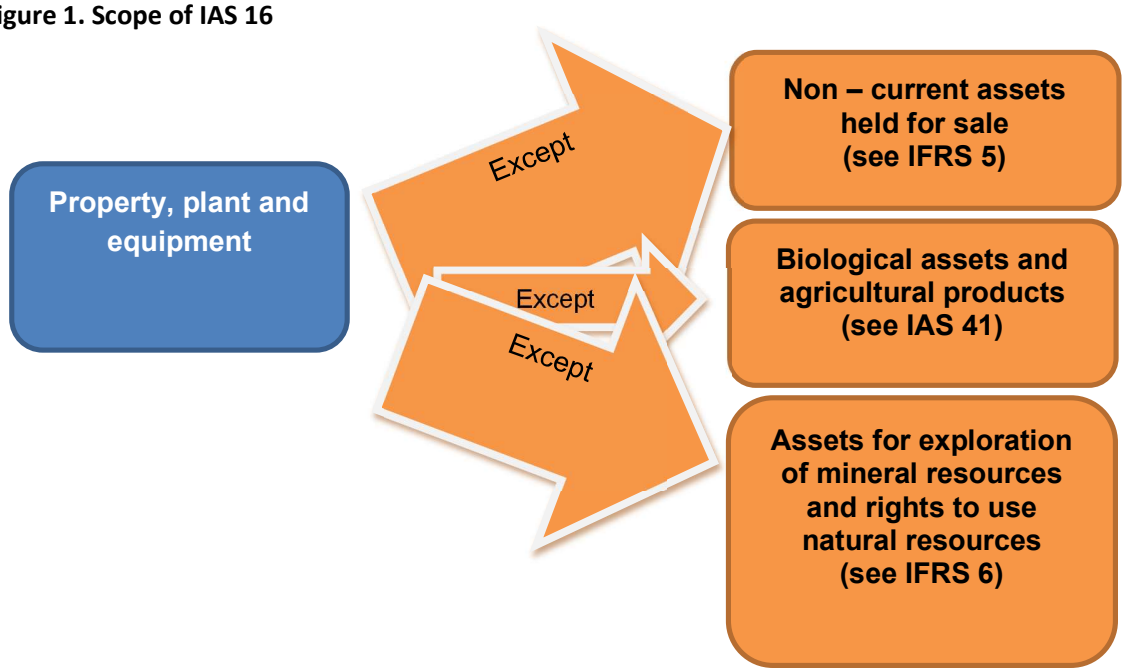
IAS® Standard 16 Property, Plant and Equipment

SCOPE

The purpose of IAS Standard 16 Property, Plant and Equipment is to provide guidance on accounting for property, plant and equipment that provides clear and comprehensible information in the financial statements about these assets.

The standard applies to the accounting for property, plant and equipment, with certain exceptions, as shown in Figure 1:

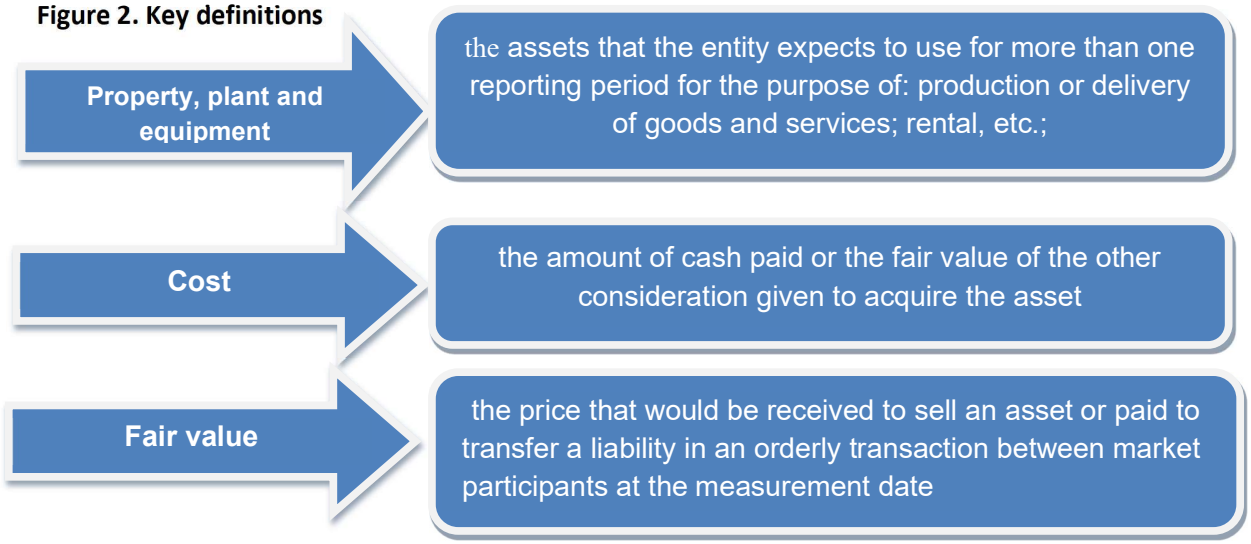
Figure 1. Scope of IAS 16



KEY DEFINITIONS

The following definitions are given for the proper understanding and application of IAS 16 (see Figure 2):

Figure 2. Key definitions



RECOGNITION

In order to recognise an asset in accordance with IAS 16, an entity needs to:

- expect to receive economic benefits from that asset, and
- the price of that asset can be reliably determined.

There are items of property, plant and equipment that are acquired to be used in management, to protect and preserve the environment, to ensure the safety of the production process. Although they do not directly generate economic benefits, their use increases economic benefits. Therefore, they are recognised as assets.

The Standard does not prescribe the unit of measure for recognition, i.e. what constitutes an item of property, plant and equipment. Judgement is needed to recognise a unit as property, plant and equipment.
In some cases, it may be appropriate to aggregate individually insignificant items (such as moulds, tools and dies), and apply the recognition criteria to the aggregate value.
When several assets are acquired at a common cost and it is possible to reliably determine the fair value of each, those assets must be accounted for separately. Typically, each of these assets has a different useful life and different depreciation is applied. For this purpose, the relative share of each asset in the total price (common fair value) must be determined. The basis for determining the relative share is the individual fair value of each asset (see Example 1).

Example 1.
The entity bought garages, land and trucks worth a total of CU300,000. The market (fair) price of each of these assets is as follows: garages - CU140,000; land - CU110,000; trucks - CU100,000.

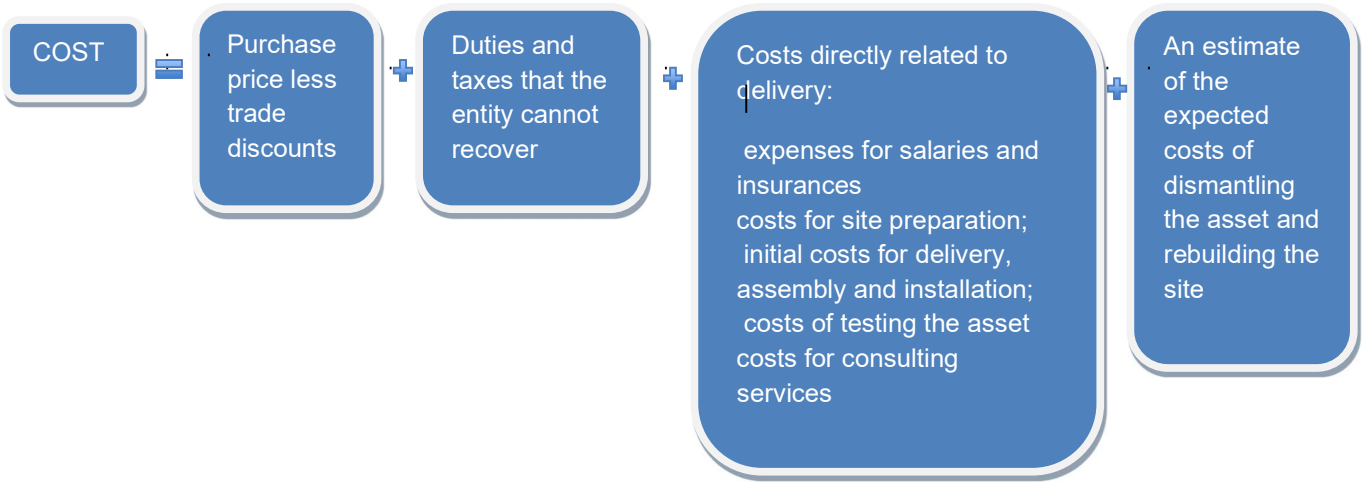
Question
At what value should each asset be recorded?

Solution
Determining the relative share of each asset in the total price, based on the individual price:
Garages: CU140,000/CU350,000 = 0.4
Land: CU110,000//CU350,000 = 0.31
Trucks: CU100,000/CU350,000 = 0.29

Allocation of the agreed market price between the individual assets based on their relative share
Garages: 0.4 x CU300,000 = CU120,000
Land: 0.31 x CU300,000 = CU93,000
Trucks: 0.29 x CU300,000 = CU87,000

MEASUREMENT
Initial measurement
Acquired property, plant and equipment are initially measured at cost. As shown in the following figure, the acquisition cost includes the purchase price less trade discounts, plus duties and taxes that the entity cannot recover, costs directly related to delivery and an estimate of the expected costs of dismantling the asset and rebuilding the site on which the asset is located (see Example 2).

Figure 3. Elements of the cost



Example 2.

Alfa PLC is currently building a new head office. So far it has incurred costs as follows:

Purchase of land	CU210,000
Stamp duty	CU8,300
Site clearance	CU14,150
Building materials	CU35,000
Labour: - Builders - Site manager - Administrative manager	 CU25,800 CU8,300 CU5,000
Interest on a loan (taken out on the first day of construction to fund the building)	CU3,300
General overheads	CU7,500

Question

How much should be capitalised in respect of the head office and how much should be treated as expenditure?

Solution

Purchase of land	CU210,000	**Capitalise**
Stamp duty	CU8,300	**Capitalise**
Site clearance	CU14,150	**Capitalise**
Building materials	CU35,000	**Capitalise**
Labour:		

- Builders - Site manager - Administrative manager	CU25,800 CU8,300 CU5,000	**Capitalise** **Capitalise** **Expense**
Interest on a loan (taken out on the first day of construction to fund the building)	CU3,300	**Capitalise**[1]
General overheads	CU7,500	**Expense**

Dismantling and restoration costs are estimated values as of the end of the asset's useful life. To this end, the present value of these costs must be determined. The discount rate is selected by the entity based on an analysis of the expected economic benefits of the asset and its useful life (see Example 3).

Example 3.

Determining the cost of assets (property, plant and equipment) - including costs for dismantling and restoration of the terrain at the end of the useful life of the asset.

The entity buys oil production equipment at a price of CU120,000. Delivery and installation costs are CU8,000. The cost of dismantling the equipment and restoring the terrain at the end of the useful life of the equipment (after 30 years) is estimated at CU25,000. The discount rate is 5 percent.

Question

What is the present value of the costs of dismantling and restoring the asset? What is the cost of acquiring the equipment?

Solution

Determining the present value of dismantling and restoration costs

1. Determination of the discount factor:

$$\frac{1}{(1+0.05)^{30}} = 0.231$$

2. Determining the present value

CU25,000x0.231= CU5,775

3. Determining the cost of the equipment

Cost = CU120,000 + CU8,000 + CU5,775= CU133,775

Measurement after recognition

IAS 16 Property, Plant and Equipment allows entities to choose one of two valuation models after initial recognition.

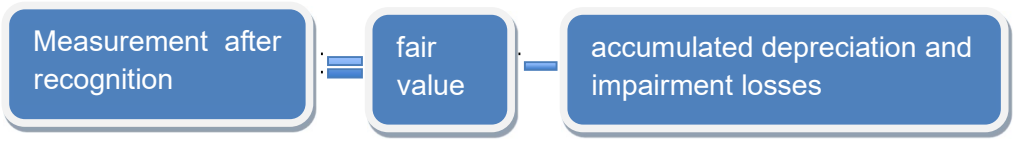
[1]See IAS 23 Borrowing costs, because there are qualifying conditions and other considerations that may not allow that amount be capitalised in full.

Cost model (see Figure 4)

Figure 4. Determining the value after recognition according to the cost model

Revaluation model (see Figure 5)

Figure 5. Determining the value after recognition according to the revaluation model



Revaluations are performed for entire classes (groups) of property, plant and equipment.
When there is no significant change in the fair value of the revalued assets, IAS 16 allows revaluations to be performed every three or five years.
When there is a significant change in the fair value of the revalued assets, the entity may set more frequent revaluations, depending on the market situation.
The purpose of the revaluation is to ensure that the value of the assets in the financial statements corresponds to market conditions. For this purpose, the carrying amount of the revalued assets is forced to equal their revalued amount.

Ways to adjust the carrying amount of assets to their revalued amount
First way: by writing off the accumulated depreciation at the expense of the book value. The new carrying amount is recalculated relative to the revalued amount.
Second way: Recalculation of carrying amount and accumulated depreciation in proportion to the change in carrying amount at the date of revaluation.

Accounting for changes in the carrying amount as a result of the revaluation
If an asset's carrying amount is increased as a result of a revaluation, the increase shall be recognised in other comprehensive income and accumulated in equity under the heading of revaluation surplus. However, the increase shall be recognised in profit or loss to the extent that it reverses a revaluation decrease of the same asset previously recognised in profit or loss [IAS 16.39] (see Example 4);
If an asset's carrying amount is decreased as a result of a revaluation, the decrease shall be recognised in profit or loss. However, the decrease shall be recognised in other comprehensive income to the extent of any credit balance existing in the revaluation surplus in respect of that asset. The decrease recognised in

other comprehensive income reduces the amount the heading of revaluation surplus [IAS 16.40] (see Example 5).

Example 4.

Alfa PLC acquired its only building on 1 January 2005 at a cost of CU160,000. The useful life of the building was estimated at 50 years. On 31 December 2020, a new fair value of the building was determined at CU350,000.

Alfa's disclosure note states that, where possible, they incorporate the use of fair values into their accounts.

Question

Explain the revaluation in Alfa's accounts for the year ended 31 December 2020.

Solution

The carrying amount at 31 December 2020 is:

Cost	CU160,000	
Accumulated depreciation (CU160,000/50 x 16 years)		(CU51,200)
Carrying amount	CU108,800	

The fair value is CU350,000.

Therefore, a revaluation of CU350,000 – CU108,800 = CU241,200 is required.

Dr. Property, plant and equipment		CU190,000
Dr. Accumulated depreciation	CU51,200	
Cr. Revaluation Reserve	CU241,200	

Example 5.

The carrying amount of Beta's property at the end of the year amounted to CU105,000. On this date the property was revalued and was deemed to have a fair value of CU91,000. The balance on the revaluation surplus relating to the original gain of the property was CU12,000.

Question

What is the double entry to record the revaluation?

Solution

Loss on revaluation:

Carrying amount of non-current asset at revaluation date		CU105,000
Fair value	CU91,000	
Loss on revaluation	CU14,000	

Double entry:

Dr. Revaluation reserve (to maximum of original gain)	CU12,000	
Dr. Loss from revaluation	CU2,000	
Cr. Property, plant and equipment		CU14,000

DEPRECIATION

Calculation of depreciation of property, plant and equipment

Depreciation of assets begins on the date on which they are available for use. IAS 16 requires depreciation to be discontinued on the earlier of the two dates:

- when the entity has determined the relevant asset for sale;
- when the asset is derecognised from the assets of the entity.

Land is a non-depreciable asset. Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item shall be depreciated separately.

Different methods are used to depreciate assets. The manner in which benefits are used determines the depreciation method.

IAS 16 regulates the following depreciation methods:

- **Straight-line depreciation** - in this method, the amount of depreciation is the same over the useful life of the asset (see Example 6).

Example 6.

An item of property, plant and equipment was purchased for CU100,000. It is estimated to have a useful life of 5 years and is depreciated on ***a straight-line basis***. The residual value of the asset is CU11,000.

Question

What is the annual depreciation during the useful life of the asset?

Solution

1. Determination of the depreciable amount of the asset:

Depreciable amount = CU100,000 - CU11,000 = CU89,000

2. Determination of the depreciation rate:

$$\text{Depreciation rate} = \frac{100}{\text{Useful life of assets (years)}} = \frac{100}{5} = 20\ \%$$

3. Determination of the depreciation quota:

Depreciation quota = CU89,000 x 20% = CU17,800

Dr Depreciation expense	CU17,800	

Cr Accumulated depreciation CU17,800

- **The diminishing balance method** - The diminishing balance method results in a decreasing depreciation expense over the useful life. This method is applied when the economic benefits of the asset are mainly obtained at the beginning of its useful life. Therefore, depreciation expenses will have the greatest impact on the financial results of the enterprise in the first years of the use of the asset (see example 7). The diminishing balance method is used until the annual depreciation rate calculated using this method is smaller than the depreciation rate calculated using the straight-line method for the remaining useful life of the asset, after which the straight-line method is used.

Example 7.

An item of property, plant and equipment was purchased for CU100,000. It is estimated to have a useful life of 5 years and is depreciated on ***diminishing balance method***. The residual value of the asset is CU11,000.

Question

What is the annual depreciation during the useful life of the asset?

Solution

1. Determination of the depreciable amount of the asset:

Depreciable amount = CU100,000 - CU11,000 = CU89,000

2. Determination of the depreciation rate:

$$\text{Depreciation rate} = \frac{100}{Useful\ life\ of\ assets\ (years)} = result \times C$$

where:

C is diminishing balance coefficient. The diminishing balance coefficient is chosen depending on the useful life of the asset. IAS 16 does not specify values. In practice, this ratio varies in the range of 1.5 to 2.5.
In this example we use a coefficient of **2**.

$$\text{Depreciation rate} = \frac{100}{5} = 20 \times 2 = 40\,\%$$

3. Preparation of the depreciation plan:

Depreciation plan:

Year of depreciation	Depreciation rate (%)	Annual depreciation = depreciable amount* depreciation rate	Depreciable amount	Carrying amount
First year	40	89.000*40 = 35,600	53,400	64,400
Second year	40	53.400*40 = 21,360	32,040	43,040
Third year	40	32.040*40 = 12,816	19,224	30,224
Fourth year	50	19.224 *50 = 9,612	19,224	20,612
Fifth year	50	19.224 *50 = 9,612	0	11,000
		89,000		

Accounting for the depreciation of the asset for the first year

Dr. Depreciation expense CU35,600

Cr. Accumulated depreciation CU35,600

- **Method according to the units of production -** this method directly relates the distribution of the amount of depreciation of an asset to the amount of output produced from that asset. When there is no production, depreciation costs are zero. The following rules are followed:
  - the depreciable amount is divided by the amount of output produced over the useful life of the asset in order to establish the depreciation rate (distributed depreciation per unit of output);
  - the established depreciation rate per unit is multiplied by the quantity of production for the respective year and thus the annual depreciation quota is obtained.

DERECOGNITION

Assets are derecognised on disposal (sale, etc.) or in cases where the entity does not expect and cannot receive any benefits from it.

If there is a revaluation reserve, this reserve is directly transformed into retained earnings when the asset is written off.

DISCLOSURE

Disclosures related to property, plant and equipment in the financial statements can be grouped into two groups: **mandatory and voluntary.**

Mandatory disclosure	Voluntary disclosure
- the valuation bases used for the assets; - depreciation policy; - the reconciliation of the carrying amount of the respective asset at the beginning and at the end of the reporting period.	- circumstances related to the ownership of the assets; - the amount of capitalised costs in the carrying amount of the asset upon its acquisition (construction); - the amount of contractual obligations related to the acquisition of assets; and - the amount of compensation from other entities and persons for losses and impairments related to assets.

COMPLEX EXAMPLE

"X" Ltd. buys a production machine with acquisition cost CU118,000. The entity has adopted the straight-line method of depreciation for this asset class. The useful life of the machine is 20 years.

After initial recognition, an entity adopts one of the two IAS 16 Property, Plant and Equipment approaches, namely the revaluation approach.

At the end of the fifth year, the production machine was revalued. The fair value of the machine at the date of revaluation was CU100,000.

The production machine was sold at a selling price of CU110,000.

Questions

1. Determine the depreciation rate and the depreciation quota for the purposes of depreciation of the production machine.
2. Calculate the depreciation charge of the production machine at the end of the fifth year.
3. Calculate the result of derecognition of the production machine from the assets of the entity "X" Ltd.

Solution

1. Determination of the depreciation rate and the depreciation quota of the production machine

1.1. Determination of the depreciation rate:

$$\text{Depreciation rate} = \frac{100}{\textit{Useful life of assets (years)}} = \frac{100}{20} = 5\ \%$$

1.2. Determination of the depreciation quota for one year:

Depreciation quota = CU118,000 x 5% = CU5,900

2. Determination of the result of the revaluation at the end of the fifth year

2.1. Depreciation accumulated so far

5 years x CU5,900 = CU29,500

2.2. Carrying amount of the asset before revaluation

Net carrying amount = Gross carrying amount - Accumulated depreciation = CU118,000 - CU29,500 = CU88,500

Fair value at the date of revaluation: CU100,000

Difference between fair value and net carrying amount = CU100,000 - CU88,500 = CU11,500 (increase).

This difference will increase the net carrying amount to fair value and will form a revaluation reserve.

Way to treatment of the revaluation in accordance to IAS 16 Property, Plant and Equipment:

Recalculation of gross carrying amount and total accumulated depreciation in proportion to the change in the net carrying amount of the asset after revaluation. In this example we use the restatement of the gross carrying amount method.

Calculation of conversion coefficient:

$$CC = \frac{Difference\ between\ net\ carrying\ amount\ and\ fair\ value}{net\ carrying\ amount} = \frac{CU11{,}500}{CU88{,}500} = 0.129943503$$

Recalculation of gross carrying amount by coefficient = CU118,000 x 0.129943503 ≈

≈ CU15,333,33

Recalculation of depreciation by coefficient = CU29,500 x 0.129943503 = CU3,833,33

Recalculated gross carrying amount = CU 118000 + CU15,333,33 = CU133,333,33

Recalculated depreciation = CU 29,500 + CU3,833,33 = CU 33,333,33

Net carrying amount after revaluation = Gross carrying amount - Depreciation = CU133,333,33 - CU33,333,33 = CU100,000

Statement of accounts:

Accumulated Depreciation

	Before revaluation CU29,500	1.
	Increase in depreciation after revaluation CU3,833,33	2.
	Balance after revaluation: CU33,333,33	

Property, Plant and Equipment

1. Acquisition cost of the machine CU118,000 2. Increase in gross carrying amount after revaluation CU15,333,33	
Balance after revaluation: CU133,333,33	

Revaluation Reserve

	Formation of a revaluation reserve CU11,500 1.
	Balance after revaluation: CU11,500

3. Derecognition of the production machine at sale

The following steps should be followed to write off the asset:

- Write-off the accumulated depreciation - CU33,333,33;
- Transform the revaluation reserve into retained earnings - CU11,500;
- Reduce the sales revenue at the expense of the net carrying amount of the sold machine – CU100,000;
- Calculate the gain/loss from the derecognition = net sales proceeds - net carrying amount of the asset = CU110,000 - CU100,000 = CU10,000.