International accounting standard (IAS) 16
Property Plant and Equipment

Objective

The objective of this Standard is to prescribe the accounting treatment for property, plant and equipment so that users of the financial statements can discern information about an entity's investment in its property, plant and equipment and the changes in such investment. The principal issues in accounting for property, plant and equipment are the ***recognition of the assets***, the ***determination of their carrying amounts*** and the ***depreciation charges*** and ***impairment losses to be recognised*** in relation to them.

Scope

For the purpose of this lecture, initial measurement of property plant and equipment and depreciation are covered

Brief history of IAS 16

International accounting Standard 16, Property, Plant and Equipment (IAS 16) replaced IAS 16

The principal issues in accounting for property, plant and equipment are the recognition of the assets, the determination of their carrying amounts and the depreciation charges and impairment losses to be recognised in relation to them.

Learning outcome:

At the end of this study session, students should be able to:

- Define Property, Plant and Equipment and other related terms
- Measure Initial cost of PPE
- Identify Component of Cost
- Calculate Depreciation charge on non-current assets
- Determine profit or loss on Disposal of Asset

Definition of terms

Property, Plant and Equipment are tangible items that:

a) Are held for use in the production or supply of goods or services, for rentals to others, or for administrative purposes
b) Are expected to be used during more than one period,

Cost

Cost is the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition or construction or, where applicable, **the amount attributed to that asset when initially recognised in accordance with the specific requirements of other IFRSs.**

Depreciable amount

Depreciable amount is the cost of an asset, or other amount substituted for cost, less its residual or scrap value.

Depreciation

Depreciation is the systematic allocation of the depreciable amount of an asset over its estimated useful life

Accumulated Depreciation

Estimated number of useful life of the asset

Accumulated Depreciation
Accumulated Depreciation is the total of depreciation charged from the beginning to a particular date.

Carrying amount
Carrying amount is the amount at which an asset is recognised after deducting any accumulated depreciation and accumulated impairment losses. It is the difference between the cost of an asset and its accumulated depreciation

Fair value
Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. (See IFRS 13 *Fair Value Measurement*).

Impairment loss
An impairment *loss* is the amount by which the carrying amount of an asset exceeds its recoverable amount

Recoverable amount
Recoverable amount is the higher of an asset's fair value less costs of disposal and its value in use.

The residual value (scrap value) of an asset is the estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Useful life is:

a) the period over which an asset is expected to be available for use by an entity; or

Focus

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a) the period over which an asset is expected to be available for use by an entity; or
b) the number of production or similar units expected to be obtained from the asset by an entity.

Initial Measurement

IAS 16 requires that PPE should initially be measured at 'cost' and the cost of an item of PPE should be recognised if, and only if:

a) it is probable that future economic benefits associated with the item will flow to the entity, and
b) the cost of the item can be measured reliably.

Focus

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b) the cost of the item can be measured reliably.

Components of Cost

According to IAS 16, the cost of an item of PPE comprises:

a) its purchase price, including import duties and non-refundable purchase taxes, after deducting trade discounts and rebates.

b) any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. These are costs

are costs that would have been avoided if the asset had not been purchased or constructed. Directly attributable costs include:

i. costs of employee benefits arising directly from the construction or acquisition of the item of PPE
ii. costs of site preparation
iii. initial delivery and handling costs
iv. installation and assembly costs
v. the cost of testing whether the asset is functioning properly, and
vi. professional fees

c) The initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located. This cost is to be discounted i.e. bringing future cost to present value.
d) Employees benefits, the period for which the costs can be included in the cost of PPE ends when the asset is ready for use, even if the asset is not brought into use until a later date. As soon as an asset is capable of operating, it is ready for use. The fact that it may not operate at normal levels immediately (e.g., because demand has not yet built up), does not justify further capitalisation of costs in this period. Any abnormal costs (for example, wasted material) cannot be included in the cost of PPE.

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Cost of PPE excludes the under listed expenses such as:

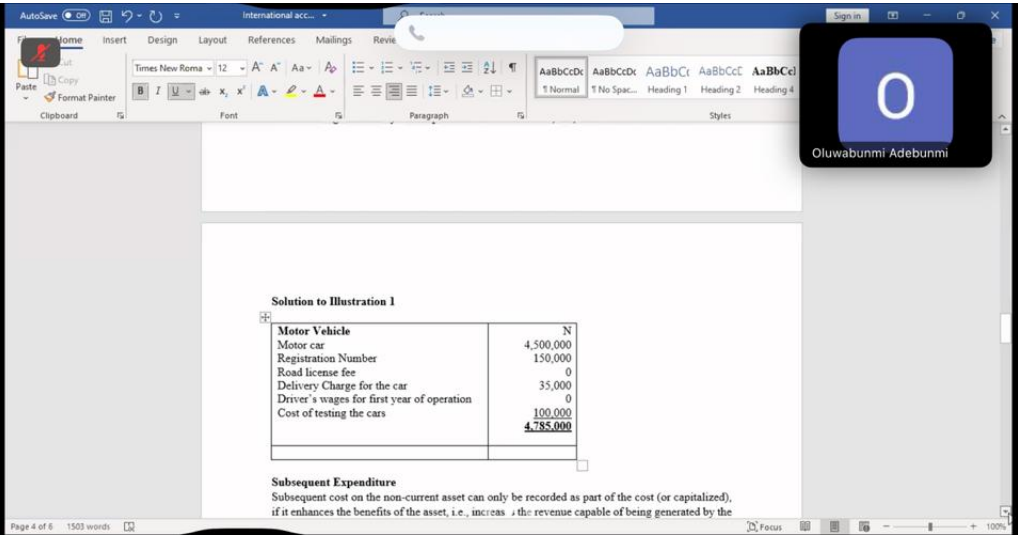
i. Repairs
ii. Renewals
iii. Repainting
iv. Administration
v. General overheads
vi. Training cost
vii. wastages

Example 1

From the information provided, determine the cost to be capitalised in the statement of financial position as

i. Motor vehicle
ii. Land and Building

Motor car	4,500,000
Registration number	150,000
Road license fees	25,000
Delivery charge for the car	35,000
Cost of testing the car	100,000
Purchase of office premises	8,000,000
Legal fees associated with purchase of office	800,000
Driver's wages for first year of operation	1,200,000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Solution to Illustration 1
Motor Vehicle
N
Motor car
4,500,000
Registration Number
150,000
Road license fee
0
Delivery Charge for the car
35,000
Driver's wages for first year of operation
0
Cost of testing the cars
100,000
4,785,000
Subsequent Expenditure
Subsequent cost on the non-current asset can only be recorded as part of the cost (or capitalized),
if it enhances the benefits of the asset, i.e., increas the revenue capable of being generated by the
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Delivery Charge for the car	35,000
Driver's wages for first year of operation	0
Cost of testing the cars	100,000
	4,785,000
Building	**N**
Purchase of office premises	8,000,000
Legal fees associated with purchase of office	800,000
	8,800,000

Subsequent Expenditure

Subsequent cost on the non-current asset can only be recorded as part of the cost (or capitalized), if it enhances the benefits of the asset, i.e., increases the revenue capable of being generated by the asset. For instance, if the engine of a car is replaced, it will elongate the useful life of the car and more revenue will be generated. Any expenditure which does not increase the capacity of the asset to generate more revenue should not be capitalised rather, it should be expended.

DEPRECIATION

- IAS 16 Property Plant and Equipment defines depreciation as the systematic allocation of the depreciable amount of an asset over its estimated useful life.
- In simple terms, depreciation spreads the cost of the asset over the period in which it will be used
- Depreciation matches the cost od using a non-current asset to the revenue generated by that asset over its useful life

Causes of Depreciation

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Causes of Depreciation

- Use
- Physical wear and tear
- Passage of time
- Obsolescence
- Change in technology or fashion
- Depletion in case of mineral resources

Methods of depreciation

The two category of depreciation methods are time-based method and service-based method.

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Time- Based Method of depreciation

Under this method, time is the basis for charging depreciation. A portion of an asset cost that relates to an accounting period is determined using the following sub methods:

- Straight line Method
- Reducing balance method
- Sum of the digit method
- Annuity method; and
- Sinking fund method

IAS 16 says that "the depreciation method applied to an asset should reflect the pattern in which the asset's future economic benefits are expected to be consumed" (IAS 16 para. 60)

Focus

Straight line Method: Under this method, the depreciable amount of PPE less its scrap value, if any, is divided by the number of estimated useful life. The method charges the same amount as depreciation on an annual basis. It is also known as fixed installment. It is calculated as:

$$\text{Depreciation} = \frac{\text{Cost of Asset less expected residual value}}{\text{Expected useful life}}$$

Example 1

An asset was bought for N2,500,000 with an expected residual value of N250,000. If the useful life of the asset is 5 years, determine the annual depreciation using the straight-line method of depreciation

Reducing balance method

The reducing balance method takes into consideration the different levels of efficiency contributed to each year of the asset. It charges a higher depreciation at the start of the useful life of the asset and reduce depreciation charged at a constant rate in the subsequent years. Depreciation is calculated by applying a fixed rate to the carrying amount of the asset at the beginning of the year.

Depreciation in Year 1 = Rate x Cost of the asset
Depreciation in Year 2 and above = Rate x Carrying Amount of the preceding year

Rate of depreciation is calculated as

$$R = (1 - n\sqrt{S/C})\, x\, 100$$

Example

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Example 1

An asset (Motor Car) was bought for N2,500,000 with an expected residual value of N250,000. If the useful life of the asset is 5 years, determine the annual depreciation using the straight-line method of depreciation

$$\text{Depreciation} = \frac{C - S}{N} = \frac{2{,}500{,}000 - 250{,}000}{5} = \frac{2{,}250{,}000}{5}$$

Annual Depreciation = N450,000

Statement of Financial Position as at 31st December, 2025

Non - Current Asset			
Motor Vehicle	Cost	Accumulated Depre.	

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Annual Depreciation = N450,000

Statement of Financial Position as at 31st December, 2025

Non - Current Asset		Accumulated	
	Cost	Depre.	Carrying Amount
Motor Vehicle	N	N	N
1	2,500,000	450,000	2,050,000
2	2,500,000	900,000	1,600,000
3	2,500,000	1,350,000	1,150,000
4	2,500,000	1,800,000	700,000
5	2,500,000	2,250,000	250,000

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$$R = (1 - n\sqrt{S/C}) \, x \, 100$$

Where:

R = rate of deprecation

N = number of estimated useful life

S = scrap value

C = cost of the asset

100 = percentage

Example

ABC bought motor vehicle for N500,000 with and expected useful life of 5 years. The expected residual value of the asset is N163,820. Determine the amount of depreciation each year and show how this is reported in the statement of financial position in each year

$$R = (1 - n\sqrt{S/C}) \; x \; 100$$

Where:
R = rate of deprecation
N = number of estimated useful life
S = scrap value
C = cost of the asset
100 = percentage

Example 2

ABC bought motor vehicle for N500,000 with and expected useful life of 5 years. The expected residual value of the asset is N163,820. Determine the amount of depreciation each year and show how this is reported in the statement of financial position in each year

Solution to Example 2
Determine R

$$R = (1 - 5\sqrt{163{,}820/500{,}000}) \; x \; 100$$
$$R = (1 - 5\sqrt{0.32764}) \; x \; 100$$
$$R = (1 - 0.8) \; x \; 100$$
$$R = 0.2 \; x \; 100$$
$$R = 20\%$$

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Compound Interest formula

$A = P (1 + r)^n$

For the purpose of depreciation the formula will change $A = P (1 - r)^n$

A = Carrying Amount

P = Cost of the asset

R = Rate of depreciation

N = Number of estimated useful life of the asset

Carrying Amount = $P (1 - r)^n$	Carrying Amount	Depreciation @ 20%
$1 - 500{,}000 (1 - 0.2)^1$	400,000	0.2 x 500,000 = 100,000
$2 - 500{,}000 (1 - 0.2)^2$	320,000	0.2 x 400,000 = 80,000
$3 - 500{,}000 (1 - 0.2)^3$	256,000	0.2 x 320,000 = 64,000
$4 - 500{,}000 (1 - 0.2)^4$	204,800	0.2 x 256,000 = 51,200
$5 - 500{,}000 (1 - 0.2)^5$	163,840	0.2 x 204,800 = 40,960