CHAPTER -TWO

Accounting for Property, Plant and Equipment (IAS16)

2. Introduction

2.1 Definition of Asset

An Asset is "A resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity."

Assets can classified in to **Current and Non-current assets.**

A. **Current asset:** assets that may reasonably be expected to be realized into cash or sold or used up usually within one year or less in normal operation of business.

B. **Non-current Assets** - assets that may reasonably take more than a year to be realized into cash or sold or used up. These assets are classified into:

- **Tangible or PPE** – **Examples,** land, building, equipment, machines, bearer plants etc.
- **Intangible assets** –**Example,** patents, good will, copyrights, trademarks etc.
- **Natural resources** - timber, metal ores, minerals, or other natural resources.

2.2. Definition of PPE (IAS 16)__It also referred to as tangible, fixed asset.

Property, plant and equipment are tangible items that are:

- Held for use in the production or supply of goods or services, for rental to others or for administrative purposes
- Expected to be used during more than one accounting or financial period
- They are expected to be used during more than one period.

Amount held can vary widely depending upon the industry and size of the entity.

Includes:

- Land,
- Building structures (offices, factories, warehouses), and

- Equipment (machinery, furniture, tools, cash register , deliver truck).

2.3. Characteristics of Plant Asset

- **Plant assets are resources that:**
  - Have physical substance (a definite size and shape).
  - Are used in the operations of a business.
  - Are not intended for sale to customers.
  - Are expected to provide service to the company for a number of years.

2.4. Initial Recognition of PPE

Property, plant and equipment should only be recognized as an asset if, and only if:

- Probable that future economic benefits associated with the item will flow to the entity; and
- Cost of the item can be measured reliably

2.5. Measurement at initial recognition (Cost of PPE)

An item of property, plant and equipment which qualifies for recognition as asset should initially be measured at its cost (Historical cost)

- Cost comprises:
  - Purchase price (Cash or cash equivalent price of obtaining the asset), including import duties and non-refundable purchase taxes
  - Less trade discounts and rebates
  - Costs directly attributable to bringing the asset to the location and condition necessary for its intended use
  - Costs directly and necessarily incurred for item to operate in the intended manner
  - Anticipated costs of dismantling/removing the asset, together with any site restoration costs
  - Cost of financing (IAS 23 -Borrowing Costs)

Generally, the costs of acquiring fixed assets include all amounts spent **to get** the asset in place and ready for use.

- Unnecessary costs (as a result of carelessness or errors in installing the asset) that **do not increase the asset's usefulness** are recorded as an expense.
- For example, the following costs are included as an expense:
  - Vandalism
  - Mistakes in installation
  - Uninsured theft
  - Damage during unpacking and installing

- Fines for not obtaining proper permits from governmental agencies
- Unqualified borrowing costs

2.6. Cost of Land

- All necessary costs incurred in making land ready for its intended use.

Costs typically include:

1) cash purchase price,
2) closing costs such as title and attorney's fees,
3) real estate brokers' commissions,
4) accrued property taxes and other liens assumed by the purchaser, and
5) Clearing, leveling, demo of existing structures.

Illustration: Lew Company acquires real estate on cash for cost of Br 2,000,000. The property contains an old warehouse that is razed at a net cost of Br 60,000 Br 75,000 in costs less Br 15,000 proceeds from salvaged materials). Additional expenditures are the attorney's fee, Br 10,000, and the real estate broker's commission, Br 80,000.

Required: Determine the amount to be reported as the cost of the land.

- Determining the Cost of Plant Assets

Solution

	Land
Cash price of property (Br 2,000,000)	Br 2,000,000
Net removal cost of warehouse (Br 75,000 - 15,000)	60,000
Attorney's fees (Br 10,000)	10,000
Real estate broker's commission (Br 80,000)	80,000
Cost of Land	Br 2,150,000

2.7. Cost of Land Improvements

- **Land improvement** -any asset attached to land but has finite life.

Thus, Cost of land improvement includes all expenditures necessary to make the improvements ready for their intended use.

- **Examples:** driveways, parking lots, fences, landscaping and lighting.
- Limited useful lives.
- Expense (depreciate) the cost of land improvements over their useful lives.

2.8. Cost of Buildings

- Includes all costs related directly to purchase or construction.

Purchase costs:

- Purchase price, closing costs (attorney's fees, title insurance, etc.) and real estate broker's commission.
- Remodeling and replacing or repairing the roof, floors, electrical wiring, and plumbing.

Construction costs:

- Contract price plus payments for architects' fees, building permits, and excavation costs.

2.9. Cost of Equipment

- Include all costs incurred in acquiring the equipment and preparing it for use.
- **Costs typically include:**
  - Cash purchase price.
  - Sales taxes.
  - Freight charges.
  - Insurance during transit paid by the purchaser.
  - Expenditures required in assembling, installing, and testing the unit.

Illustration: Zhang Company purchases factory machinery at a cash price of Br 500,000. Related expenditures are for sales taxes Br 30,000, insurance during shipping Br 5,000, and installation and testing Br 10,000.

Required: Compute the cost of the machinery & prepare the journal entry to record these costs.

Solution

1. **Cost of Machinery**

Machinery	
Cash price	Br 500,000
Sales tax	30,000
Insurance during shipping	5,000
Installation and testing	10,000
Cost of machinery	**Br 545,000**

2. **Journal Entry**

Equipment **545000**

Cash **545000**

2.10. Depreciation Plant Asset (PPE)

- As time passes, all plant assets with the exception of land lose their capacity to yield service. Accordingly, the cost of such assets should be transferred to the related expense accounts in an orderly manner during their expected useful life.
- This periodic cost expiration is called **depreciation**. This is the measure of the wearing out, consumption or other reduction in the useful life of fixed asset or PPE.
- The depreciable amount (net of residual value) of an asset should be allocated on a systematic basis over its useful life so as to charge a fair proportion if cost or valuation to each accounting period expected to benefit from its use

Factors contributing to a decline in usefulness of an asset:

1. **Physical depreciation**: It includes wear and tear, from use and deterioration from the action of the elements.

2. **Functional depreciation (Economic Factor)**: which includes
   - **Inadequacy**: its capacity is not sufficient to meet the demands of increased production.
   - **Obsolescence**: equipment may become obsolete due to changing technology.

Two common **misunderstandings** exist about depreciation as used in accounting include:

1. Depreciation does not measure **a decline in the market value of a fixed asset**.
   - Instead, is the process of allocating to expense the cost of a plant asset over its useful (service) life in a rational and systematic manner?
2. Depreciation is not **a cash outflow**.
   - The cash account is neither increased nor decreased by depreciation.

Factors in Computing Depreciation

- **Cost:** all expenditures necessary to acquire the asset and make it ready for intended use
- **Useful life:** estimate of the expected life based on need for repair, service life, and vulnerability to obsolescence
- **Residual value:** estimate of the asset's value at the end of its useful life.

Methods of Computing Depreciation Expense

The most common methods of computing depreciation for plant asset are as follows:

1. **Straight-line depreciation method**
2. **Units-of-production depreciation method**
3. **Double-declining-balance depreciation method**

Management selects the method it believes best measures an asset's contribution to revenue over its useful life.

- **Illustration:** Florists purchased a small delivery truck on January 1, 2014.

Cost	Br 13,000
Expected residual value	Br 1,000
Estimated useful life in years	5
Estimated useful life in mile	100,000

Required: Compute depreciation using the following.

(a) **Straight-Line.**

(b) **Units-of-Activity.**

(c) **Declining Balance**.

We will compare the three depreciation methods using the following data for a small delivery truck purchased by Florists on January 1, 2014.

Solution

1. **Straight-Line Method**
   a. Provides for equal amount of depreciation expense for each year of the asset's useful life.
   b. **Example**: **assume that delivery truck was purchased on January 1 as follows: calculate the periodic depreciation.**

Annual

Depreciation Expense $= \frac{\text{Initial cost – Residual value}}{\text{Estimated useful life}}$ **= Depreciable cost/ Estimated useful life**

ADE= $\frac{\text{Br 13000- Br 1000}}{5}$ **= 12000/5= Br 2,400**

   c. Expense is same amount for each year.
   d. Depreciable cost = Cost less residual value.

Year	Depreciable cost X	Depreciation rate	=Ann. Deprn. Expense	Accum. Deprn.	Book value
2014	Br 12000	20%	Br 2,400	Br 2400	Br 10600
2015	12000	20%	Br 2,400	4800	8200
2016	12000	20%	Br 2,400	7200	5800
2017	12000	20%	Br 2,400	9600	3400
2018	12000	20%	Br 2,400	12000	1000

Note: The depreciation expense of Br 2,400 is the same each year. The book value (computed as cost minus accumulated depreciation) at the end of the useful life is equal to the expected Br 1,000 residual value.

Assume the delivery truck was purchased on April 1, 2014.

Year	Depreciable cost X	Depreciation rate	=Ann. Deprn. Expense	Partial year	Current yr Exp.	Accum. Deprn.
2014	Br 12000	20%	Br 2,400	9/12	Br 1800	1800
2015	12000	20%	Br 2,400		2400	4200
2016	12000	20%	Br 2,400		2400	6600
2017	12000	20%	Br 2,400		2400	9000
2018	12000	20%	Br 2,400		2400	11400
2019	12000		Br 2400	3/12	600	12000

Journal entry 2014

Depreciation expense 1800

Accumulated depreciation 1800

2. UNITS-OF-ACTIVITY

Companies estimate total units of activity to calculate depreciation cost per unit.

Useful life is expressed in terms of:

- Units of production or use expected from the asset, rather than as a time period.

This method is ideally suited to factory machinery and delivery equipment (miles driven) and airplanes (hours in use).

Is not suitable for buildings or furniture, because depreciation for these assets is more a function of time than of use.

- Expense varies based on units of activity.
- Depreciable cost is cost less residual value.

Illustration: Assume that Florists drives its delivery truck 15,000 miles in the first year.

Depreciable cost per unit= Depreciable cost / Total Unit of activity

Depreciable cost per unit=Br 12000/ 100,000 mile= 0.12

Ann Deprn. Exp. =Depreciable cost per unit x Unit of activity during the year

= 0.12 x 15000 mile = Br 1800

The units-of-activity depreciation schedule, using assumed mileage, is as follows:

Year	Unit of activity	Cost per unit	Annual expense	Accum.Deprn.	Book Value
2014	Br 15,000	0.12	Br 1,800	Br 1,800	Br 11,200
2015	30,000	0.12	3,600	5,400	7,600
2016	20,000	0.12	2,400	7,800	5,200
2017	25,000	0.12	3,000	10,800	2,200
2018	10,000	0.12	1,200	12,000	1000

Journal entry for 2014

Depreciation Expense 1800

Accumulated depreciation 1800

3. Declining-Balance

- Provides decreasing annual depreciation expense over the asset's useful life & also called accelerated method.

- The double-declining-balance method is applied in three steps.
- **Step 1.** Determine the straight-line percentage using the expected useful life. (**100%/Useful Life**)

- **Step 2.** Determine the double-declining-balance rate by multiplying the straight line rate from Step 1 by two (2).
- **Step 3.** Compute the depreciation expense by multiplying the double-declining balance rate from Step 2 times the book value of the asset.

Annual Depreciation Expense = BV at Beg Year x Declining balance rate = 13000 x 40% = Br 5200

Year	Beg. BV	Decline Bal.Rate	Annual Expense	Accum. Depren.	Book Value
2014	Br 13,000	40%	Br 5,200	5200	7800
2015	7,800	40%	3,120	8320	4680
2016	4,680	40%	1,872	10192	2808
2017	2,808	40%	1,123	11315	1685
2018	1,685	40%	685	12000	1000

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Journal entry for 2014

Depreciation Expense 5200

Accumulated depreciation 5200

* **Computation of $674 ($1,685 x 40%) is adjusted to Br 685.**

Assume the delivery truck was purchased on April 1, 2014.

Year	Beg. BV	Decline Bal.Rate	Annual Expense	Partial year	Current year Expe	Book Value
2014	Br 13,000	40%	Br 5,200	9/12	3,900	3900
2015	9,100	40%	3,640		3,640	7540
2016	5,460	40%	2,184		2,184	9724
2017	3,276	40%	1,310		1310	11034

2018	1,966	40%	786		786	11821
2019	1,179	40%	472	3/12	179	12000

Journal entry for year 2014

Depreciation expense 3900

Accumulated depreciation Expense 3900

Component Depreciation

- IFRS requires component depreciation for plant assets.
- Requires that any significant parts of a plant asset that have significantly different estimated useful lives should be separately depreciated.

Illustration: Assume that 'L' Construction Company builds an office building for Br 4,000,000. The building is estimated to have a 40-year useful life, however Br 320,000 of the cost of the building relates to personal property and Br 600,000 relates to land improvements. Because the personal property has a depreciable life of 5 years and the land improvements have a depreciable life of 10 years. 'L' co. must use component depreciation. Assuming that 'L' co. uses straight-line depreciation and no residual value, component depreciation for the first year of the office building is computed as follows.

Building cost adjusted(Br 4,000,000 – Br 320,000 – Br 600,000	**Br 3,080,000.00**
Building cost depreciation per year(Br 3,080,000 /40 years)	**Br 77,000**
Personal property depreciation(Br 320,000/5 years)	**64,000**
Land Improvement depreciation(Br 600,000/10 years)	**60,000**
Total component depreciation in first year	**Br 201,000**

Depreciation and Income Taxes

- ❖ Tax laws often do not require corporate taxpayers to use the same depreciation method on the tax return that is used in preparing financial statements.
- ❖ Many corporations use
  - ◆ Straight-line in their financial statements to maximize net income.
  - ◆ An accelerated-depreciation method on their tax returns to minimize their income taxes.

Revision of Depreciation Estimates

- Estimates of residual values and useful life of fixed assets may change due to:
  - Unexpected physical deterioration or unforeseen obsolescence may make the useful life of the asset less than originally estimated.
  - Good maintenance procedures, revision of operating procedures, or similar improvements may prolong the life of the asset beyond the original estimate.
- When new estimates are determined, they are used to determine the depreciation expense in future periods.
- The depreciation expense recorded in earlier years is not affected, **prospective adjustment**.

Illustration: HS company, purchased equipment for Br 510,000 which was estimated to have a useful life of 10 years with a residual value of Br 10,000 at the end of that time. Depreciation has been recorded for 7 years on a straight-line basis. In 2017 (year 8), it is determined that the total estimated life should be 15 years with a residual value of Br 5,000 at the end of that time.

Required: What is the journal entry to correct prior years' depreciation expense? No entry is required

Calculate the depreciation expense for 2017.

Depreciation Solution — After 7 years

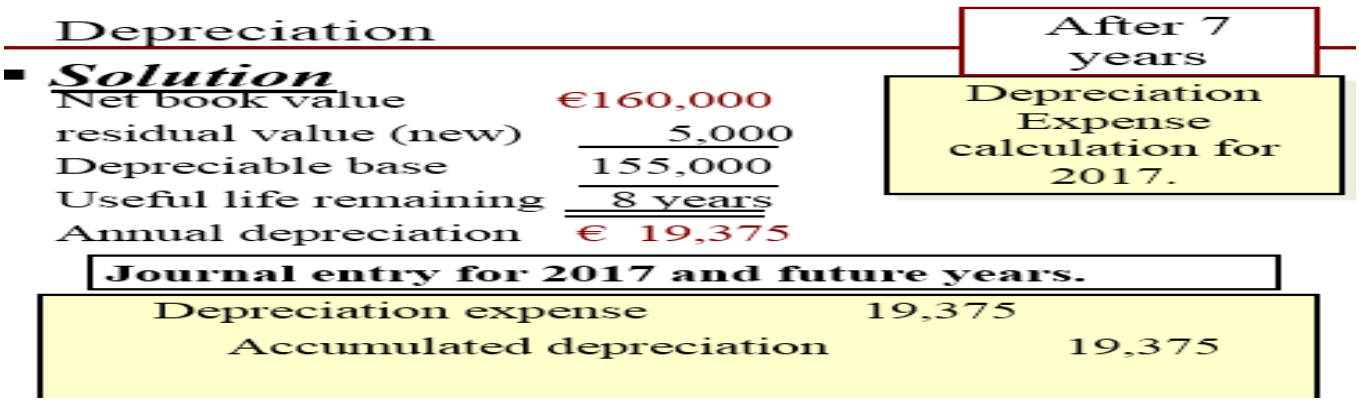
Equipment cost	€510,000
residual value	- 10,000
Depreciable base	500,000
Useful life (original)	10 years
Annual depreciation	€ 50,000

First, establish NBV at date of change in estimate.

x 7 years = €350,000

Balance Sheet (Dec. 31, 2016)

Property, Plant, and Equipment	
Equipment	€510,000
Accumulated depreciation	350,000
Net book value (NBV)	€160,000



Capital and Revenue Expenditures

- Once a fixed asset has been acquired and placed in service, costs may be incurred for ordinary maintenance, cleaning and repairs; necessary to keep an asset in good working condition.
- In addition, costs may be incurred for improving an asset or for extraordinary repairs that extend the asset's useful life.
- Costs that benefit only the current period are called **revenue expenditures.**
- Costs that improve the asset or extend its useful life are **capital expenditures.**
- Costs related to the ordinary maintenance and repairs of a fixed asset (revenue expenditures) are recorded as **an expense** of the current period.
- Capital expenditures includes **additions**, **betterments** and **extraordinary repairs**.
- **Addition** is an enlargement to the physical layout of a plant asset.
- **For example**, if a new wing is added to a building, the benefits from the expenditure will be received over several years, and the amount paid for it should be debited to the asset account.
- **Betterment**: is an improvement that does not add to the physical layout of the asset. For example, installation of an air conditioning system. Its cost should be debited to an asset account.
- **Extra ordinary repairs**: are repairs of a more significant nature. They affect the estimated residual value or estimated useful life of an asset.
- **For example,** the engine of a car that is near the end of its useful life may be repaired at a cost of Br 45,000, extending its useful life by eight years.
- Such costs are capital expenditures and are recorded as **a decrease in an accumulated depreciation account**.

- **Example:**
- a machine costing Br 35,000 had no estimated residual value and an estimated useful life of ten years, has been depreciated for 7 years by straight line method. At the very beginning of the 8th year, the machine was given a major repair costing Br 3,000. This expenditure extended the machine 3 years beyond the original estimate.
- **Required**:
    - **Record the extra ordinary repair costs**
    - **Calculate the revised annual periodic depreciation expense.**
- **A) to record the extra ordinary repair**
    - Accumulated Depreciation ……3,000

      Cash …….3, 000
- **B) the revised annual depreciation calculated as follows**
- Cost of machines…….35,000
- Accumulated Depreciation(3,500x7)…… 24,500
    - Less: Extra ordinary repair debited to ACC depn…..3,000

      Balance…….21,500
- Book value after extra ordinary: (35,000 – 21,500) … 13,500
- Revised Annual Depreciation: 13,500/6 years = 2,250

Disposal of Fixed Assets

- Fixed assets that are no longer useful may be
    1. **Discarded as worthless**
    2. **Sold or**
    3. **Exchanged with a new asset**

A. Discarding Fixed Assets

If a fixed asset is no longer used and has no residual value, can not be sold or can not be exchanged with other asset, it is discarded.

The entry to record the discarding removes the asset and its related accumulated depreciation from the ledger.

To illustrate, assume that equipment acquired at a cost of Br 25,000 is fully depreciated at December 31, 2009. On February 14, 2010, the equipment is discarded.

The entry to record the discard is as follows:

Feb.	14	Accumulated Depreciation—Equipment Equipment		25,000	 25,000

In this case neither gain nor loss is realized.

Discarding Fixed Assets

- On the other hand, if a plant asset has a book value (if not fully depreciated) at the time it is discarded, the business incurs a loss.
- **For example**, on July 5 the equipment that was acquired at a cost of Br 11,000 is discarded as worthless. The discarded equipment has a carrying value of Br 2,000 at the time of disposal.
- **Required**: record the necessary entry?

July 5	**Accumulated Depreciation**	**9,000**	
	Loss on disposal of plant asset	2,000	
	Equipment		11,000

B. Selling Fixed Assets

- An asset may be disposed by selling it either at

1. **Book value**
   - (neither gain nor loss is recognized)
2. **Less than book value or**
   - (loss is recognized)
3. **More than book value**
   - (gain is recognized)

For example, on July 5 the equipment that was acquired at a cost of Br 11,000 with a carrying value of Br 2,000 is disposed by selling.

- Required: record the necessary entry under different assumptions.

A. Assume the equipment has sold at Br 2,000 cash.

B. Assume the equipment has sold at Br 1,500 cash.

C. Assume the equipment has sold at Br 3,000 cash.

Date	Description	Dr	Cr
	Cash	2,000	

	Accumulated depreciation	9,000	
	Equipment		11,000
Case1, sale of equipment at book value(@$2,000)			
	Cash	1,500	
	Accumulated depreciation	9,000	
	Loss on sale of equipment	500	
	Equipment		11,000
Case 2, sale of equipment at less than book value(@$1,500)			
	Cash	3,000	
	Accumulated depreciation	9,000	
	Equipment		11,000
	Gain on sale of equipment		1,000
Case 3,sale of equipment at more than book value (@ $3,000)			

C. Exchange with other assets

- Businesses also dispose of plant assets by trading them with other similar (the old machine traded-in on a new machine) or dissimilar assets (an old machine traded -in on a truck).
- In such cases, the seller allows the buyer an amount for the old equipment traded in.
- This amount, called the trade-in allowance, may be either greater or less than the book value of the old equipment.
- The remaining balance—the amount owed—is either paid in cash or recorded as a liability. It is normally called boot.
- For example: the price/cost of the new machine and the related information of an old machine at July 19 are as follows:
- Machine traded in (old):
  - Cost of old machine . . . . . …….. .. Br 11,000
  - Accumulated depreciation at date of exchange..... 9,000
  - Book value at June 19, date of exchange . . . ……Br 2,000
  - Price (fair market value) of new machine. . ……..Br 12,000
- Required: record this exchange and payment of cash under different assumptions?

A. Assume the company trades in for Br 2,000 the old machine and pays the remaining for cash.

B. Assume the company trades in for Br 1,000 the old machine and pays the remaining for cash.

C. Assume the company trades in for Br 3,000 the old machine and pays the remaining for cash.

- Solution

Date	Description	Dr	Cr
July	Equipment (new)	12,000	
	Accumulated depreciation-machine	9,000	
	Equipment(old)		11,000
	Cash		10,000
Case 1, trade-in @ book value (@ $2,000)			
July	Equipment (new)	12,000	
	Accumulated depreciation-machine	9,000	
	Loss on exchange of plant asset	1,000	
	Equipment(old)		11,000
	Cash		11,000
Case 2, trade-in @ book value (@ $1,000)			
Date	Description	Dr	Cr
July	Equipment (new)	12,000	
	Accumulated depreciation-machine	9,000	
	Equipment(old)		11,000
	Cash		9,000
	Gain on exchange of plant asset		1,000
Case 3, trade-in @ book value (@ $3,000)			

Intangible Assets

- **Intangible assets** are rights, privileges, and competitive advantages that result from ownership of long-lived assets that do not possess physical substance.
    - ❑ Limited life or indefinite life.
    - ❑ Common types of intangibles:
        - ◆ Patents
        - ◆ Copyrights

- Goodwill
- Trademarks and Trade Names
- Franchises or licenses

Accounting for Intangible Assets

Limited-Life Intangibles:

- Amortize to expense.
- Credit asset account.

Indefinite-Life Intangibles:

- No amortization.

Companies classify Amortization Expense as an operating expense in the income statement.

Similar to property, plant, and equipment, IFRS permits revaluation of intangible assets to fair value, except for goodwill.

Patents

- Exclusive right to manufacture, sell, or otherwise control an invention for a specified number of years from the date of the grant.
- Capitalize costs of purchasing a patent and amortize over its legal life or its useful life, whichever is shorter.
- Expense any Research and Development costs in developing a patent.
- Legal fees incurred successfully defending a patent are capitalized to Patent account.

National Labs purchases a patent at a cost of Br 720,000. National estimates the useful life of the patent to be eight years. National records the annual amortization for the ended December 31 as follows.

Cost	$720,000
Useful life	÷ 8 years
Annual expense	$ 90,000

Dec. 31		
Amortization expense	90,000	
Patent		90,000

Copyrights

Give the owner the exclusive right to reproduce and sell an artistic or published work.

- Granted for the life of the creator plus a specified number of years, commonly 70 years.
- Capitalize costs of acquiring and defending it.

- ◆ Amortized to expense over useful life.

Trademarks and Trade Names

- ◆ Word, phrase, symbol that identifies a particular enterprise or product.
- ◆ Legal protection for specified number of years, commonly 20 years. Protection may be renewal indefinitely.
- ◆ Capitalize cost of acquisition.
- ◆ No amortization.

Franchises and Licenses

- ◆ Contractual arrangement between a franchisor and a franchisee.
- ◆ Franchise (or license) with a limited-life should be amortized to expense over its useful life.
- ◆ Franchise (or license) with an indefinite life is not amortized.

Goodwill

- ◆ Includes exceptional **management, desirable location, good customer relations, skilled employees, high-quality products**, etc.
- ◆ Only recorded when an entire business is purchased.
- ◆ Goodwill is recorded as the excess of cost over the fair value of the net assets acquired.
- ◆ Internally created goodwill should not be capitalized.
- ◆ Not amortized.

Natural Resources

❖ Consist of **standing timber and resources extracted** from the ground, such as **oil, gas, and minerals**.

- IFRS defines extractive industries as those businesses involved in finding and removing natural resources located in or near the earth's crust.
- Standing timber is considered a biological asset under IFRS. In the years before they are harvested, the recorded value of biological assets is adjusted to fair value each period.

Natural Resources

Acquisition cost of an extractable natural resource is the

- ◆ price needed to acquire the resource and
- ◆ Prepare it for its intended use.

Depletion - allocation of the cost to expense in a rational and systematic manner over the resource's useful life.

- Depletion is to natural resources as depreciation is to plant assets.
- Companies generally use units-of-activity method.
- Depletion generally is a function of the units extracted.

- Lane Coal Company invests Br 50 million in a mine estimated to have 10 million tons of coal and no residual value. In the first year, Lane extracts and sells 800,000 tons of coal. Lane computes the depletion expense as follows:

$50,000,000 ÷ 10,000,000 = $5 depletion cost per ton

$5 x 800,000 = $4,000,000 annual depletion expense

Journal entry:

Depletion expense	4,000,000	
Accumulated depletion		4,000,000