Thammasat University
Faculty of Economics
Bachelor of Economics (International Program)

AC201
Fundamental Accounting

Semester 1/2011

Course Materials

Topic:

Chapter 08 Reporting and Interpreting Property, Plant, and Equipment

Session:

Session #8

Instructor:

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Chapter 8: Reporting and Interpreting Property, Plant, and Equipment; Natural Resources; and Intangibles

CHAPTER SUMMARY

This chapter discusses accounting for long-lived productive assets. These are the noncurrent assets that a business retains for long periods for use in the course of normal operations rather than being held for sale. They include tangible assets and intangible assets. At acquisition, an asset is recorded at cost. Cost includes the cash equivalent purchase price plus all reasonable and necessary expenditures made to acquire and prepare the asset for its intended use.

Expenditures related to long-lived assets are classified in two groups. Capital expenditures are those expenditures that provide benefits for one or more accounting periods beyond the current period; therefore, they are debited to appropriate asset accounts and depreciated, depleted, or amortized over their useful lives. Revenue expenditures are those expenditures that provide benefits during the current accounting period only; therefore, they are debited to appropriate expense accounts when incurred.

A long-lived productive asset represents a bundle of future services and benefits that have been purchased in advance. As this asset is used, this bundle of services is gradually used to earn revenue. In conformity with the matching principle, cost (less any estimated residual value) is allocated to expense over the periods benefited. In this way, the expense associated with the use of operational assets is matched with the revenues earned. This allocation process is called depreciation in the case of property, plant, and equipment; depletion in the case of natural resources; and amortization in the case of intangibles. Three of the most widely used methods of depreciation are straight-line, units-of-production, and declining-balance.

The disposal of long-lived assets is recorded by removing the cost of the asset and the related accumulated depreciation account. A gain or loss on the disposal will result when the disposal price is different from the book value of the asset. When an asset's ability to provide benefits in the future is impaired, the asset is written down.

CHAPTER OBJECTIVES

LO1 Define, classify, and explain the nature of long-lived productive assets and interpret the fixed asset turnover ratio.
LO2 Apply the cost principle to measure the acquisition and maintenance of property, plant, and equipment.
LO3 Apply various cost allocation methods as assets are held and used over time.
LO4 Explain the effect of asset impairment on the financial statements.
LO5 Analyze the disposal of property, plant, and equipment.
LO6 Apply measurement and reporting concepts for natural resources and intangible assets.
LO7 Explain the impact on cash flows of acquiring, using, and disposing of long-lived assets.

UNDERSTNANDING BUSINESS

I. BUSINESS BACKGROUND

1. Management faces the challenges of forecasting long-term productive capacity (amount of plant and equipment). Managers devote considerable time to planning optimal level of productive capacity.
   - **a.** Underestimates by managers may reduce sales due to the lack of capacity to meet demand.
   - **b.** Overestimates may reduce profits since the excess costs of maintaining the additional assets reduce profitability.
   - **c.** In either event, net income is reduced when forecasting productive capacity is in error.
2. Service companies also suffer due to poor forecasting of long-term assets. Forecasting hours of labor and facilities needed to provide services is essential to operating efficiently.
   - **a.** Service companies cannot inventory hours or space for future sales.
     - Examples include airlines, hotels, CPA firms, and law firms.
   - **b.** If a manufacturer or merchandiser forecasts capacity incorrectly, future sales may still be enjoyed if obsolescence or spoilage do not deplete inventoriable goods.
3. Decisions regarding the acquisition of long-lived productive assets are crucial in long-term planning. Issues related to property, plant, equipment, intangibles, and natural resources have a great impact in terms of strategy, pricing decisions, and profitability for a business.
4. Financial analysts closely review financial statements to determine the impact of management decisions.

II. LO1 DEFINE, CLASSIFY, AND EXPLAIN THE NATURE OF LONG-LIVED PRODUCTIVE ASSETS AND INTERPRET THE FIXED ASSET TURNOVER RATIO.

A. Classifying Long-Lived Assets

Long-Lived Assets are resources that determine a company's productive capacity.

1. Tangible assets have physical substance. They are usually classified as property, plant, and equipment (fixed assets). They include:
   - **a.** Land used in operations.
   - **b.** Buildings, fixtures, and equipment used in operations.
   - **c.** Natural resources used in operations.
2. Intangible assets have no physical substance. These assets confer rights on the owner. They are evidenced by legal documents.
   - **a.** Examples include patents, copyrights, franchises, licenses, and trademarks.
3. Fixed Asset Turnover
   - **a.** How effectively is management using fixed assets to generate revenue?
   - **b.** For each dollar of fixed assets, how many dollars of sales revenue are generated?

$$\text{Fixed Asset Turnover} = \frac{\text{Net Sales (or Operating Revenues)}}{\text{Average Net Fixed Assets}}$$

$$\text{Average Net Fixed Assets} = \frac{\text{Beginning Net Fixed Assets - Ending Net Fixed Assets}}{2}$$

III. LO2 APPLY THE COST PRINCIPLE TO MEASURE THE ACQUISITION AND MAINTENANCE OF PROPERTY, PLANT, AND EQUIPMENT.

A. Measuring and Recording Acquisition Cost

1. Under the cost principle, all reasonable and necessary costs incurred to acquire and prepare an asset for use should be capitalized, i.e., assigned (recorded) to the asset account.

a. Acquisition costs: the net cash equivalent paid or to be paid for long-lived assets. Examples:

1. Costs to buy the asset include the invoice price (less early payment discounts), sales taxes, legal fees, and transportation costs.
2. Setup costs, including special wiring, platforms (such as a concrete foundations), and other installation costs.
3. Costs to place the asset in service (to ready it for use) include expenditures for testing, adjusting, renovating, and complying with safety requirements.

b. Generally, financing charges associated with the asset are treated as interest expense (not capitalized).

2. Various means of acquiring long-lived assets include:

a. For cash: cash is paid at the time of acquisition.

b. For debt: a note is negotiated with the seller or the bank to finance the purchase.

c. For equity or noncash consideration: when stock or other noncash consideration is included as part of the purchase price.

1. The cash-equivalent cost is measured by the current market value of the stock or non-cash consideration.
2. If the value of what is given up is not determinable, the current market value of what is received should be used for measurement purposes.

d. By construction: self-constructed assets should include all necessary costs associated with construction such as labor and materials.

- Interest incurred during the construction process (capitalized interest) is normally included even when funds are not borrowed to directly support the construction. In such cases, capitalized interest is based on the funds invested in the project.

B. Repairs, Maintenance, and Additions

1. Most productive assets require expenditures during their useful lives for ordinary repairs and maintenance, major repairs, replacements, and additions.

a. Depending on the nature of the cost, these expenditures must be recorded either to expense accounts or to asset accounts.

2. Revenue expenditures: recorded as expenses since they provide benefits only during the current accounting period.

a. These are for ordinary repairs and maintenance. They are expenditures for the normal operating upkeep of assets to keep them in working condition.

b. They are relatively small, recurring amounts that <u>do not effectively lengthen the useful life</u> of the asset.

c. These revenue expenditures are reported as expenses in the current period.

3. Capital expenditures: recorded as increases in asset accounts since they provide benefits for one or more accounting periods beyond the current period.

a. These costs are then depreciated over their useful lives.

b. Included in this category are <u>extraordinary</u> repairs; i.e., major, high-cost, long-term repairs that increase the economic usefulness of the asset in terms of greater efficiency or longer life.

c. Examples:

- Major overhauls, complete reconditioning, and major replacements and improvements. They are additions, extensions to, or enlargements of, existing assets. These are considered capital expenditures and are therefore shown as an increase to an asset account.

4. Management experience and professional judgment help to distinguish between the classification of expenditures as either revenue expenditures (expenses) or capital expenditures (assets). This decision can be quite subjective.
   a. Decisions to "expense" items result in lower net income in the current period. Decisions to "capitalize" items result in higher net income in the current period.
   b. Auditors and financial analysts pay close attention to management decisions in this area.
   c. The materiality and cost-benefit constraints are important considerations in decisions to "expense" versus "capitalize".

IV. LO3 APPLY VARIOUS COST ALLOCATION METHODS AS ASSETS ARE HELD AND USED OVER TIME.

A. Depreciation Concepts

1. Land is considered to have an unlimited life. In accordance with the cost principle, land remains on a company's books at its cost. With the exception of impairment, no adjustment is made to the cost of land.
2. Other long-lived assets such as buildings and equipment have limited useful lives.
   a. The cost of these assets represents the collective amount of future services and benefits that will help earn future revenues.
   b. The matching principle requires that a portion of the cost be allocated to each period in which revenue is earned by using these assets.
3. Depreciation is the systematic and rational cost allocation of tangible productive assets, other than land, to future periods in which the assets contribute services or benefits to help earn revenues.
   a. No matter which method of determining depreciation expense for the period is used, the accounts involved in the journal entry are the same.

Depreciation Expense	xxx	
Accumulated Depreciation		xxx

   b. Depreciation Expense is presented on the income statement.
   c. Accumulated Depreciation, the total amount of depreciation expense recorded for an asset since its acquisition date, reduces the cost of the productive asset on the balance sheet.

	Asset Cost
-	Accumulated Depreciation
	Net Book Value of Asset

   d. Accumulated Depreciation is a contra-asset account since it reduces the book value (carrying value) of an asset. Note: Since Accumulated Depreciation is a contra asset account, it is not closed during the closing process.
   e. The balance sheet presentation does not represent current market values.
4. The calculation of depreciation expense requires three amounts to be determined, two of which are estimates made by management. Therefore, depreciation expense is an estimate.
   a. Acquisition cost – All cost incurred to purchase and get the asset ready for use.
   b. Useful life is the estimated service life of an asset to the present owner. This life often differs from the total economic life of the asset. The continuity assumption (going concern) underlies the determination of this estimate.
   c. Residual value (salvage value, scrap value, or trade-in value) is the estimated amount to be recovered at the end of the estimated useful life of the asset.

B. Alternative Depreciation Methods

1. Because of differences between companies and the assets they own, different depreciation methods exist.
   a. Each method that is in conformity with GAAP allocates costs in a systematic and rational manner.
   b. The amount of cost allocation in each period varies by method, but the depreciation charges over the entire estimated life will be the same in total for all methods.

2. Three of the most commonly used depreciation methods are as follows:

a. Straight-line depreciation

1. Allocates the depreciable cost in equal amounts over the estimated useful life.
2. The most commonly used method due to its relative simplicity.
3. Based on the estimated time for using the asset.
4. Provides for a constant depreciation expense, equal increases to accumulated depreciation, and equal decreases of book value each year.

$$\text{Depreciation expense} = (\text{Cost} - \text{Residual Value}) \times \frac{1}{\text{Useful life}}$$

b. Units-of-production depreciation

1. Allocates the cost over the useful life based on its productive output (usage) related to its total estimated productive output (usage).
2. Results in depreciation expense, accumulated depreciation, and book values that vary from period to period.
   a. Varies directly with the units produced.
   b. Depreciation under this method is a variable expense.
3. Based on an estimate of the total productive capacity of an asset. This is an "activity" based estimate instead of a time based estimate.

$$\text{Depreciation rate per unit} = \frac{\text{Cost} - \text{Residual value}}{\text{Estimated total production}}$$

$$\text{Depreciation expense} = \text{Depreciation rate} \times \text{Actual production (Units used)}$$

c. Declining-balance depreciation

1. An accelerated depreciation method.
2. It allocates cost over the useful life based on a multiple of the straight line rate.
3. Declining balance ignores residual value in its computation, but, the asset may not be depreciated beyond the residual value.
4. The declining balance rate often used is 200% or 2 times the straight-line rate.

$$\text{Straight Line Rate} = \frac{100\%}{\text{Life in years}}$$

$$\text{Declining Balance Rate} = \text{Straight Line Rate} \times \text{Declining Balance multiple}$$

$$\text{DDB Rate} = \text{Straight Line Rate} \times 2$$

$$\text{Depreciation expense} = \text{Declining Balance Rate} \times \text{Beginning Book Value}$$

5. Declining balance provides for larger expenses in early years and smaller expenses in later years compared to the straight-line method.
   - The last year(s) of depreciation expense must be adjusted from the formula above so that book value does not go below residual value.
6. Declining Balance is commonly used by companies that experience rapid obsolescence in long-lived productive assets.

C. How Managers Choose

1. Managers should choose a depreciation method that best matches the use of long-lived productive assets relative to the revenues it helps to generate.

2. Straight-line depreciation is the most widely used for financial statement purposes due to its simplicity.

3. Accelerated methods of depreciation

a. Assets are more efficient in their early years. Therefore, they help to produce more revenues in those years.

b. Repair costs are lower in early years and higher in later years. When the cost of the asset and the cost of repairs for that asset are considered collectively, accelerated depreciation tends to level out the total cost of using an asset over its useful life.

4. Companies may use one depreciation method for some assets and another depreciation method for other assets. Note, disclosure is required for depreciation methods used and estimated useful lives selected.

5. When a depreciation method is chosen for an asset, it should be consistently applied.

6. Companies generally must maintain two sets of accounting records.

a. One set is for financial statement purposes according to GAAP.

b. The other is for income tax purposes according to Internal Revenue Code.

c. It is legal and necessary to keep “two sets of books" for these purposes since financial reporting and income tax determination have different objectives and rules.

1. Financial reporting is designed to provide economic information about a business so that decision makers can formulate predictions about the future cash flows.
2. Income tax reporting is driven by the government's focus to secure revenues. Taxpayers are driven by "the least and the latest rule." That is, they want to pay the smallest amount of tax at the latest possible date.

d. Depreciation methods for GAAP and income tax purposes are quite different.

1. The acceptable methods for GAAP are discussed above.
2. The method used for federal income tax purposes is the Modified Accelerated Cost Recovery System (MACRS). Tax laws mandate the lives and depreciation rates to be used. These are not the same as for GAAP. Note that a disclosure is needed to explain GAAP and tax depreciation differences.
3. MACRS delays the payment of income taxes, since it allocates more of the depreciable cost in the early years of an asset.
4. Theoretically, this delay will reverse in the later years of an asset; however, as long as a company continues to purchase new assets, the tax will continue to be delayed.
5. Straight-line depreciation will generate a higher net income, which is preferable for financial reporting purposes.

V. LO4 EXPLAIN THE EFFECT OF ASSET IMPAIRMENT ON THE FINANCIAL STATEMENTS.

A. Measuring Asset Impairment

1. It is important for management to review long-lived tangible and intangible assets for possible impairment.

2. Impairment occurs when events or circumstances cause the book value of an asset to be higher than estimates of future cash flows (future benefits).

a. If the estimated future cash flows are less than the book value of the asset, the asset should be “written down.”

b. The carrying value is reduced to the fair value and an impairment loss is recognized.

$$\text{Impairment Loss} = \text{Net Book Value} - \text{Fair Value}$$

VI. LO5 ANALYZE THE DISPOSAL OF PROPERTY, PLANT, AND EQUIPMENT.

A. Disposal of PP&E

1. Voluntary disposals of assets include sales, trade-ins, and retirements.

2. Involuntary disposals of assets result from casualties such as fires, storms, and accidents.

B. Recording Disposals

1. Two journal entries are usually required to record the disposal of depreciable assets.

a. Disposals seldom occur on the last day of the accounting period, so the depreciation expense and accumulated depreciation accounts must be updated at the time of disposal.

b. The cost of the asset and any accumulated depreciation must be removed from the accounts.

1. If the cash or other consideration received for the asset is greater than its book value, a gain on disposal is recognized.
2. If cash or other consideration received is less than book value, a loss is recognized.
3. Discarded assets
   i. If a fully depreciated asset (when salvage value is zero) is discarded, no gain or loss results.
   ii. If it is not fully depreciated, a loss is recognized.

VII. LO6 APPLY MEASUREMENT AND REPORTING CONCEPTS FOR NATURAL RESOURCES AND INTANGIBLE ASSETS.

A. Acquisition and Depletion of Natural Resources

1. Natural resources: assets that occur in nature.

a. Often referred to as wasting assets since they are depleted or used up when they are extracted for use in products.

b. Examples: gold, coal, iron ore, oil, and timber.

2. Environmental considerations are particularly important for companies owning natural resources.

3. Acquisition

a. Recorded in conformity with the cost principle when acquired.

4. Depletion

a. The action of allocating the cost over the period of its exploitation. [Example: When coal is mined, the mine value is reduced (depleted) and the asset account for coal inventory is increased. The coal is expensed when the coal is sold..]

b. The process of periodic cost allocation of the natural resource over the economic life in conformity with the matching principle.

c. Computation is similar to the units-of-production depreciation method. It is a systematic and rational allocation of the natural resource's cost.

$$\text{Depletion rate} = \frac{\text{Cost - Residual value}}{\text{Life in units}}$$

$$\text{Depletion} = \text{Depletion rate} \times \text{Units extracted}$$

d. Residual value is rarely used for natural resources.

e. An Accumulated Depletion account may be used; however, usually the natural resource asset itself is reduced directly.

f. Depletion is not expensed. It is added to the company's inventory as the natural resource is extracted or harvested. When inventory is sold, cost of goods sold is matched to sales revenue.

B. Acquisition and Amortization of Intangible Assets

1. Intangible assets: assets that have no physical substance. Their value results from certain rights and privileges conferred by law on the owner of the asset. Intangible assets can either have definite lives or indefinite lives.

2. Acquisition

a. Recorded in conformity with the cost principle *only* if purchased.

b. If they are developed by a company, the development costs are usually recorded as expenses when incurred.

3. Amortization

a. If the intangible assets have definite lives, the process of periodic cost allocation of intangible assets over their estimated useful lives in conformity with the matching principle.

b. Similar to depreciation for plant assets.

c. Computation is a systematic and rational allocation, similar to the straight-line depreciation method when intangible assets have definite lives.

$$\text{Amortization} = \frac{\text{Cost - Residual value *}}{\text{Life in years}}$$

*Residual value usually is zero

d. An Accumulated Amortization account may be used. However, usually the intangible asset itself is reduced directly.

e. If intangible assets have indefinite lives, they are not amortized.

1. Such assets are tested annually for impairment.
2. Impairment occurs when the book value exceeds future cash flows.
3. As with tangible assets, the impairment loss recognized is the excess of book value over fair value.

4. Examples of Intangible Assets

a. Goodwill

1. Includes aspects of a business such as good reputation, good location, customer loyalty, and quality goods or services.
2. The only time goodwill is recorded is when one business buys another business.
   a. It is recorded at its cost.
   b. The cost of goodwill is the amount paid for the whole business minus the market value of its identifiable net assets.
   c. Often reported as "cost in excess of net assets acquired."
   d. Goodwill has an indefinite life and must be reviewed at least annually for possible impairment.
3. Goodwill that is internally generated is not recorded.

b. Trademark

1. A special name, image, logo, or slogan that is identified with a product or a company.
2. Among the most valuable assets a company can own.
3. Since trademarks are normally created internally by a company, they are not recorded. The costs of developing trademarks internally are recorded as expenses.
4. If a trademark is purchased, it follows the rules for other purchased intangibles.

c. Copyright
1. The exclusive right to publish, use, and sell a literary, musical, or artistic work for a period generally not to exceed 70 years after the author's death.
2. Should be recorded at cost and amortized over the shorter of their useful life or remaining legal life.

d. Patent
1. An exclusive right granted by the federal government for a period of 20 years.
2. Enables its owner to use, manufacture, and sell the subject of the patent.
3. Patents encourage the development of new products.
4. If a patent is purchased, it should be recorded at cost and amortized over the shorter of its useful life or remaining legal life.
5. If a patent is internally developed, only the costs associated with registration would be capitalized and amortized.

e. Technology
1. Includes costs for computer software and Web development.
2. Amortization follows the impairment rules due to the indefinite life of technology.

f. Franchises
1. May be granted by a government or a business for a specified period and purpose.
2. The life of is usually included in a contract, and the cost is amortized over the appropriate life.

g. Licenses and operating rights (Examples include radio and television rights)
1. Obtained through agreements with governmental agencies.
2. They permit owners to use public property to provide services.

h. Research and development costs
1. Generally expensed as incurred.
2. R&D is usually <u>not</u> an intangible asset because of the insufficient probability of measurable future cash flows.

VIII. LO7 EXPLAIN THE IMPACT ON CASH FLOWS OF ACQUIRING, USING, AND DISPOSING OF LONG-LIVED ASSETS.

A. Purchase (or sale) of an intangible asset is an outflow (inflow) of cash in the <u>I</u>nvesting section of the Statement of Cash Flows.

B. Operating Section adjustments (indirect method):
1. Depreciation and amortization expense is added back.
2. Gain on sale of a plant asset or an intangible asset is deducted.
3. Loss on sale of a plant asset an intangible asset is added back.
4. Loss due to asset impairment write-down is added back.

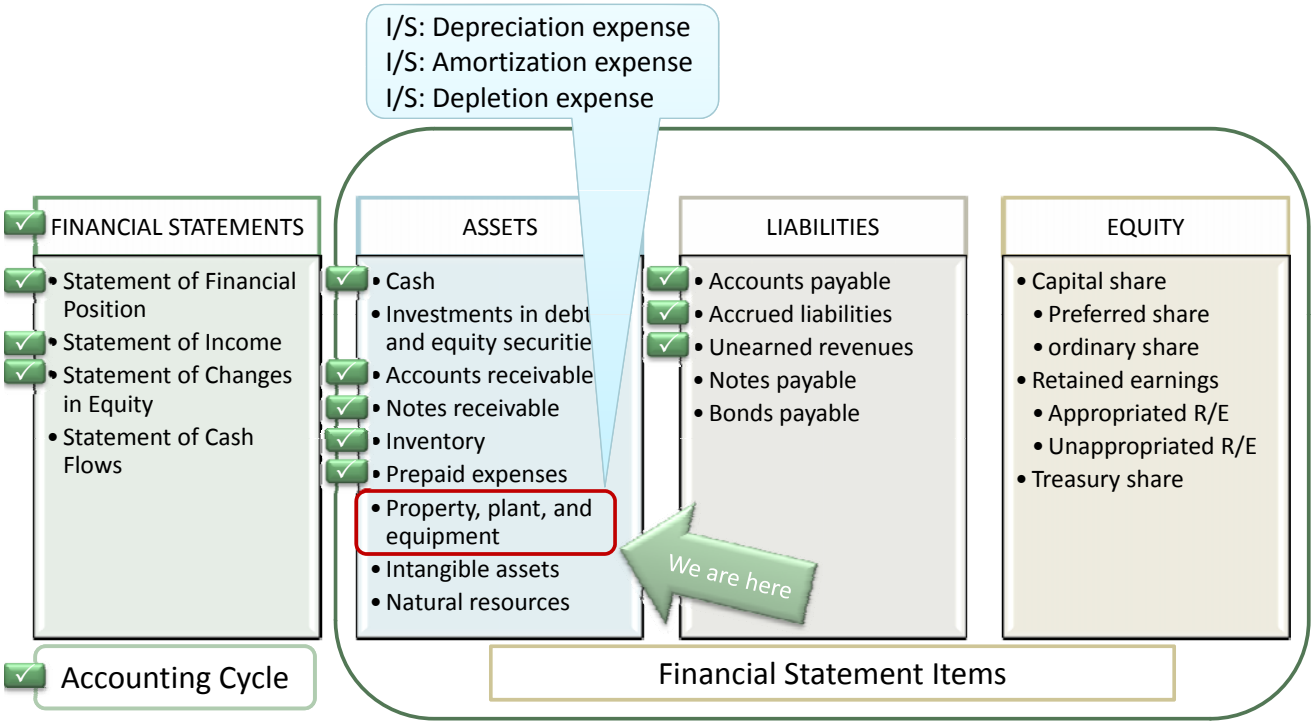
IX. CHAPTER SUPPLEMENT A: CHANGES IN DEPRECIATION ESTIMATES

1. The computation of depreciation expense uses two estimates -- useful life and residual value.
- Since these are estimates, their initial determination may need to be revised as experience with the asset accumulates.

2. When management believes it is appropriate to change estimates regarding a depreciable asset, the book value (undepreciated value) less the revised residual value becomes the remaining depreciable amount for the asset. This value should be apportioned over the remaining estimated life of the asset.

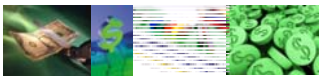
3. Changes in estimates result because of better measures of the asset's usefulness.
a. This is a prospective change that does not involve restatement of prior period statements.
b. Note, a disclosure should explain such changes since comparability of financial statements is important to financial analysts and other statement users.

4. Changes in depreciation methods require special treatment on the income statement (see Chapter 5) since the consistency principle is violated.



FINANCIAL STATEMENT ANALYSIS

AC201 Fundamental Accounting



CHAPTER 8: REPORTING AND INTERPRETING PROPERTY, PLANT, AND EQUIPMENT

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มาตรฐานการบัญชี ฉบับที่ 16 (ปรับปรุง 2552)

เรื่อง

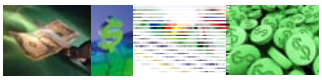
ที่ดิน อาคารและอุปกรณ์

คำแถลงการณ์

มาตรฐานการบัญชีฉบับนี้ได้ปรับปรุงให้เป็นไปตามเกณฑ์ที่กำหนดขึ้นโดยมาตรฐานการบัญชีระหว่างประเทศ ฉบับที่ 16 เรื่อง ที่ดิน อาคารและอุปกรณ์ ซึ่งเป็นการแก้ไขของคณะกรรมการมาตรฐานการบัญชีระหว่างประเทศที่สิ้นสุดในวันที่ 31 ธันวาคม 2551 (IAS 16: Property, Plant and Equipment (Bound volume 2009))

TAS16 Property, Plant, and Equipment

Federation of Accounting Professions

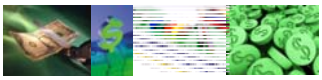


Definition

- **The following terms are used in this Standard with the meanings specified:**
  - ***Carrying amount*** is the amount at which an asset is recognized after deducting any accumulated depreciation and accumulated impairment losses.
  - ***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.
  - ***Depreciable amount*** is the cost of an asset, or other amount substituted for cost, less its residual value.
  - ***Depreciation*** is the systematic allocation of the depreciable amount of an asset over its useful life.

Definition

- ***Property, plant and equipment*** are tangible items that:
  - (a) are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and
  - (b) are expected to be used during more than one period.
- The ***residual 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
  - (b) the number of production or similar units expected to be obtained from the asset by an entity.



Recognition

- ***Recognition***
  - Items of property, plant, and equipment should be recognized as assets when it is probable that: [TAS 16.7]
    - it is probable that the future economic benefits associated with the asset will flow to the entity, and
    - the cost of the asset can be measured reliably.
  - This recognition principle is applied to all property, plant, and equipment costs at the time they are incurred. These costs include costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it.
  - TAS 16 does not prescribe the unit of measure for recognition – what constitutes an item of property, plant, and equipment. [TAS 16.9]
    - Note, however, that if the cost model is used 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 must be depreciated separately. [TAS 16.43]

Initial Measurement

- **Initial Measurement**
  - An item of property, plant and equipment should initially be recorded at cost. [TAS 16.15]
    - Cost includes all costs necessary to bring the asset to working condition for its intended use. This would include not only its original purchase price but also costs of site preparation, delivery and handling, installation, related professional fees for architects and engineers, and the estimated cost of dismantling and removing the asset and restoring the site. [TAS 16.16-17]

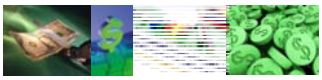
Measurement Subsequent to Initial Recognition

- ***Measurement Subsequent to Initial Recognition***
  - TAS 16 permits two accounting models:
    - Cost Model. The asset is carried at cost less accumulated depreciation and impairment. [TAS 16.30]
    - Revaluation Model. The asset is carried at a revalued amount, being its fair value at the date of revaluation less subsequent depreciation and impairment, provided that fair value can be measured reliably. [TAS 16.31]

This is not covered in AC201.

Depreciation

- ***Depreciation (Cost and Revaluation Models)***
  - For all depreciable assets:
    - The depreciable amount (cost less residual value) should be allocated on a systematic basis over the asset's useful life [TAS 16.50].
    - The residual value and the useful life of an asset should be reviewed at least at each financial year-end and, if expectations differ from previous estimates, any change is accounted for prospectively as a change in estimate. [TAS 16.51]
    - The depreciation method used should reflect the pattern in which the asset's economic benefits are consumed by the entity. [TAS 16.60]
    - The depreciation method should be reviewed at least annually and, if the pattern of consumption of benefits has changed, the depreciation method should be changed prospectively as a change in estimate. [TAS 16.61]
    - Depreciation should be charged to the statement of income, unless it is included in the carrying amount of another asset [TAS 16.48].
    - Depreciation begins when the asset is available for use and continues until the asset is derecognised, even if it is idle. [TAS 16.55]

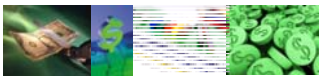


Derecognition

- **Derecogniton (Retirements and Disposals)**
  - An asset should be removed from the Statement of Financial Position on disposal or when it is withdrawn from use and no future economic benefits are expected from its disposal.
  - The gain or loss on disposal is the difference between the proceeds and the carrying amount and should be recognized in profit or loss (on the Statement of Income). [TAS 16.67-71]

Disclosure

- **Disclosure**
  - For each class of property, plant, and equipment, disclose: [TAS 16.73]
    - basis for measuring carrying amount
    - depreciation method(s) used
    - useful lives or depreciation rates
    - gross carrying amount and accumulated depreciation and impairment losses
    - reconciliation of the carrying amount at the beginning and the end of the period, showing:
      - additions
      - disposals
      - acquisitions through business combinations
      - revaluation increases or decreases
      - impairment losses
      - reversals of impairment losses
      - depreciation
      - net foreign exchange differences on translation
      - other movements



Accounting for Property, Plant, and Equipment

Classifying Long-Lived Assets

- **The resources that determine a company's productive capacity are often called long-lived assets.**
  - These assets that are listed as noncurrent assets on the balance sheet may be either tangible or intangible, and have the following characteristics.

Tangible assets

- They have physical substance; that is they can be touched. This classification is called ***property, plant, and equipment*** or fixed assets.
  - Land
  - Building, fixtures, and equipment

Intangible assets

- They are long-lived assets without physical substance that confer specific rights on their owner.
  - Examples are patents, copyrights, franchises, licenses, and trademarks.

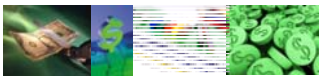
Property, Plant, and Equipment

- **Property, plant, and equipment include land, building structures (offices, factories, warehouses), and equipment (machinery, furniture, tools).**
  - Major characteristics of property, plant, and equipment are as follows:
    - They are acquired for use in operations and not for resale.
    - They are long-term in nature and usually depreciated.
    - They possess physical substance.

Measuring and Recording Asset Cost

- **Example:**
  - On Jan. 1, 20X1, Company A purchased new equipment for a list price of 5,200,000 Baht. Company A received a discount of 200,000 Baht.
  - In addition, Company A paid for transportation and installation cost of 100,000 Baht

Invoice price	5,200,000
Less: Discount	(200,000)
Net cash invoice price	5,000,000
Add: Transportation and installation cost	100,000
Asset cost	**5,100,000**



Acquired Asset for Cash

- **The journal entries to record the acquisition of equipment under various situation are listed below:**

GENERAL JOURNAL

Date		Account Titles and Explanation	Debit	Credit
Jan.	1	Dr. Equipment [A+]	5,100,000	
20X1		Cr. Cash [A-]		5,100,000
		To record purchase equipment for cash		

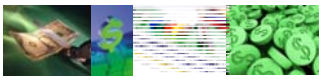
Date		Account Titles and Explanation	Debit	Credit
Jan.	1	Dr. Equipment [A+]	5,100,000	
20X1		Cr. Cash [A-]		100,000
		Note payable [L+]		5,000,000
		Purchase equipment for debt and cash		

Date		Account Titles and Explanation	Debit	Credit
Jan.	1	Dr. Equipment [A+]	5,100,000	
20X1		Cr. Cash [A-]		300,000
		Share capital [E+]		4,800,000
		Purchase equipment for equity and cash		

Basket (Lump-sum) Purchase

- **Basket or lump-sum Purchase**
  - The purchase of two or more assets acquired together at a single price.
    - Relative Fair Market Value Method is used
      - A way of allocating a basket purchase price to the individual assets acquired based on their respective market values.
- **Illustration:**
  - Company A purchased land and a new sorting facility at a total cost of 3,600,000 Baht.

Asset	Fair Value	% of Total Value	Calculation	Cost Allocation
Land	1,000,000	25%	25% x 3,600,000 =	900,000
Building	3,000,000	75%	75% x 3,600,000 =	2,700,000
Total	**4,000,000**			**3,600,000**

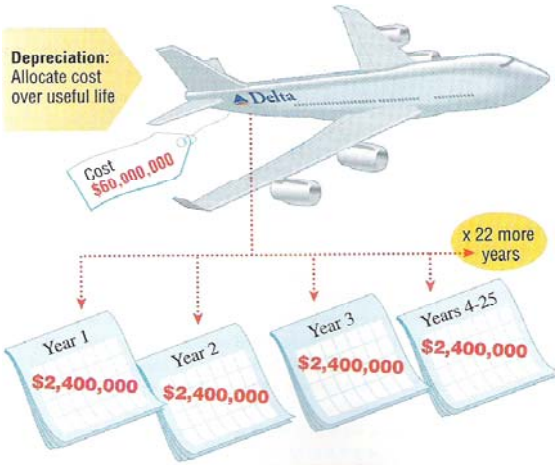


Depreciation

Depreciation: Process of allocating the asset cost over their productive lives using a systematic and rational method.

Estimated useful life: The expected service life of an asset to the present owner.

Residual value: The estimated amount to be recovered at the end of the company's estimated useful life of an asset.



Using the asset→depreciation expense each year

Depreciation

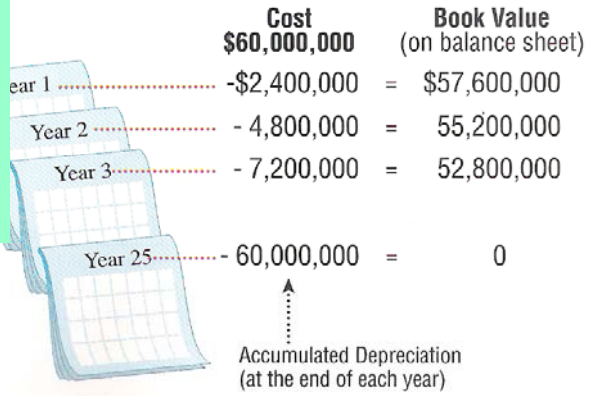
It is the accounting process of allocating the cost of tangible assets to expense in a systematic and rational manner to those periods expected to benefit from the use of the asset.

When companies write off the cost of long-lived assets over a number of periods, they typically use the term depreciation.

Carrying amount

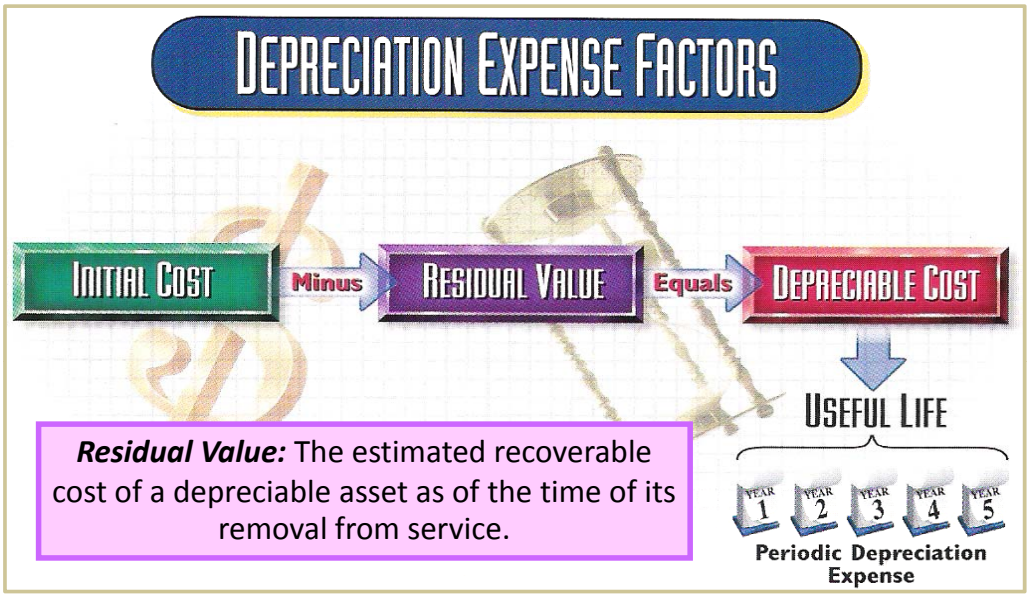
Carrying amount: Difference between the balance of an asset and its related accumulated depreciation.

Accumulated depreciation: The contra asset account used to accumulate the depreciation recognized to date on plant assets.

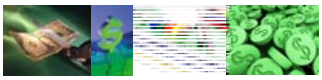


Factors Involved in the Depreciation Process

- **Depreciable amount for the asset**
  - Depreciation amount = Asset cost – Residual value
- **Estimation of service lives**
  - Time or Capacity
- **Methods of depreciation**
  - Activity method or units-of-production approach
    - This method assumes that depreciation is a function of use or productivity, instead of the passage of time.
  - Straight-line method
    - This method considers a function of time rather than a function of usage.
  - Decreasing-charge methods
    - These methods provide for a higher depreciation cost in the earlier years and lower charges in later periods.
      - Sum-of-the-years'-digits
      - Declining-balance method



GENERAL JOURNAL				
Date		**Account Titles and Explanation**	**Debit**	**Credit**
Dec.	31	Dr. Depreciation expense [EXP+, E-]	XXX	
20XX		Cr. Accumulated depreciation (Contra A+, A-]		XXX
		To record depreciation expense		



Depreciation

- **Depreciation**
  - The allocation of the cost of a plant asset to expense in the periods in which services are received from the assets.

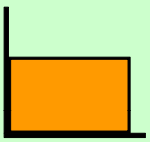
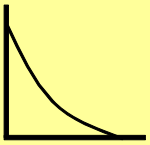
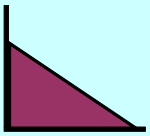
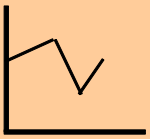
Statement of Financial Position

- **Assets:**
- Plant and equipment
- Less: Accumulated depreciation

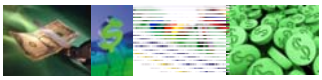
Statement of income

- **Expenses:**
- Depreciation expense

Depreciation Methods

Method	Pattern	Computation	Remarks
Straight-line		**(Asset cost - Residual value) / Useful life**	Or **Depreciable cost x Straight-line rate** **Straight-line rate** = 100% / Useful life
Double declining balance		**(Asset cost - Accumulated depreciation) X Accelerated rate**	Or **Book value x Accelerated rate** **Accelerated rate** = 200% / Useful life = 2 X Straight-line rate
Sum of the years' digits		**(Asset cost - Residual value) X Fraction**	**Fraction** = Remaining useful life / Sum of the years' digits **Sum of the years' digits** = n(n+1) / 2
Units of production		**Units produced X Rate per unit**	**Rate per unit** = (Asset cost - Residual value) / Estimated capacity

AC201 Fundamental Accounting



Depreciation Calculations

- **To illustrate the depreciation calculation, we assumed that Company A purchased equipment on January 1, 20X1.**
  - The following facts apply:
    - Acquisition cost: 24,000 Baht
    - Estimated residual value: 2,000 Baht
    - Estimated useful life:
      - In years: 5 years
      - In capacity: 60,000 units

Straight-line Method

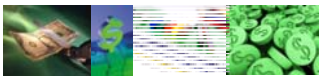
Annual depreciation expense

= (Asset cost – Residual value) / Useful life (years)

= (24,000 – 2,000) / 5

= 4,400 Baht per year

	Computation	Annual Depreciation Expense	Accumulated Depreciation	Book Value
Acquisition date				24,000
End of year 1	(24,000 - 2,000) / 5	4,400	4,400	19,600
End of year 2	(24,000 - 2,000) / 5	4,400	8,800	15,200
End of year 3	(24,000 - 2,000) / 5	4,400	13,200	10,800
End of year 4	(24,000 - 2,000) / 5	4,400	17,600	6,400
End of year 5	(24,000 - 2,000) / 5	4,400	22,000	***2,000***
		22,000		



Double Declining Balance Method

Straight-line rate

= 100% / Useful life (years)

= 100% / 5

= 20%

Accelerated rate

= 2 X Straight-line rate

= 2 X 20%

= 40%

Annual depreciation expense

= (Asset cost – Accumulated depreciation) X Accelerated rate

	Computation	Annual Depreciation Expense	Accumulated Depreciation	Book Value
Acquisition date				24,000
End of year 1	24,000 X 40%	9,600	9,600	14,400
End of year 2	14,400 X 40%	5,760	15,360	8,640
End of year 3	8,640 X 40%	3,456	18,816	5,184
End of year 4	5,184 X 40%	2,074	20,890	3,110
End of year 5	*(22,000 - 20,890)	1,110	22,000	***2,000***
		22,000		

Units of Production Method

Units produced:

Year 1: 12,000 units
Year 2: 18,000 units
Year 3: 11,000 units
Year 4: 9,000 units
Year 5: 10,000 units

Depreciation rate per unit

= (Asset cost – Residual value) / Estimated capacity

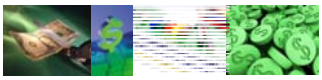
= (24,000 – 2,000) / 60,000 = 0.37 Baht per unit

Annual depreciation expense

= Actual units produced X Depreciation rate per unit

	Computation	Annual Depreciation Expense	Accumulated Depreciation	Book Value
Acquisition date				24,000
End of year 1	12,000 X 0.37	4,400	4,400	19,600
End of year 2	18,000 X 0.37	6,600	11,000	13,000
End of year 3	11,000 X 0.37	4,033	15,033	8,967
End of year 4	9,000 X 0.37	3,300	18,333	5,667
End of year 5	10,000 X 0.37	3,667	22,000	***2,000***
		22,000		

AC201 Fundamental Accounting



Sum-of-the-years-digits Method

Remaining useful life

Sum-of-the-years'-digits
[n (n+1)] / 2

Sum-of-the-years'-digits

= [N(N+1)] / 2

= (5 X 6) / 2 → Useful life = 5 years

= 15

Annual depreciation expense

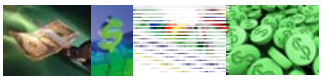
= (Asset cost – Residual value) X Fraction

	Computation	Annual Depreciation Expense	Accumulated Depreciation	Book Value
Acquisition date				24,000
End of year 1	(24,000 - 2,000) X 5/15	7,333	7,333	16,667
End of year 2	(24,000 - 2,000) X 4/15	5,867	13,200	10,800
End of year 3	(24,000 - 2,000) X 3/15	4,400	17,600	6,400
End of year 4	(24,000 - 2,000) X 2/15	2,933	20,533	3,467
End of year 5	(24,000 - 2,000) X 1/15	1,467	22,000	***2,000***
		22,000		

Other Issues

- **Estimates of Useful Life and Residual Value**
  - May differ from company to company.
  - The reasonableness of management's estimates is evaluated by external auditors.
- **Principle of Consistency**
  - Companies should avoid switching depreciation methods from period to period.

The total amount of depreciation recorded over the useful life of an asset is the same regardless of the method used. Depreciation expense recorded in any one period will vary according to method used.

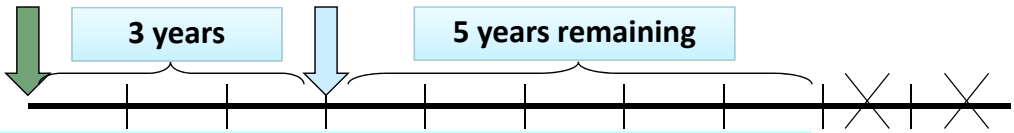


Change in Accounting Estimates

- **Over the life of an asset, new information may come to light that indicates the original estimates need to be revised.**
  - Residual value
  - Useful life
- **Illustration**
  - On January 1, 20X1, equipment was purchased at a cost of 300,000 Baht. The equipment has a useful life of 10 years and no residual value.
  - On January 1, 20X4, the useful life was revised to 8 years total (5 years remaining).
    - Calculate depreciation expense for the year ended December 31, 20X4, using the straight-line method.

On Jan.1, 20X1, Co. purchased equipment for 300,000 Baht

On Jan.1, 20X4, Co. revised useful life to be 8 years total



1. Straight-line depreciation (Original estimates)
= (Asset cost - Residual value) / Useful life
= (300,000 - 0) / 10
= 30,000 per year

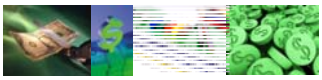
Original estimates:
Residual value = 0
Useful life = 10 years

2. Accumulated depreciation at the date of change
= 30,000 Dep. per year X 3 years
= 90,000

3. Book value at the date of change
= Asset cost - Acc. Dep.
= 300,000 - 90,000
= 210,000

4. Revised depreciation per year
= (Book value at the date of change - Revised residual value) / Remaining useful life
= (210,000 - 0) / 5
= 42,000

Revised estimates:
Residual value = 0
Useful life = 8 years



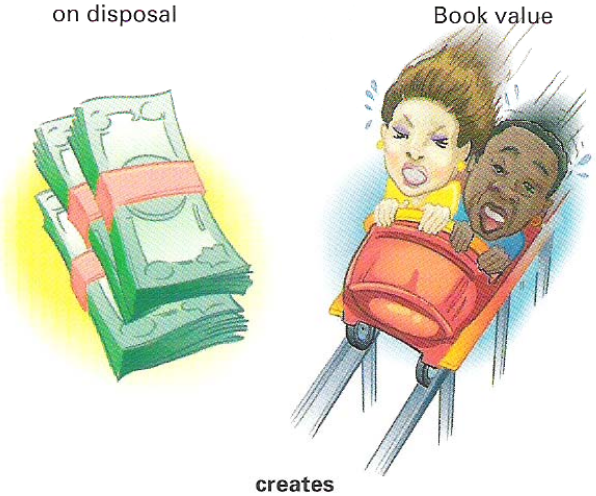
Disposition of Property, plant, and Equipment

- **The disposal of a depreciable asset usually requires two journal entries:**
  - An adjusting entry to update the depreciation expense and accumulated depreciation account.
  - An entry to record the disposal.

Disposal of Property, plant, and Equipment

Cedar Fair

Receive $6,000,000 on disposal — but — **Give-up** $7,500,000 Book value

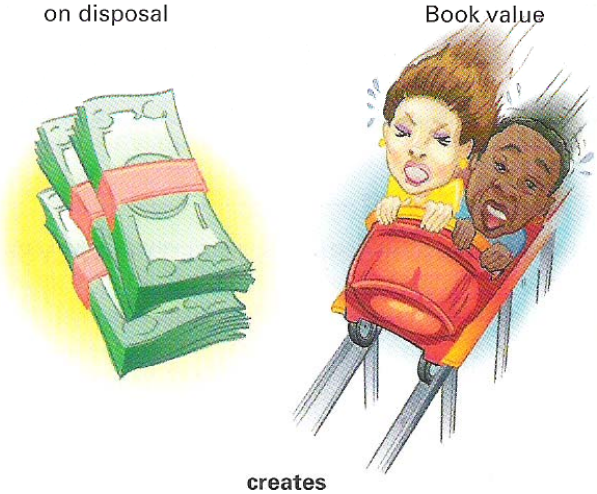


creates

LOSS = $1,500,000

Six Flags

Receive $6,000,000 on disposal — but — **Give-up** $4,035,000 Book value

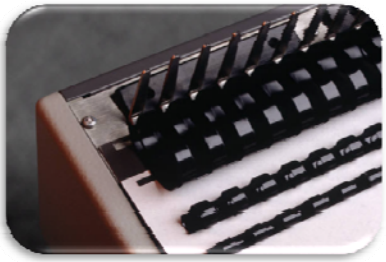


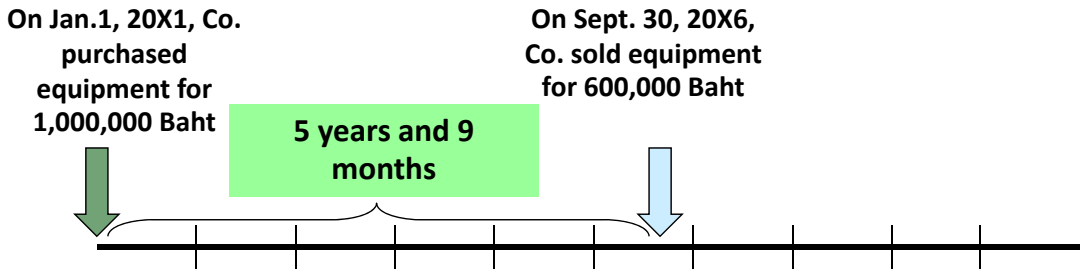
creates

GAIN = $1,965,000

Disposal of Property, Plant, and Equipment (Cont.)

- **Illustration:**
  - On Sept. 30, 20X6, Company A sold machine that originally cost 1,000,000 Baht for 600,000 Baht cash.
    - The machine was placed in service on Jan. 1, 20X1.
      - It was depreciated using the straight-line method with an estimated residual value of 200,000 Baht and a useful life of 10 years.





1. Straight-line depreciation per year
= (Asset cost - Residual value) / Useful life
= (1,000,000 - 200,000) / 10
= 80,000

Residual value = 200,000

Useful life = 10 years

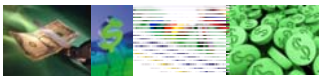
2. Accumulated depreciation at the date of sale
= (80,000 X 5 yrs) + (80,000 X (9/12))
= 460,000

3. Carrying value at the date of sale
= Asset cost - Accumulated depreciation
= 1,000,000 - 460,000
= 540,000

Cash > BV ➔ Gain (↑E)
Cash < BV ➔ Loss (↓E)

4. Compare the Carrying amount at the date of sale with the cash received:

Cash received from sale		600,000
Carrying value at the date of sale		
Asset cost	1,000,000	
Less: Accumulated depreciation	(460,000)	(540,000)
Gain (loss) on sale		60,000



Disposal of Property, Plant, and Equipment (Cont.)

- **Prepare the journal entry to record Evans' sale of the machine on September 30, 20X6.**

GENERAL JOURNAL

Date		Account Titles and Explanation	Debit	Credit
Sept.	30	Dr. Depreciation expense [EXP+, E-]	60,000	
20X6		Cr. Accumulated depreciation [Contra A+, A-]		60,000
		To record depreciation expense during 20X6		
Sept.	30	Dr. Cash [A+]	600,000	
20X6		Accumulated depreciation [Contra A-, A+]	460,000	
		Cr. Equipment [A-]		1,000,000
		Gain on sale of equipment [REV+, E+]		60,000
		To record the sale of equipment		

Example of Financial Statement Presentation & Disclosure: Property, Plant, & Equipment
[Source: www.farmhouse.co.th]

BALANCE SHEETS

President Bakery Public Company Limited
As at 31 December 2010 and 2009

(Unit : Baht)

	Note	Financial statements in which the equity method is applied		Separate financial statements	
		2010	2009	2010	2009
Assets					
Non-current assets					
Investment in joint venture	10	8,442,283	7,753,495	5,850,000	5,850,000
Other long-term investment - net	11	-	-	-	-
Property, plant and equipment - net	12	2,660,925,587	2,473,725,139	2,660,925,587	2,473,725,139
Advance payments for purchase of assets		15,347,413	-	15,347,413	-
Intangible assets - net	13	1,294,434	1,440,643	1,294,434	1,440,643
Leasehold rights - net	14	2,323,734	2,651,113	2,323,734	2,651,113
Other non-current assets		6,541,253	5,805,162	6,541,253	5,805,162
Total non-current assets		2,694,874,704	2,491,375,552	2,692,282,421	2,489,472,057
Total assets		3,765,063,406	3,157,284,049	3,762,471,123	3,155,380,554

4.6 Property, plant and equipment and depreciation

Land is stated at cost. Plant and equipment are stated at cost less accumulated depreciation. Depreciation of plant and equipment is calculated by reference to their costs on a straight-line basis over the estimated useful lives of assets, except for computer equipment acquired since 1 January 2002 calculated by double declining balance basis, as follows:

Buildings	-	10 - 20 years
Machinery and equipment	-	5 - 20 years
Computer equipment	-	3 - 5 years
Furniture and office equipment	-	5 years
Motor vehicles	-	5 years

No depreciation is provided on land, construction in progress and assets under installation.

Depreciation is included in determining income.

12. PROPERTY, PLANT AND EQUIPMENT

(Unit : Baht)

	Land	Building	Machinery and equipment	Furniture and office equipment	Motor vehicles	Construction in progress and assets under installation	Total
Cost							
31 December 2009	158,205,147	1,027,915,918	2,067,173,343	601,718,021	472,990,350	33,930,935	4,361,933,714
Additions	9,032,950	-	-	61,442,713	18,027,662	475,882,844	564,386,169
Transfers in (out)	121,303	2,581,744	58,287,548	19,490,831	89,223,492	(170,254,918)	(550,000)
Disposals	-	-	(35,839,581)	(910,902)	(11,369,056)	-	(48,119,539)
31 December 2010	167,359,400	1,030,497,662	2,089,621,310	681,740,663	568,872,448	339,558,861	4,877,650,344
Accumulated depreciation							
31 December 2009	-	155,048,494	962,076,537	423,117,847	347,965,697	-	1,888,208,575
Depreciation for the year	-	51,417,285	183,691,920	78,179,565	61,111,892	-	374,400,662
Depreciation - disposals	-	-	(33,605,041)	(910,396)	(11,369,043)	-	(45,884,480)
31 December 2010	-	206,465,779	1,112,163,416	500,387,016	397,708,546	-	2,216,724,757
Net book value							
31 December 2009	158,205,147	872,867,424	1,105,096,806	178,600,174	125,024,653	33,930,935	2,473,725,139
31 December 2010	167,359,400	824,031,883	977,457,894	181,353,647	171,163,902	339,558,861	2,660,925,587
Depreciation for the year							
2009 (Baht 230 million included in manufacturing cost, and the balance included in selling and administrative expenses)							310,023,954
2010 (Baht 281 million included in manufacturing cost, and the balance included in selling and administrative expenses)							374,400,662