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Agriculture *In depth*

A look at current financial reporting issues

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Agriculture – Including new rules for ‘bearer plants’

IAS 41 ‘Agriculture’ and IAS 16 ‘Property, Plant and Equipment’

At a glance

All agricultural activity was in the scope of IAS 41, ‘Agriculture’ until recently. In June 2014 the IASB issued an amendment moving bearer plants, but not the produce growing on the bearer plants, from the scope of IAS 41 to IAS 16, ‘Property, Plant and Equipment.’

IAS 41 requires biological assets to be measured initially and subsequently at fair value less costs to sell. Judgement is required to determine fair value and complex models are often required.

Entities with bearer plants are generally supportive of the amendment because it allows the use of the cost model under IAS 16. The amendment has a number of consequences that need careful consideration.

Background

IAS 41 is a short standard with a wide scope and a significant impact on those entities within its scope. It applies to most entities that grow or rear biological assets for profit. The principle of the standard is that increases in value are recognised as income as the asset grows and develops.

In June 2014, the IASB issued amendments to IAS 41 and IAS 16. The amendments remove bearer plants from the scope of IAS 41 into the scope of IAS 16. Bearer plants are plants which bear produce for more than one period, (for example oil palms, grape vines and fruit trees). The amendment is effective for annual periods beginning on or after 1 January 2016 but early adoption is permitted.

1. Scope

1.1. IAS 41

IAS 41 applies to agricultural activity which relates to biological assets, agricultural produce and government grants.

*‘Agricultural activity is the **management by an entity of the biological transformation** and harvest of **biological assets for sale or for conversion into agricultural produce, or into additional biological assets.**’ [IAS 41 Para 5]*

*Agricultural activity is distinguished by the management of biological transformation. ‘**Biological transformation comprises the processes of growth, degeneration, production, and procreation that cause qualitative or quantitative changes in a biological asset.**’ [IAS 41 Para 5]*

Once harvested, agricultural produce becomes inventory and is accounted for in accordance with IAS 2, ‘Inventory’.

1.2. Land

Land owned by the entity and used for agricultural activity is subject to the recognition and measurement principles of IAS 16. Land owned by a third party and rented to the entity for the purposes of agricultural activity is likely to be an operating lease according to IAS 17, ‘Leasing’.

1.3. Third party contract

An entity might rear or grow biological assets under contract for a third party. Whether the contract is in the scope of IAS 41 will depend on the facts and circumstances of the contract. The contract-grower needs to determine whether its exposure to risk is that of a receivable (secured credit risk) or that of a biological asset (physical inventory and fair value changes). Where the risks and rewards relating to ownership of the biological assets are with the contract growing entity, management should account for them as its biological assets.

Scope Q&As

Q: Is managing animal-related recreational activities agricultural activity?

A: No. Managing recreational activities – for example, game parks and zoos – is not agricultural activity. There is no management of the transformation of the biological assets for sale. Natural breeding that takes place is not a managed activity and is incidental to the main activity of providing a recreational facility.

Q: Is ocean fishing agricultural activity?

A: No. Harvesting biological assets from unmanaged sources, such as ocean fishing, is not agricultural activity.

Q: Is fish farming agricultural activity?

A: Yes. Managing the growth of fish for subsequent slaughter or sale is agricultural activity within the scope of IAS 41.

Q: Is the growing of plants to be used in the production of drugs an activity within the scope of IAS 41?

A: Yes. If a pharmaceutical or biotechnology entity grows plants from which particular drugs are produced, that activity will fall within IAS 41's scope.

Q: Entity A raises cattle, slaughters them at its abattoirs and sells the carcasses to the local meat market. Which of these activities are in the scope of IAS 41?

A: The cattle are biological assets while they are living. When they are slaughtered, biological transformation ceases and the carcasses meet the definition of agricultural produce. Entity A should account for the live cattle in accordance with IAS 41 and the carcasses as inventory in accordance with IAS 2.

1.4. IAS 41/16 Amendment

Biological assets fall into the following main categories: plants or animals; and consumable or bearer assets. Consumable assets are those which are to be harvested as agricultural produce or sold as biological assets – that is, they will be consumed (for example wheat and cattle for beef). Bearer assets are those which bear produce over their productive lives, which exceeds one period. For example, grape vines, where the vine is the bearer asset and the grapes are produce and dairy cows, where the cow is the bearer asset and milk is the produce.

Bearer plants have been moved into the scope of IAS 16 under the new amendment, but the produce growing on the plant remains within IAS 41. A bearer plant is defined in IAS 16 as a living plant that:

- a. Is used in the production or supply of agricultural produce;
- b. Is expected to bear produce for more than one period; and
- c. Has a remote likelihood of being sold as agricultural produce, except for incidental scrap sales

A plant might have two uses: 1) it is cultivated for bearing agricultural produce, and 2) the bearer plant will be harvested and sold as agricultural produce. For example, rubber trees might be cultivated for both their latex and wood. If the sales from wood are not incidental scrap sales, the tree does not meet the definition of a bearer plant.

Bearer plants that no longer bear produce are commonly cut down and sold as scrap at the end of their life. Such incidental scrap sales would not prevent the plant from being a bearer plant

Bearer Plant Scope Q&As

Q: What kinds of plants fall within the definition of bearer plant?

A: To fall within the scope of the amendment, the plants must meet all three criteria of the definition; examples include, fruit trees, oil palms, nut trees, grape vines, tea bushes, rubber trees and sugar canes. Annual crops, such as grain and many market vegetables including sugar beet are not bearer plants.

Q: An entity farms walnut trees for the harvest of walnuts and, ultimately, for the valuable timber obtained at the end of the trees' productive lives. Should the trees be accounted for under IAS 16 or IAS 41?

A: The last criterion in the definition of bearer plant is that the likelihood that the plant will be sold as agricultural produce must be remote, except for incidental scrap sales. If part of the objective of growing the trees is to harvest valuable timber at the end of the trees' productive lives, it seems unlikely that this criterion will be met. The walnut tree would be in the scope of IAS 41.

Q: Can the amendment be applied, by analogy, to livestock reared solely as breeding animals?

A: No, all biological assets that are animals remain within the scope of IAS 41.

Q: Is there a choice to continue to account for bearer plants under IAS 41, rather than under IAS 16?

A: No. If the plant meets the definition of a bearer plant, it must be accounted for in accordance with the requirements of IAS 16.

2. Recognition

IAS 41 requires an entity to recognise a biological asset when:

- a. The entity controls the asset as a result of past events;
- b. It is probable that future economic benefits associated with the asset will flow to the entity; and
- c. The fair value or cost of the asset can be measured reliably.

Recognition Q&A

Q: At what point is bearer biological produce recognised in the financial statements?

A: IAS 41 provides no specific guidance for produce other than the general recognition criteria described above. Bearer produce is therefore likely to be recognised immediately after the preceding harvest. The entity controls the bearer produce as it controls the bearer plant. The previous harvest is evidence that there will be future economic benefit. The fair value can be measured reliably in most cases but could be close to zero. We would not expect a material gain on initial recognition of agricultural produce immediately after the last harvest. See section 3.

3. Measurement

3.1. IAS 41

IAS 41 requires biological assets to be measured on initial recognition and at each balance sheet date at their fair value less costs to sell, except in limited circumstances. Any movements in fair value are recorded in the income statement.

There are two occasions where the standard permits departure from fair value: at the early stage of an asset's life; and when fair value cannot be measured reliably on initial recognition.

The first exemption is a practical expedient. The standard allows cost to approximate fair value where little biological transformation has taken place since the initial cost was incurred (for example, for wheat sowed immediately before the balance sheet date). The same applies when the impact of the biological transformation on price is not expected to be material (for example, for the initial growth in a 30-year pine plantation cycle). [IAS 41 para 24].

The second exemption, that fair value cannot be reliably measured, is seldom relevant. The standard includes a presumption that fair value can be measured reliably for a biological asset. That presumption can be rebutted only on initial recognition for a biological asset for which market-determined prices or values are not available and for which alternative estimates of fair value are determined to be clearly unreliable. The term 'clearly unreliable' is not used elsewhere in the IFRS literature and, based on the objective of the standard; it is a high hurdle to clear.

In the event that the estimate of its fair value is deemed to be clearly unreliable, that biological asset is measured at its cost less any accumulated depreciation and any accumulated impairment losses. [IAS 41 para 30]. Determining whether an asset is impaired requires an estimate of its value.

Measurement – Q&A's

Q: An entity has a history of large variations in outcome from the biological transformation process. Can it use the cost model?

A: No. A history of large variations in outcome is not considered to be evidence of the value being clearly unreliable. This should be factored into the measurement model when fair value is determined. All measurement models incorporate risk. A history of large variations is more risky and a higher discount rate will be used. A higher discount rate will reduce the fair value.

Q: An entity grows consumable assets with a very long production cycle, and there is no forward market price available. Can it use the cost model?

A: No. A long production cycle does not mean that fair value is clearly unreliable. The price risks and impact of timing should be built into the model when fair value is determined. It is important to remember that the measurement objective is the fair value of the biological asset at the reporting date in its current state.

Q: An entity has been using IAS 41 for a number of years. In year 4 of a 10- year production cycle, there is huge volatility in the price of the entity's consumable asset. Can it use the cost model?

A: No. The exemption is only available on initial recognition. It is not permissible to revert to the cost model if fair value has previously been used. Volatility in pricing would also not be considered as a factor that evidences measurement to be clearly unreliable.

3.2. What is fair value?

IFRS 13, 'Fair Value', defines fair value as '*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*' [IFRS 13 para 9].

There are three approaches described in IFRS 13 to measure fair value: the market approach; the income approach; and the cost approach. The market and income approaches are the most likely methods used to measure biological assets. IFRS 13 does not have a preferred method of calculating fair value however whichever technique is used observable inputs must be maximised. If there is a market price it cannot be ignored.

The market approach

Many biological assets have relevant market-determined prices or values available, as agricultural produce are often basic commodities that are traded actively. For example, there are usually market prices for calves and piglets. Where there is an active market for a biological asset or agricultural produce, the quoted price in that market is the appropriate basis for determining the fair value of that asset.

If an active market does not exist, one or more of the following methods could be used to estimate fair value, if data is available:

- The most recent market transaction price, provided that there has not been a significant change in economic circumstances between the date of that transaction and the balance sheet date.
- Market prices for similar assets, with adjustment to reflect differences.
- Sector benchmarks, such as the value of an orchard expressed per export tray, bushel or hectare, and the value of cattle expressed per kilogram of carcass weight.

Biological assets are often physically attached to land (for example, consumable trees). There might be no separate market for biological assets that are attached to the land, but an active market might exist for the combined assets – That is, for the biological assets, raw land and land improvements, as a package. An entity could use information regarding the combined assets to determine fair value for the biological assets. For example, the fair value of raw land and land improvements might be deducted from the fair value of the combined assets to arrive at the biological assets' fair value.

A biological asset's physical location is often one of the asset's critical characteristics. Transport costs are regularly incurred in an agricultural context, as entities need to ensure that their biological assets and agricultural produce are transported to the principal or most advantageous market. Paragraph 26 of IFRS 13 requires the fair value of those assets to be adjusted for transport costs. For example, the fair value of cattle at a farm is the price for the cattle in the principal market less the transport and other costs of getting the cattle from the farm to that market. This can result in a loss on initial recognition of purchased biological assets

The income approach

The income approach is a discounted cash flow method and is often used when there is not a market price for the biological asset in its current condition. For example, the fair value of bearer animals might be based on the expected cash flows of the agricultural produce that they will bear.

The cash flow model should include all directly attributable cash inflows and outflows. The inflows will be the expected price in the market of the harvested asset upon maturity or when other produce from the asset is harvested over the asset's life. The outflows will be those costs incurred in raising or growing the asset and getting it to market, (for example, direct labour, feed, fertiliser and transport to market). The 'market' is where the asset will be sold. For some assets, this will be an actual market; for others, it might be the 'factory gate'.

Cash flows relating to financing and taxation (where a pre-tax discount rate is used) are ignored for the purposes of estimating the fair value of biological assets. Any cash flows to be incurred in re-establishing biological assets after harvest are also excluded from the valuation (for example, the cost of re-planting). A provision for re-planting might be required by IAS 37 once the biological asset is harvested, but it is not included as a deduction in the current assets fair value; replanting is not a characteristic of the asset but the cost of the new asset.

An imputed contributory asset charge should be added as a notional cash outflow where there are no actual cash flows associated with the use of assets essential to the agricultural activity; otherwise, the fair value will be overstated. The most common example where this is necessary is where the land on which the biological asset is growing is owned by the entity. The cash flows should include a notional cash outflow for 'rent' of the land to be comparable with the asset of an entity that rents its land from a third party. The fair value of a biological asset is independent of the land on which it grows or lives. An example where this approach is crucial includes long-term biological assets, such as plantation forests, but is normally also appropriate for short-term assets.

Bearer produce remains in the scope of IAS 41 and therefore needs to be separately valued from a bearer plant. For the purposes of valuing immature produce on bearer plants, a notional cash outflow for the 'rent' of the bearer plants will need to be included, see next example.

Fair value – Q&A's

Q: How is the fair value of bearer produce ascertained?

A: A cash flow model is the most likely valuation method for bearer produce. The cash flow model should include all directly attributable cash inflows and outflows. The inflows will be the price in the market of the harvested produce. The outflows will be those incurred in growing the asset and getting it to market, (for example, direct labour, fertiliser and transport to market). Contributory asset charges will be included for both the land and bearer plant if they are owned by the entity. This 'notional' rent removes cash flows attributable to those assets so the remaining value relates solely to the produce. As such, on day 1 after the previous harvest, the next harvest is likely to have a fair value close to zero.

In depth

Illustrated example: fair value of bearer produce

Fact pattern:

Entity A grows apples. It has an annual harvest in August. Its year end is December.

Based on the last harvest, it estimates that each apple tree will yield 200kg of apples. The entity has 6,790 trees and one kilogram of apples is likely to sell for CU3

Contributory asset charges (CAC) have been estimated for renting the land and the bearer plant (the apple tree).

This example assumes that fair value increases equally over time. This might not be the case, depending on each plant's production cycle, and especially when actual cash outflows are incurred unevenly. Costs to sell have been ignored for this example.

Analysis



	Recognition		Fertilising		Year End			Growth				Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Inflow – Annual harvest												4,074,000
Outflow												
Fertiliser	100,000	100,000	100,000	100,000								
Direct Labour	250,000	250,000	250,000	250,000	125,000	125,000	125,000	125,000	125,000	250,000	250,000	250,000
Other direct costs	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000
CAC – Land	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
CAC – Bearer plant	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
	(450,000)	(450,000)	(450,000)	(450,000)	(225,000)	(225,000)	(225,000)	(225,000)	(225,000)	(350,000)	(350,000)	3,775,000
Discount – 5%	1.00	0.99	0.99	0.98	0.98	0.98	0.97	0.97	0.96	0.96	0.96	0.95
PV	(448,174)	(446,356)	(444,544)	(442,741)	(220,472)	(219,578)	(218,687)	(217,799)	(216,915)	(336,055)	(334,691)	3,546,667
NPV at 1 September	655											
NPV at 31 of each month	450,657	902,493	1,356,170	1,811,695	2,044,077	2,277,404	2,511,683	2,746,916	2,983,107	3,345,261	3,708,890	

The produce is initially recognised at 1 September, immediately after the last harvest, at a fair value of CU655

At the yearend (31 December), the produce is remeasured to a fair value of CU1,811,695 and the gain of CU1,811,041 is included in the income statement.

The NPV at each month end has been included for illustration purposes.

Harvested produce

Harvested produce is measured at fair value less costs to sell at the point of harvest. IAS 41 states that the fair value of produce at the point of harvest can always be measured reliably; hence there is no possibility of exemption from fair value measurement at the point of harvest. The fair value less costs to sell of the harvested produce is the deemed cost of the inventories on the date when IAS 2 is applied.

3.3. Bearer plants in the scope of IAS 16

Bearer plants in the scope of IAS 16 are typically measured at accumulated cost until they are mature. From maturity, any subsequent costs are expensed unless they enhance the future economic benefits of the asset.

The entity has the choice of using the cost model or the revaluation model under IAS 16. The model chosen must be applied to the entire class of asset. The plants must be depreciated over their useful lives under both models

Measurement (IAS 16) Q&As

Q: How should immature bearer plants be accounted for under IAS 16?

A: It is accounted for as an asset under construction and is typically measured at accumulated cost until the plant is in *the location and condition necessary for it to be capable of operating in the manner intended by management* (i.e., it reaches maturity).

Q: At what point do bearer plants reach maturity?

A: Many bearer plants take a number of years to reach maximum yields. An entity will need to make a judgement about when a bearer plant reaches maturity. This should be disclosed clearly in the entity's accounting policies and as a significant accounting judgement.

Q: What depreciation method should be applied to bearer plants?

A: The depreciation method chosen should reflect the pattern in which the future economic benefits of the plants are expected to be consumed by the entity. IAS 16 does not specify a particular method that must be used, so judgement will need to be applied.

Q: Are bearer plants subject to impairment?

A: Bearer plants accounted for under IAS 16 will fall in the scope of IAS 36 for impairment testing. This applies whether the cost or revaluation model is used.

Q: Can borrowing costs be capitalised as part of cost?

A: Yes. Borrowing costs are capitalised until substantially all of the activities necessary to prepare the bearer biological asset for its intended use are complete. This is likely to be when the bearer plant reaches maturity and depreciation commences.

Q: Can notional land rent be capitalised as part of the cost of bearer plants?

A: No. The notional land rent is not a cost under IAS 16 and therefore cannot be included in the cost of bearer plants. If the land is actually rented from a third party this rental expense can be capitalised as part of the cost of the bearer plant.

4. Presentation and disclosure

Biological assets are measured at fair value, with the change recognised in the income statement. Disclosure of the aggregate gain or loss arising during the current period is required.

Gains or losses arise from:

- Initial gain or loss on biological assets.
- Changes in fair value less costs to sell of biological assets.
- Initial gain or loss on agricultural produce.

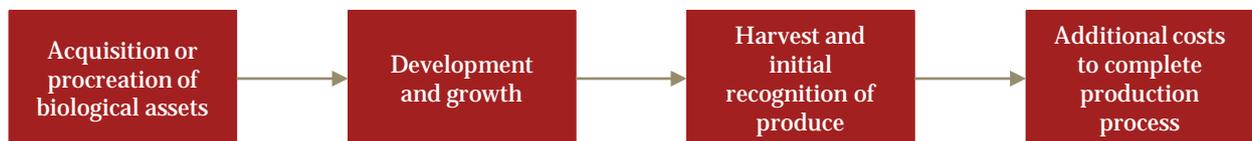
There is no requirement to specify the gains and losses from these different sources, only the aggregate.

Initial losses on biological assets typically arise when a biological asset is purchased. The cost of the biological asset is often higher than the fair value less costs to sell, as the latter represents an exit price, and transaction expenses therefore create a loss. Transportation costs will also typically generate an initial loss. Initial gains on biological assets arise when new biological assets are generated and separately recognised, (for example, when a calf or a piglet is born), although this might, in theory be offset to a large extent by a decrease in the value of the cow or sow.

Changes in fair value less costs to sell of biological assets represent the difference in value from period to period. The value typically increases due to growth, procreation and higher prices, but might decrease due to degeneration, sickness and lower prices. It is sometimes difficult to distinguish such changes from the initial gain due to for example procreation.

Initial gains or losses on agricultural produce represents the difference between the reduction in carrying value of the biological assets due to harvest and the fair value less costs to sell of the harvested agricultural produce. They reflect the last stage of the value creation of the biological process. The harvested produce is transferred to inventory. There could be further costs involved in preparing the inventory for market.

The different stages in the accounting life of a biological asset are:



IAS 41 does not prescribe the treatment of costs associated with agricultural activity. Such costs might include feeding, veterinary services, planting, weeding, irrigation, fertiliser, and harvesting and slaughtering costs. An entity can therefore choose to capitalise or expense these amounts. The net impact on income will be the same as illustrated in the below example. Difficulties might be encountered in defining what should be capitalised. The accounting policy choice should be clearly disclosed. Capitalising costs are more relevant to those entities that present their income statement by function.

Illustrative example

Capitalising costs

1. Direct labour costs incurred

Dr Biological asset 100

Cr Cash 100

2. FV adjustment

Dr Biological asset 50

Cr Gain on re-measurement – P&L 50

Expensing costs

Dr Cost of production – P&L 100

Cr Cash 100

Dr Biological asset 150

Cr Gain on re-measurement – P&L 150

Net Impact in the income statement

Gain on re-measurement 50

Cost of production Nil

Net Impact: +50

Gain on re-measurement 150

Cost of production 100

Net Impact: +50

Presentation Q&As

Q: Where should the aggregate gain or loss be disclosed?

A: The aggregate gain or loss is included in net income. This can be separately disclosed on the face of the income statement or in the notes, as there is no specific requirement in IAS 41 on where to show it. In practice, most entities show this on the face of the income statement.

Q: Where should the aggregate gain or loss be presented in the income statement?

A: The standards are silent on this issue. The presentation of change in fair value tends to be near the top of the income statement under common practice. As the change in fair value could be either a positive or negative amount, it is most appropriate to present the change in fair value after revenues and other income, but before expenses. The presentation should take into consideration the unique characteristics of the production of the entity.

Disclosure

Biological assets measured at fair value require disclosure under paragraph 40 to 57 of IAS 41 and IFRS 13. Income approach valuations are likely to be Level 3 in IFRS 13, because many of the inputs used will be unobservable.

A reconciliation is required to explain the changes in the carrying amount of biological assets in the current period [IAS 41 para 50]. For example:

IAS 41 requirement	What does it mean?
Carrying amount at 1 January (IAS 41.50)	IAS 41 requires a reconciliation of the carrying amount at the beginning and end of the year.
Gain or loss arising from changes in fair value less costs to sell, (IAS 41.50.a)e.g.: <ul style="list-style-type: none"> • livestock losses and births; • changes in fair value due to transformation; • changes in fair value due to price changes 	<p>As biological assets transform some assets might be lost, (for example livestock losses or crop losses due to unseasonable weather etc.).</p> <p>Transformation also causes changes in fair value. The fair value of a lamb held for wool is reduced after it has been sheared.</p>
Increases due to purchases (IAS 41.50.b)	Some of this movement will be due to purchases of new biological assets. If the entity chooses to capitalise expenses on the asset, it is natural to include these within this line or on a separate line.
Transfer to inventory (IAS 41.50.d)	At the point of harvest biological produce move into IAS 2. The fair value less costs to sell is removed from the carrying amount on the balance sheet.
At 31 December	The year-end balance.

In addition IAS 41 para 50 requires changes due to business combinations and foreign currency differences to be included in the reconciliation. For example disclosures please also refer to the IFRS Illustrative financial statements Appendix III which can be found online here: [IFRS Illustrative financial statements](#)

Bearer plants amendment – Transition and Effective date

The new requirements for bearer assets are effective for annual periods beginning on or after 1 January 2016. Earlier adoption is permitted.

An entity can apply the amendments on a full retrospective basis or apply the relevant transitional provisions, depending on whether it is a current IFRS preparer or a first-time adopter.

Current IFRS preparers, on initial application of the amendments, can elect to use the fair value at the beginning of the earliest comparative period presented in the financial statements as the deemed cost of the bearer plants on that date. Any difference between fair value and the carrying amount (that is, fair value less costs to sell determined under the old IAS 41) is recognised in opening retained earnings at the beginning of the earliest period presented. Any element of the previous carrying amount that relates to produce on the plant at the beginning of the earliest comparative period would need to be identified, separated out and continue to be accounted for as biological assets.

First-time IFRS adopters can apply the deemed cost exemptions for items of property, plant and equipment as provided in IFRS 1, 'First-time adoption of IFRS'.

In addition to the fair value on date of transition as deemed cost exemption (similar to the exemption for the existing IFRS preparers described above), first time IFRS adopters can elect to use a previous GAAP revaluation at, or before, the date of transition as deemed cost. This exemption is applicable if the revaluation was broadly comparable to fair value or cost or depreciated cost adjusted to reflect, for example, changes in a general or specific price index. First-time IFRS adopters can also use an event-driven fair value (for example at the point of privatisation or initial public offering) as the deemed cost at the date of measurement

Questions?

PwC clients who have questions about this In depth should contact their engagement partner. Engagement teams that have questions should contact members of the Business Combinations team in Accounting Consulting Service. More information on agriculture can be found in the IFRS Manual of Accounting chapter 32.

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Appendix 1: Comprehensive example of the application of IAS 41

Entity A is a beef cattle farm, breeding and maturing cattle for future selling as the main business.

Example 1 – Beef cattle farm with no slaughtering activity

The following assumptions apply:

- The company was created as at 31 December 2012; at that time, 100 immature calves and 50 mature stock were acquired.
- Cattle become mature after one year.
- During the period under analysis, all the movements and transactions took place at 31 December of each year.
- Transportation costs are given per animal (variable cost). In practice, it is likely to be a fixed cost for a number of animals.

General information about the fair value for both mature and immature cattle as well as costs to sell is as follows:

	2012	2013	2014	2015
Fair value per unit (immature)	100.00	105.00	110.00	116.00
Fair value per unit (mature)	150.00	153.00	156.00	159.00
Costs to sell:				
• Auctioneer's fee (total cost per animal)	5.00	5.25	5.50	5.80
• Transportation (total cost per animal to be paid for any transaction)	0.30	0.32	0.34	0.36
Fair value less costs to sell per unit (immature) (a)	94.70	99.43	104.16	109.84
Fair value less costs to sell per unit (mature) (c)	144.70	147.43	150.16	152.84

Measurement

Biological assets are measured on initial recognition and at each reporting date at fair value less costs to sell (FVLCTS). For Entity A, it is assumed that the costs to sell include the auctioneer's fee and the transportation costs.

For the analysed period, the movements and fair values of immature cattle are as follows:

	2012	2013	2014	2015
Immature cattle (No. of animals)				
Opening balance	–	100	115	115
Purchases	100	105	105	115
New born	–	10	10	20
Transfer to mature	–	100	115	115
Sales	–	–	–	–
Closing balance (b)	100	115	115	135
FVLCTS (total) (a x b)	9,470	11,434	11,978	14,828

During the same period, the movements and fair values of the mature cattle are as follows

	2012	2013	2014	2015
Mature cattle (No. of animals)				
Opening balance	–	50	100	115
Purchases	50	–	–	–
Transfer from immature	–	100	115	115
Sales	–	50	100	115
Closing balance	50	100	115	115
FVLCTS (total) (c x d)	7,235	14,743	17,268	17,577

Changes in fair values

Changes in fair value may be due to both physical changes and price changes in the market. A reconciliation of changes in the carrying amount of biological assets between the beginning and the end of the period is required under IAS 41 para 50. Companies are encouraged to present separately in the reconciliation the gains and losses due to physical changes and price changes. For Entity A, the reconciliation presents separately the changes due to new acquisitions, physical changes, price changes, new born cattle and sales. Separate reconciliations of changes in fair value for both mature and immature cattle are presented below. A consolidated reconciliation is also acceptable.

For immature cattle

	2012	2013	2014	2015
Changes in fair value (immature cattle)				
At the beginning of the year	–	9,470.00	11,434.45	11,978.40
Due to purchases	9,470.00	10,440.15	10,936.80	12,631.60
Due to price changes (1)	–	473.00	543.95	653.20
Due to new born cattle	–	994.30	1,041.60	2,196.80
Due to physical changes (transferred to mature) at immature FVLCTS: refer to journal entry 4	–	(9,943.00)	(11,978.40)	(12,631.60)
Due to sales	–	-	–	–
At the end of the year	9,470.00	11,434.45	11,978.40	14,828.40

For mature cattle

	2012	2013	2014	2015
Changes in fair value (mature cattle)				
At the beginning of the year	–	7,235.00	14,743.00	17,268.40
Due to purchases	7,235.00	–	–	–
Due to price changes (1)	–	136.50	273.00	308.20
Due to physical changes (transferred from immature) at mature FVLCTS: refer to journal entry 4.	–	14,743.00	17,268.40	17,576.60
Due to sales	–	(7,371.50)	(15,016.00)	(17,576.60)
At the end of the year	7,235.00	14,743.00	17,268.40	17,576.60

(1) Change in price calculated on the opening balance of animals for the year.

Companies are also encouraged to present a reconciliation of non-financial measures or estimates of the physical quantity. The table above with the movements in the number of calves is an example of this disclosure

Classification and presentation

The Journal Entries (JE) would be:

	2012	2013	2014	2015
JE 1: Purchases				
Dr. Biological assets (immature) @ FVLCTS	9,470.00	10,440.15	10,936.80	12,631.60
Dr. Biological assets (mature) @ FVLCTS	7,235.00	–	–	–
Dr. FV loss on initial recognition of biological assets (2)	1,590.00	1,169.70	1,226.40	1,416.80
Cr. Cash (3)	18,295.00	11,609.85	12,163.20	14,048.40
JE 2: Newborn calves				
Dr. Biological assets (immature)	–	994.30	1,041.60	2,196.80
Cr. FV gain on initial recognition of biological assets	–	994.30	1,041.60	2,196.80
JE 3: Remeasurement of biological assets, price changes				
Dr. Biological assets	–	609.50	816.95	961.40
Cr. FV gains on remeasurement of biological assets (1)	–	609.50	816.95	961.40
JE 4: Remeasurement of biological assets, transfer from immature to mature				
Dr. Biological assets	–	4,800.00	5,290.00	4,945.00
Cr. FV gains on remeasurement of biological assets	–	4,800.00	5,290.00	4,945.00
JE 5: Cattle sold				
Dr. Cash	–	7,371.50	15,016.00	17,576.60
Dr. Selling expenses	–	278.50	584.00	708.40
Cr. Revenue	–	7,650.00	15,600.00	18,285.00
JE 6: Cost of Sales				
Dr. Cost of Sales	–	7,371.50	15,016.00	17,576.60
Cr. Biological assets (mature)	–	7,371.50	15,016.00	17,576.60

- (1) Change in price calculated on the opening balance of immature and mature animals for the year.
- (2) Loss arises due to the biological asset being recognised initially at FVLCTS which is after deduction of costs to sell.
- (3) This represents the total cash outflow on purchase of cattle, i.e. cash cost for the cattle plus transportation cost and auctioneers fees.

As a consequence, the income statements for these entries in aggregate would be:

	2012	2013	2014	2015
Revenue	–	7,650.00	15,600.00	18,285.00
FV gains/(losses) on initial recognition of biological assets	(1,590.00)	(175.40)	(184.80)	780.00
FV gains/(losses) on remeasurement of biological assets	–	5,409.50	6,106.95	5,906.40
Cost of Sales	–	(7,371.50)	(15,016.00)	(17,576.60)
Selling expenses	–	(278.50)	(584.00)	(708.40)

In this example, the fair value gains and losses are presented separately with the purpose of giving a more comprehensive understanding of the changes in fair values due to both initial recognition and remeasurement of biological assets. IAS 41 para 40 allows a simplified approach whereby all the changes in fair value can be presented on an aggregated basis.

This example can be expanded to look at a cattle farm that matures and slaughters the cattle to sell the carcasses.

Example 2 – Beef cattle farm with slaughtering activity

The following assumptions apply:

- General assumptions are the same as in Example 1.
- The movements of immature cattle are the same as described in Example 1.

The movements of mature cattle would be as follows (movements of immature cattle are the same as described in Example 1):

	2012	2013	2014	2015
No of animals				
Opening balance	–	50	100	115
Purchases	50	–	–	–
Due to reclassification from immature	–	100	115	115
Sales	–	20	80	90
Slaughter (e)	–	30	20	25
Closing balance (d)	50	100	115	115
FVLCTS (total) (c x d)	7,235	14,743	17,268	17,577

Changes in fair values

Changes in fair values of immature cattle are the same as in Example 1. Changes in fair values of mature cattle for Example 2 will have an additional line of changes due to slaughtering. The total movements are the same for both Examples 1 and 2, as the total amount of cattle sold in the first equals the sum of total cattle sold and slaughtered in the latter.

For mature cattle

	2012	2013	2014	2015
Changes in fair value (mature cattle)				
At the beginning of the year	–	7,235.00	14,743.00	17,268.40
Due to purchases	7,235.00	–	–	–
Due to price changes (1)	–	136.50	273.00	308.20
Due to physical changes (transferred from immature) at mature FVLCTS: refer to journal entry 4	–	14,743.00	17,268.40	17,576.60
Due to sales		(2,948.60)	(12,012.80)	(13,755.60)
Due to slaughtering (transferred to inventories)	–	(4,422.90)	(3,003.20)	(3,821.00)
At the end of the year	7,235.00	14,743.00	12,016.82	17,576.60

(1) Changes in price calculated on the opening balance of animals for the year.

Slaughtering activity

Entity A also has slaughtering activity. The cattle ceases to be a biological asset from the point it is slaughtered, and becomes agricultural produce. IAS 41's scope encompasses agricultural produce up to the point of harvest. IAS 41 para 13 states that agricultural produce is measured at FVLCTS at the point of harvest and is subsequently accounted for in accordance with IAS 2, 'Inventories'.

Information about the carcasses is as follows:

	2012	2013	2014	2015
Fair value per unit excluding transport	180.00	189.00	198.00	208.00
Transportation (total cost to be paid for any transaction)	0.50	0.53	0.56	0.59
Cost to slaughter	4.00	4.20	4.42	4.64
Fair value less costs to sell per unit (f)	175.5	184.27	193.02	202.77

In this example, all the carcasses are immediately sold.

Journal Entries

The journal entries will be:

	2012	2013	2014	2015
Refer to journal entries 1-4 in example 1.				
JE 5: Cattle sold				
Dr. Cash	–	2,948.60	12,012.80	13,755.60
Dr. Selling expenses	–	111.40	467.20	554.40
Cr. Revenue	–	3,060.00	12,480.00	14,310.00
JE 6: Cost of Sales				
Dr. Cost of Sales	–	2,948.60	12,012.80	13,755.60
Cr. Biological assets (mature)	–	2,948.60	12,012.80	13,755.60
JE 7: Cattle slaughtered				
Dr. Inventories (e x f) (1)	–	5,528.10	3,860.40	5,069.25
Cr. FV gain on initial recognition of inventories	–	1,105.20	857.20	1,248.25
Cr. Biological assets (mature)	–	4,422.90	3,003.20	3,821.00
Dr. Inventories (1)	–	126.00	88.40	116.00
Cr. Cash (cost of slaughtering cattle)	–	126.00	88.40	116.00
JE 8: Carcasses sold				
Dr. Cash	–	5,654.10	3,948.80	5,185.25
Dr. Selling expenses	–	15.90	11.20	14.75
Cr. Revenue	–	5,670.00	3,960.00	5,200.00
Dr. Cost of production	–	5,654.10	3,948.80	5,185.25
Cr. Inventories	–	5,654.10	3,948.80	5,185.25

(1) Inventory is initially recognised at FVLCTS. Subsequently it is treated at cost in terms of IAS 2, resulting in slaughtering costs being capitalised to inventories.

As a consequence, the income statements for these entries in aggregate would be

	2012	2013	2014	2015
Revenue – sales of cattle	–	3,060.00	12,480.00	14,310.00
Revenue – sales of carcasses	–	5,670.00	3,960.00	5,200.00
FV gains/(losses) on initial recognition of biological assets	(1,590.00)	(175.40)	(184.80)	780.00
FV gains/(losses) on initial recognition of inventories	–	1,105.20	857.20	1,248.25
FV gains/(losses) on remeasurement of biological assets	–	5,409.50	6,106.95	5,906.40
Cost of Sales	–	2,948.60	12,012.80	13,755.60
Cost of production	–	(5,654.10)	(3,948.80)	(5,185.25)
Selling expenses	–	(127.30)	(478.40)	(569.15)

Appendix 2: Defined terms

Agriculture activity: The management by an entity of the biological transformation and harvest of biological assets for sale or for conversion into agricultural produce of the entity's biological assets.

Agricultural produce: The harvested produce of the entity's biological assets.

Bearer plant: A living plant that:

- a) Is used in the production or supply of agricultural produce;
- b) Is expected to bear produce for more than one period; and
- c) Has a remote likelihood of being sold as agricultural produce, except for incidental scrap sales.

Biological asset: A living plant or animal

Biological transformation: Comprises the process of growth, degeneration, production and procreation that cause qualitative and quantitative changes in biological asset,

Costs to sell: The incremental costs directly attributable to the disposal of an asset, excluding finance costs and income taxes.

Consumable biological asset: Are those assets that are to be harvested as agricultural produce or sold as biological assets



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