

IFRS Accounting Standards discussion fora: Biological assets

2023

Addis Ababa, Ethiopia



WORLD BANK GROUP

AABE

Accounting and Audit Board of Ethiopia
የኢትዮጵያ የሂሳብ አያያዝ እና ኮሚቴ ቦርድ
Established under proclamation no 847/2006

The consensus views expressed in this presentation are those of the discussion participants and not necessarily those of any organization with which the discussants are associated.

1

Disclaimer

- » The sponsors, the authors, the discussants and the publishers do not accept responsibility for loss caused to any person who acts or refrains from acting in reliance on the material in this document, whether such loss is caused by negligence or otherwise.
- » When evaluating accounting treatments all the relevant facts and circumstances need to be fully considered. A discussion forum, because of its format and for reasons of simplification, can only consider a particular, constrained set of facts. The consensus views arrived at in this material are based on the assumption that there are no other relevant facts that, if they had been considered, might have altered that view. Consequently, such consensus views can only be considered likely conclusions, and cannot be considered to be determinative, without full consideration of all the facts and circumstances that would be present in reality.

2

2



Applicable version of IFRS Accounting Standards

Unless specified otherwise, the accounting requirements that are the subject matter of this discussion forum are IFRS Accounting Standards as issued by the International Accounting Standards Board that are applicable for annual period beginning on or after 1 January 2023 without early applying new and amended IFRS Accounting Standards that have a later mandatory application date.

3

3



Aims

- » Develop in the Ethiopian Agriculture Sector a more cohesive understanding of IFRS accounting and reporting.
- » Enhance capacity in the Ethiopian Agriculture Sector to apply IFRS Accounting Standards more consistently.

4

4

Index of issues

5

» Index of issues

» Latex farming

- » Issue 1: classification of latex farmers' growing rubber trees
- » Issue 2: classification of latex inside/attached to the farmer's living rubber trees
- » Issue 3: classification of harvested latex
- » Issue 4: classification of infant rubber trees growing in the plant nursery
- » Issue 5: how to depreciate rubber tree bearer plants

6

6



Index of issues

» Dairy farming

- » Issue 1: classification and measurement of the dairy herd a manufacturer owns and maintains primarily to provide milk to employees
- » Issue 2: classification of the milk harvested from the dairy herd a manufacturer owns and maintains primarily to provide milk to employees

» Government grants and other forms of government assistance

- » Issue 1: import duty waiver

7

7



Index of issues

» Measuring fair value less costs to sell

- » Issue 1: measuring the fair value of standing timber
- » Issue 2: measuring the fair value of unharvested sugar cane
- » Issue 3: measuring the fair value of standing annual crops
- » Issue 4: measuring point-of-harvest fair value less costs to sell of produce

8

8

Latex farming

9

Index of latex farming issues

- » Issue 1: classification of latex farmers' growing rubber trees
- » Issue 2: classification of latex inside/attached to the farmer's living rubber trees
- » Issue 3: classification of harvested latex
- » Issue 4: classification of infant rubber trees growing in the plant nursery
- » Issue 5: how to depreciate rubber tree bearer plants

10

10



Issue 1: classification of latex farmers' growing rubber trees

11



Classification of latex farmers' growing rubber trees planted in the rubber plantation *What do you think?*

Latex farming is a relatively new industry in Ethiopia's agriculture sector.

Which IFRS Accounting Standard applies to a latex farmer's living rubber trees that are planted in the rubber plantation?

12

12



Classification of latex farmers' growing rubber trees planted in the rubber plantation

Summary of discussion

Which IFRS Accounting Standard applies to a latex farmer's living rubber trees that are planted in the rubber plantation? Discussants' consensus view = growing rubber trees (excluding the harvestable latex contained therein) likely satisfy the definition of bearer plants (IAS 41.5) and consequently likely should be accounted for by the farmer in accordance with IAS 16 *Property, Plant and Equipment*.

» Reasoning: a rubber farmer's living rubber trees are living plants used in the production of latex (agricultural produce) for more than one period, and, provided there is no more than a remote likelihood of the wood from the rubber trees when felled at the end of their useful lives being sold as agricultural produce (except for incidental scrap sales like firewood), satisfy the definition of bearer plants.

Similarly, the IASB observes that rubber trees usually meet the definition of a bearer plant (IAS 41.4).

13

13



Issue 2: classification of latex inside/attached to the farmer's living rubber trees

14

Classification of latex inside/attached to the farmer's living rubber trees

What do you think?

Latex farming is a relatively new industry in Ethiopia's agriculture sector.

Which IFRS Accounting Standard applies to latex inside (attached to) the farmer's living rubber trees?

15

15

Classification of latex inside/attached to the farmer's living rubber trees

Summary of discussion

Which IFRS Accounting Standard applies to latex inside (attached to) the farmer's living rubber trees?

Discussants' consensus view = irrespective of whether the latex farmer's growing rubber trees are bearer plants, the unharvested latex (produce) inside/attached to the growing rubber trees is accounted for by the farmer in accordance with IAS 41 *Agriculture*.

Reasoning: IAS 41 applies to produce attached to bearer plants (IAS 41.2(b)).

16

16



Issue 3: classification of harvested latex

17



Classification of latex from the point of harvest from the latex farmer's rubber trees
What do you think?

Latex farming is a relatively new industry in Ethiopia's agriculture sector.

Which IFRS Accounting Standard applies to latex from the point of harvest from the latex farmer's rubber trees?

18

18



Classification of latex from the point of harvest from the latex farmer's rubber trees

Summary of discussion

Which IFRS Accounting Standard applies to latex from the point of harvest from the latex farmer's rubber trees?

Discussants' consensus view = irrespective of whether the latex farmer's growing rubber trees are bearer plants, from the point of harvest, latex (produce) detached from the growing rubber trees is likely accounted for by the farmer in accordance with IAS 2 *Inventories*.

» Reasoning: from the point of harvest IAS 2 applies to the harvested produce unless another Standard is applicable (IAS 41.3).

19

19



Issue 4: classification of infant rubber trees growing in the plant nursery

20

Classification of infant rubber trees growing in the plant nursery

What do you think?

Latex farming is a relatively new industry in Ethiopia's agriculture sector.

Which IFRS Accounting Standard applies to infant rubber trees growing in the plant nursery?

21

21

Classification of infant rubber trees growing in the plant nursery

Summary of discussion

Which IFRS Accounting Standard applies to infant rubber trees growing in the plant nursery? Discussants' consensus view: it depends:

- » If the nursery is operated by the latex farmer that intends planting its infant rubber trees in its rubber plantation from which it harvests latex, then likely satisfies the definition of bearer plants (IAS 41.5) and consequently likely should be accounted for by the farmer in accordance with IAS 16 *Property, Plant and Equipment*.
- » If the nursery operator does not farm latex, ie its business is only to breed plants for sale to others, then IAS 41 *Agriculture* likely applies because the plant breeding business is agricultural activity, and the bearer plant exception does not apply because in this farmer's operations harvesting does not take place over a number of seasons etc.

22

22



Issue 5: how to depreciate rubber tree bearer plants

23



How to depreciate rubber tree bearer plants *What do you think?*

Latex farming is a relatively new industry in Ethiopia's agriculture sector.

How should a latex farmer depreciate its rubber tree bearer plants?

24

24

How to depreciate rubber tree bearer plants

Summary of discussion

How should a latex farmer depreciate its rubber tree bearer plants? Discussants' consensus view:

- » Because, from the latex farmer's perspective, the service potential of a rubber tree is to produce harvestable latex, the depreciation method that likely most closely reflects how the latex farmer consumes the tree's service potential is the units of production method, on the basis of the expected harvestable latex yield over the tree's useful life (IAS 16.60).
- » Because the expected latex yield is not uniform over time (ie is significantly uneven), other depreciation methods, for example straight-line, are unlikely to reflect the pattern in which the tree's future economic benefits are expected to be consumed by the latex farmer.

25

25

Dairy farming

26



Index of dairy farming issues

- » Issue 1: classification and measurement of the dairy herd a manufacturer owns and maintains primarily to provide milk to employees
- » Issue 2: classification of the milk harvested from the dairy herd a manufacturer owns and maintains primarily to provide milk to employees

27

27



Issue 1: classification and measurement of the dairy herd a manufacturer owns and maintains primarily to provide milk to employees

28

Classification of a manufacturer's dairy herd

What do you think?

A manufacturer maintains a herd of dairy cows because a law requires that it provides fresh milk to its employees on an ongoing basis.

Which IFRS Accounting Standard applies to the manufacturer's dairy herd?

29

29

Classification and measurement of a manufacturer's dairy herd

Summary of discussion

Which IFRS Accounting Standard applies to the manufacturer's dairy herd? Discussants' consensus view = if material the dairy herd must be accounted for using the fair value model (fair value less costs to sell) in accordance with IAS 41 *Agriculture*.

» **Reasoning:**

- » cows are biological assets (living animals); and
- » the herd is deployed in agricultural activity (IAS 41.5) because the manufacturer is actively managing the biological transformation of the herd to harvest milk (agricultural produce) from the cows.

30

30



Issue 2: classification of the milk harvested from the dairy herd a manufacturer owns and maintains primarily to provide milk to employees

31



Classification and measurement of the milk harvested from a manufacturer's dairy herd and given to employees
What do you think?

A manufacturer maintains a herd of dairy cows because a law requires that it provides fresh milk to its employees on an ongoing basis.

Which IFRS Accounting Standard/s apply to the milk harvested from the dairy herd and then given to employees?

32

32

Classification and measurement of the milk harvested from a manufacturer's dairy herd and given to employees

Summary of discussion

Which IFRS Accounting Standard/s apply to the milk harvested from the manufacturer's dairy herd and given to employees and how is it measured?

Discussants' consensus view = the milk harvested from the cows would be measured at its point-of-harvest fair value less costs to sell (IAS 41.13) and when the milk is distributed to the employees it becomes an employee benefit accounted for in accordance with IAS 19 *Employee Benefits*.

33

33

Government grants and other forms
of government assistance

34



Index of government grant and assistance issues

» Issue 1: import duty waiver

35

35



Issue 1: import duty waiver

36

Import duty waiver *What do you think?*

Government allows some farmers to import particular items (materials and machines, including motor vehicles) **duty free**.

Should the duty-free benefit provided by the government be accounted as a government grant in accordance with IFRS Accounting Standards (IAS 20 or IAS 41, if a biological asset in agricultural activity)?

37

37

Import duty waiver *Summary of discussion*

Should the duty-free benefit provided by the government be accounted as government grant in accordance with IFRS Accounting Standards (IAS 20 or IAS 41, if a biological asset in agricultural activity)?

Discussants' consensus view = no, it is not a government grant. However, it likely is government assistance that must be disclosed.

Note: PwC conclude, albeit in the context of business rates reliefs during the covid pandemic, "The charge will not be levied so there is simply no expense to recognise. There is no transfer of resources so the relief will not be a government grant, but it will represent a form of government assistance for disclosure purposes."

Source www.pwc.co.uk/covid-19/accounting-for-government-assistance-in-response-to-covid-19-pandemic.pdf.

38

38

Measuring fair value less costs to sell

39

Index of measurement issues: fair value less costs to sell

- » Issue 1: measuring the fair value of standing timber
- » Issue 2: measuring the fair value of unharvested sugar cane
- » Issue 3: measuring the fair value of standing annual crops
- » Issue 4: measuring point-of-harvest fair value less costs to sell of produce

40

40



Issue 1: measuring the fair value of standing timber

41



Measuring the fair value of standing timber *What do you think?*

Standing timber in the scope of IAS 41 *Agriculture* must be measured at fair value less costs to sell (IAS 41.12). However, in exceptional circumstances, the cost model is used for standing timber that, at initial recognition the entity rebutted the presumption that its fair value can be measured reliably (IAS 41.30). IFRS 13 *Fair Value Measurement* specifies how to measure fair value.

How is the fair value of standing timber measured in different jurisdictions around the world?

42

42



Measuring the fair value of standing timber *Summary of observed practice in other jurisdictions*

- » **Market approach** used by 3 of 25 companies
- » **Income approach** (DCF methods) used by 21 of 25 companies
- » **Cost model** exception from fair value measurement used by 1 company
 - » The company, with natural tropical rain forest, concluded that cost represents the only option for certain areas with diverse indigenous species, where there are less well-known growth patterns and where there are no track records of reliable, quoted prices.
- » **Multiple approaches** (to measuring fair value) used by a few companies due to nature of their various standings.
 - » **Cost approach** (to measuring fair value) used by 7 of 25 companies for newly planted trees.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p11)

43

43



Measuring the fair value of standing timber: market approach *Summary of observed practice in other jurisdictions*

- » **Market approach** used by 3 of 25 companies
 - » plantations with relatively short rotation periods (typically 5-20 years) that are classified as mature when reaching a certain stage in their rotation.
 - » This type of standing timber could be sold at reliable market prices.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p11)

44

44

Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (1 of 6 slides)

Extract from Note 35 Accounting Policies to Mondi's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

"Agriculture – owned forestry assets (note 14)

Owened forestry assets are biological assets measured at fair value less costs to sell, calculated by applying the expected selling price, less costs to harvest and deliver, to the estimated volume of timber on hand at each reporting date. The fair value less costs to sell is determined **using a market-based approach**. The estimated **volume of timber** on hand is determined based on the maturity profile of the area under afforestation, the species, the geographic location, climate and other environmental considerations and excludes future growth. The product of these is then **adjusted for risks associated with forestry assets**.

Changes in fair value are recognised in the consolidated income statement within other net operating expenses. At point of harvest, the carrying value of forestry assets is transferred to inventory and recorded as a felling cost reduction to the fair value of forestry assets. Directly attributable costs incurred during the year of biological growth and investments in standing timber are capitalised and presented within cash flows from investing activities."

45

45

Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (2 of 6 slides)

Extract from Note 14 Forestry Assets to Mondi's consolidated financial statements for the year ended 31 December 2022

14 Forestry assets

€ million	2022	2021
At 1 January	348	372
Investment in forestry assets	49	45
Fair value gains/(losses)	169	(7)
Felling costs	(78)	(62)
Currency movements	(3)	-
At 31 December	485	348
Mature	309	217
Immature	176	131

46

46



Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (3 of 6 slides)

Extract from Note 14 Forestry Assets to Mondi's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

"The Group has 252,857 hectares (2021: 253,680 hectares) of owned and leased land available for forestry activities, all of which is in South Africa. 80,227 hectares (2021: 80,854 hectares) are **set aside for conservation activities and infrastructure needs**. 1,045 hectares (2021: 1,044 hectares) relate to non-core activities. The balance of 171,585 hectares (2021: 171,782 hectares) are under afforestation, which forms the basis of the valuation set out above.

Mature forestry assets are those plantations that are harvestable, while **immature** forestry assets have not yet reached that stage of growth. Timber is harvested according to a rotation plan, once trees reach maturity. The maturity period ranges from 6.5 to 14.5 years, depending on species, climate and location.

The fair value of forestry assets is a **level 3** measure in terms of the fair value measurement hierarchy, consistent with prior years. ...

47

47



Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (4 of 6 slides)

Extract from Note 14 Forestry Assets to Mondi's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

"The following assumptions have a significant impact on the valuation of the Group's forestry assets:

- » The **net selling price**, which is defined as the selling price less the costs of transport, harvesting, extraction and loading. The net selling price is **based on third-party transactions and is influenced by the species, maturity profile and location of timber**. In 2022, the net selling price used ranged from the South African rand equivalent of €14 per tonne to €47 per tonne (2021: €14 per tonne to €44 per tonne), with a weighted average of €33 per tonne (2021: €24 per tonne).
- » The **conversion factor**, which is used to convert hectares of land under afforestation to **tonnes of standing timber**, is dependent on the species, the maturity profile of the timber, the geographic location and a variety of other environmental factors, such as the anticipated impact of climate change on water scarcity and fire risks. In 2022, the conversion factors ranged from 7.9 to 23.9 (2021: 8.3 to 24.1). ...

48

48

Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (5 of 6 slides)

Extract from Note 14 Forestry Assets to Mondi's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

» “The **risk premium** on **immature timber** of 12.5% (2021: 12.9%) is based on an assessment of the risks associated with forestry assets in South Africa and is applied for the years the immature timber has left to reach maturity. A risk premium on **mature timber** of 4.0% (2021: 4.0%) was applied. The risk premium applied to immature and mature timber include factors for the **anticipated impact of climate change on water scarcity and fire risks**. An **increase in the severity and frequency of extreme weather events, such as higher temperatures, changes in rainfall patterns and drought conditions, may result in higher timber losses in future years caused by stronger winds, erosion, fires, pests and diseases**.

The valuation of the Group's forestry assets is determined in South African rand and converted to euro at the closing exchange rate on 31 December of each year.

...

49

49

Measuring the fair value of standing timber: market approach Observed practice example: Mondi Group (6 of 6 slides)

Extract from Note 14 Forestry Assets to Mondi's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

Management has performed **sensitivity analyses** of **reasonably possible changes** in the significant assumptions and the EUR/ZAR exchange rate. The sensitivity table is based on historical experience; however, the estimates may vary by greater amounts. Therefore, the Board considers the forestry assets valuation to be a significant accounting estimate. The reported value of owned forestry assets would change as follows should there be a change in these underlying assumptions on the basis that all other factors remain unchanged:

€ million	2022	2021
Effect of €5/tonne increase in net selling price	75	71
Effect of 1% increase in conversion factor (hectares to tonnes)	5	3
Effect of 1% increase in risk premium	(7)	(5)
Effect of 10% increase in EUR/ZAR exchange rate	(44)	(32)

50

50



Measuring the fair value of standing timber: income approach

Summary of observed practice in other jurisdictions

- » PwC study: income approach (DCF models) **used by most** (21 of 25 companies) for both **managed natural forests and plantations**. DCF methods used because **lack active markets for large plots of forest land**, implying no reliable quoted market prices for standing timber.
 - » However, since the PwC study evidence from **Sweden** finds the price of forest land in a number of larger forest land deals showing that the value of larger forest assets per hectare or per cubic metres of forest generally lie at the same level as for smaller or medium forest assets. Consequently, some Nordic companies (eg Sveaskog) now use market-based valuations for forest assets (land and trees). Nonetheless Sveaskog uses DCF model to measure the fair value of trees (IAS 41) with the residual forest assets under IAS 16's revaluation model.
- » PwC study: concludes **most important assumptions** used in the DCF-modelling include: (i) harvesting plans; (ii) timber prices; (iii) forestry costs; (iv) growth rates; and (iv) discount rates.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p11&12)

51

51



Measuring the fair value of standing timber: income approach

Summary of observed practice in other jurisdictions

- » PwC study: differences between preparers' modelling assumptions **could reflect economic differences**. For example, **different species, different environments** (geographic location), etc logically different.
 - » However, PwC also observe **counterintuitive differences** in modelling assumptions, **notably the basis of timber prices**.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p11&12)

52

52

Measuring the fair value of standing timber: income approach

Summary of observed practice in other jurisdictions regarding price modelling assumptions

- » Some companies base their assumptions on **current market prices** for timber.
 - » **Plantations** in regions with **faster rotation species** (except Chilean companies), there appears to be less of a need for adjusted price assumptions, as current timber prices are considered sufficiently reliable for modelling fair values.
- » Others companies use **adjusted current market prices** to **smooth out short-term volatility** in the market prices for logs.
 - » Nordic regions, mainly **natural forests**, have considerably **longer growth cycles**
- » Disclosures about timber prices modelling assumptions are **generally inadequate**.
 - » Some companies make extensive disclosures, which supports transparency in the financial statements.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p12)

53

53

Measuring the fair value of standing timber: income approach

Observed practice example: Sveaskog 2022 Annual Financial Statements (p67) (emphasis added) (1 of 4 slides)

Note 1 Accounting policies ... Judgements and estimates in the financial statements (emphasis added)

"In order to calculate the fair value of the biological asset, standing timber, the **estimated cash flow from future revenue from timber extractions less felling costs has been discounted to a present value**. ...

One production cycle for standing timber is estimated by Sveaskog to amount to an average of 100 years in northern Sweden and 80 years in southern Sweden. **Cash flows are calculated on the basis of felling volumes** according to Sveaskog's current felling plan and assessment of future price and cost development. **Prices are based on a rolling ten-year average (2013–2022)**. Regarding the **cost development, the current normal cost is applied**, i.e. an average of the previous year's cost as well as the cost for the year and the next year's budget. The inflation assumptions in the model are based on estimated future development during the valuation period. Cash flow before tax is **discounted at an interest rate of 4.5 per cent (4.5)**. Sveaskog's Board of Directors assesses that this interest rate **corresponds to the long-term cost of capital for an investment in forest assets** and that is not affected by short-term fluctuations in market rates. According to current felling estimates, which date from 2022 and are based on a forest optimisation model, felling will amount to approximately 5.1 million m³sub per year (6.3). This level is estimated to **increase steadily until 2033, to then remain at a level of approximately 6.8 million m³sub until 2037**. The level is **then estimated to decrease slightly to approximately 6.3 million m³sub (7.2–7.9)**. In 2022, approximately 53 per cent (54) of Sveaskog's own forest volume was sold as **sawlogs to sawmills** and 43 per cent (42) comprised **pulpwood** which was sold to the pulp and paper industry. **Other volumes consisted of, for example, biofuel in the form of rejected branches and treetops, which are primarily used as fuel wood; this volume is not included in the valuation.** ...

54

54

Measuring the fair value of standing timber: income approach
Observed practice example: Sveaskog 2022 Annual Financial Statements
 (p82) (emphasis added) (2 of 4 slides)

Note 14 Total forest assets – Biological assets and forest land ... Biological assets model assumptions (emphasis added)

“Revenue (timber prices) is based on prices from a ten-year average (2013–2022) and thereafter on estimated development during the valuation period with a nominal price increase of 2.0 per cent (1.75) per year. This estimated development is adjusted when the company forecasts a different development in their long-term plans.

For the production costs (felling costs), a current normal cost is applied that corresponds to the average of three years (outcome for the current year, the previous year and the budget for the coming year). These costs are based on an estimated development during the valuation period of 2.0 per cent (2.0) per year.

Sveaskog has set aside areas of productive forest land as nature conservation areas. These areas are not included in the value of forest assets.”

55

55

Measuring the fair value of standing timber: income approach
Observed practice example: Sveaskog 2022 Annual Financial Statements
 (p82) (3 of 4 slides)

Note 14 Total forest assets – Biological assets and forest land ...

Summary model assumptions – Forest assets – biological assets and forest land

Summary of model assumptions ¹	2022	2021
Valuation price per cubic metre of forest in SEK	5-year average	5-year average
Timber stocks per million cubic metres of forest	Forest registers as of October 2022	Forest registers as of October 2021
Discount rate	4.50%	4.50%
Revenue	10-year average	10-year average
Nominal price increase	2.00% per year	1.75% per year
Costs	Normal cost ¹	Normal cost ¹
Nominal cost increase	2.00% per year	2.00% per year

1) Normal cost = outcome for the current year and the previous year as well as budget for the coming year.

56

56

Measuring the fair value of standing timber: income approach

Observed practice example: Sveaskog 2022 Annual Financial Statements (p82) (emphasis added) (4 of 4 slides)

Note 14 Total forest assets – Biological assets and forest land ... Sensitivity analysis based on key measurement parameters and their impact on Sveaskog's forest assets (emphasis added)

TOTAL FOREST ASSETS

Valuation price per cubic metre of forest in SEK A reduction in the market value of SEK 5 per cubic metre of forest lowers the value of forest assets by approximately MSEK 1,300 (1,300). An increase in the market value of SEK 5 per cubic metre of forest increases the value of forest assets by approximately MSEK 1,300 (1,300).

Timber stocks per million cubic metres of forest A reduction in timber stocks of 5 million cubic metres of forest lowers the value of forest assets by approx. MSEK 1,700 (1,600). An increase in timber stocks of 5 million cubic metres of forest raises the value of forest assets by approx. MSEK 1,700 (1,600).

BIOLOGICAL ASSET

Discount rate A decrease in the discount rate by 0.5 percentage points will increase the value of the biological asset by approx. MSEK 8,500 (7,400). An increase in the discount rate by 0.5 percentage points will reduce the value of the biological asset by approx. MSEK 6,800 (5,900)

Revenue (timber prices) A decrease in the annual price increase by 0.5 percentage points will reduce the value of the biological asset by MSEK 13,700 (12,700). An increase in the annual price increase by 0.5 percentage points will increase the value of the biological asset by approx. MSEK 17,200 (15,700).

Expenses (felling, forest management, road and joint costs) An increase in the annual cost increase by 0.5 percentage points will reduce the value of the biological asset by approx. MSEK 8,900 (8,400). A decrease in the annual price increase by 0.5 percentage points will increase the value of the biological asset by approx. MSEK 7,100 (6,700).

57

57

Measuring the fair value of standing timber: cost approach

Summary of observed practice in other jurisdictions, and observed practice example: Smurfit Kappa's 2022 financial statements

Cost approach used by 7 of 25 companies in PwC study to measure the fair value of newly planted trees.

Source: PwC, *Forest Industry: Application Review of IAS 41, Agriculture: The Fair Value of Standing Timber*, 2011, (p11)

Extract from Note 16 Biological Assets to Smurfit Kappa's consolidated financial statements for the year ended 31 December 2022 (emphasis added)

The age threshold for young pine plantations is 96 months and for young eucalyptus plantations is 48 months. As young plantations are not available to sell or harvest, the cost approach is used to measure their fair value. The cost approach is based on the published index by the Colombian government which details the cost of establishing and maintaining a hectare for each species across various age brackets. The number of hectares planted is recorded in the Group's Forestry Information System. ...

58

58



Issue 2: measuring the fair value of unharvested sugar cane

59



Measuring the fair value of unharvested sugar cane *What do you think?*

It is observed practice that sugar cane roots are accounted for as bearer plants. Nonetheless, standing sugar cane attached to roots in the scope of IAS 41 *Agriculture* (IAS 41.5C) and must be measured at fair value less costs to sell (IAS 41.12).

IFRS 13 *Fair Value Measurement* specifies how to measure fair value.

How is the fair value of standing seasonal crops attached to bearer plants measured in different jurisdictions around the world?

60

60



**Measuring the fair value less costs to sell of unharvested sugar cane:
market approach**
Observed practice example 2: Crookes Brothers Limited (1 of 4 slides)

**Notes to the 31 March 2021 Annual Financial Statements
(emphasis added)**

“3. SIGNIFICANT ACCOUNTING POLICIES

3.13 Biological assets

The Group’s biological assets comprise growing crops in the form of sugarcane, deciduous fruit, bananas and macadamias.

Biological assets are measured on initial recognition and at the end of each reporting period at fair value, determined as at 31 March, based on **current estimated market prices for the following season**, less the **estimated costs of harvesting, transport, packing and point-of-sale costs.**” (p25)

61

61



**Measuring the fair value less costs to sell of unharvested sugar cane:
market approach**
Observed practice example 2: Crookes Brothers Limited (2 of 4 slides)

Notes to the 31 March 2021 Annual Financial Statements (emphasis added)

“4. Judgements made by management and key sources of estimation uncertainty

4.10 Fair value measurements and the valuation process over biological assets

The Group’s biological assets are held at fair value. Under the supervision and review of the Chief Financial Officer, an experienced and qualified team of management accountants determine the appropriate valuation techniques and inputs used to arrive at the fair value of biological assets. In estimating the fair value of the biological assets, the Group uses **market-observable data to the extent it is available**. Where Level 1 inputs are not available, the Group engages suitable leaders in the agricultural industry, which includes the South African Cane Growers Association and the Group’s co-ops Two-a-Day, Lebombo Growers (Pty) Ltd and macadamia customers, **to establish the appropriate valuation techniques** and prices. Refer to **note 23.2** for the valuation inputs applied in determining the fair value of biological assets at the end of the reporting period and note 38 for the fair value hierarchy of the Group’s biological assets.” (p28)

62

62

Measuring the fair value less costs to sell of unharvested sugar cane: market approach

Observed practice example 2: Crookes Brothers Limited (3 of 4 slides)

	Group	
	2021 R'000	2020 R'000
23. Biological assets continued		
23.2 Biological asset valuations		
The following key assumptions have been used in determining the fair value of biological assets:		
Sugar cane		
Expected area to harvest after 31 March		
– South Africa (ha)	3 517	3 704
– Eswatini (ha)	2 375	2 414
– Zambia (ha)	393	426
Total area (ha)	6 285	6 544
Estimated yields		
– South Africa (tons/ha)	98.3	103.9
– Eswatini (tons/ha)	105.4	106.1
– Zambia (tons/ha)	135.5	127.7
Weighted average	103.3	106.3
Average maturity of cane at 31 March		
– South Africa (%)	64	64
– Eswatini (%)	64	64
– Zambia (%)	64	64
Estimated RV price per ton – South Africa (Rands)	5 119	4 479
Estimated sucrose price per ton – Eswatini (Rands)	4 400	3 716
Estimated ERC price per ton – Zambia (Rands)	4 093	3 923

63

63

Measuring the fair value less costs to sell of unharvested sugar cane: market approach

Observed practice example 2: Crookes Brothers Limited (4 of 4 slides)

Note 38 Fair value measurements ... (p69)

	Level 1 R'000	Level 2 R'000	Level 3 R'000	Total R'000
2021				
Investment property	–	67 152	–	67 152
Financial assets	–	–	4 626	4 626
Biological assets	–	–	286 509	286 509
	–	67 152	291 135	358 287
2020				
Investment property	–	41 782	–	41 782
Financial assets	–	–	4 582	4 582
Biological assets	–	–	245 511	245 511
	–	41 782	250 093	291 875

The above assets are measured at fair value on a recurring basis. There have been no material transfers between level 1 and 2 of any financial assets in the current financial reporting period. The fair values of other financial assets under IFRS 9 are not readily determinable, therefore the Directors have measured these investments at cost, which they assess to be the closest approximation of fair value.

64

64

Measuring the fair value less costs to sell of unharvested sugar cane: market approach

Observed practice example 2: Zambia Sugar plc (1 of 2 slides)

16. GROWING CANE

	Group		Company	
	AUGUST		AUGUST	
	2021	2020	2021	2020
	K'000	K'000	K'000	K'000
The carrying value of growing cane is reconciled as follows:				
Carrying value at beginning of year	384 444	336 745	318 495	283 414
Change in fair value	121 814	47 699	108 208	35 081
Carrying value at end of year	506 258	384 444	426 703	318 495

The fair value of the growing cane is determined using inputs that are unobservable, using the best information available in the circumstances and therefore fall into the level 3 fair value category (see note 2.2.15).

The following are the key assumptions in the valuation of growing cane:

Expected area to harvest (hectares)	16 584	17 167	13 880	14 435
Estimated yield (tonnes cane per hectare)	115.70	108.50	114.70	105.90
Sucrose content in cane (%)	14.36%	14.45%	14.36%	14.45%
Average maturity of cane at 31 March (%)	65.70%	65.70%	65.70%	65.70%

A 1% change in the unobservable inputs could increase or decrease the fair value of the standing cane by the following values:

Estimated sucrose content (tonnes)	275 391	269 148	228 521	220 952
Estimated sucrose price (K/tonne)	5 077	3 906	5 077	3 906

65

65

Measuring the fair value less costs to sell of unharvested sugar cane: market approach

Observed practice example 2: Zambia Sugar plc (2 of 2 slides)

Key Audit Matter (emphasis added)

"The Company carries its growing cane at fair value in accordance with IAS-41, Agriculture. The growing cane valuation is based on the **estimated sucrose content** (adjusted for the Company's long-term view of the average **maturity of the cane**) and the **estimated sucrose price for the following season**, less the **estimated costs for harvesting and transport**. There is **significant management judgement** in the estimation of the **sucrose content and price**, **expected cane yield** and **average maturity** of the growing cane. As at 31 August 2021, the fair value of growing cane was estimated at K506 million.

We considered this as a key audit matter as the determination of the fair value involves significant judgement and estimates. A management expert was utilised in the determination of yield and sucrose content values that will be extracted from the area under cane.

The Company's disclosures about significant judgements and estimates related to fair value of growing cane are included in Note 16 which details the assumptions and key inputs used by management." (p69)

66

66



Issue 3: measuring the fair value of standing annual crops

67



Measuring the fair value of standing annual crops *What do you think?*


Standing annual crops (for example, maize and wheat) in the scope of IAS 41 *Agriculture* (IAS 41.5A(c)) must be measured at fair value less costs to sell (IAS 41.12).

IFRS 13 *Fair Value Measurement* specifies how to measure fair value.

How is the fair value of standing annual crops measured in practice?

68

68



Measuring the fair value of standing annual crops: income approach.
Observed practice example: MHP Agro & Industrial Holdings 2022
Annual Financial Statements (1 of 3 slides)


Extract from note 2. Summary of Significant Accounting Policies

“(iv) Crops in fields

The fair value of crops in fields is determined by reference to the cash flows that will be obtained from sales of harvested crops, with an allowance for costs to be incurred and risks to be faced during the remaining transformation process.”

69

69



Measuring the fair value of standing annual crops: income approach.
Observed practice example: MHP Agro & Industrial Holdings 2022
Annual Financial Statements (2 of 3 slides)

Extract from note 4. Critical Accounting Judgments and Key Sources of Estimation Uncertainty

“Fair value less costs to sell of biological assets and agricultural produce

Biological assets are recorded at fair values less costs to sell. The Group estimates the fair values of biological assets based on the following key assumptions: ...

- Expected crops output;
- Estimated changes in future sales prices;
- Projected production costs and costs to sell; and,
- Discount rate.

During the year ended 31 December 2022 the fair value of biological assets was estimated using discount factors of 25.0% and 42.7% (31 December 2021: 11.2% and 11.5%) for non-current and current assets, respectively. Although some of these assumptions are obtained from published market data, the majority of these assumptions are estimated based on the Group’s historical and projected results (Note 19). In determining fair value measurement, the impact of potential climate-related matters, including legislation, climate change, and company climate objectives which may affect the fair value measurement of biological assets and agricultural produce has been considered. At present, the impact of climate-related matters is not material to the Group’s financial statements.”

70

70

Measuring the fair value of standing annual crops: income approach. Observed practice example: MHP Agro & Industrial Holdings 2022 Annual Financial Statements (3 of 3 slides)

19. BIOLOGICAL ASSETS (continued)

Biological assets of the Group are measured at fair value within Level 3 of the fair value hierarchy, except for cattle and pigs that can be measured based on market prices of livestock of a similar age, breed and genetic merit, and which are therefore measured at fair value within Level 2 of the fair value hierarchy. There were no transfers between any levels during the year.

The following unobservable inputs were used to measure biological assets:

DESCRIPTION	VALUATION TECHNIQUE	SIGNIFICANT UNOBSERVABLE INPUTS	RELATIONSHIP OF UNOBSERVABLE INPUTS TO FAIR VALUE	RANGE OF UNOBSERVABLE INPUTS (AVERAGE)	SENSITIVITY OF THE INPUT TO FAIR VALUE INCREASE / (DECREASE) USD THOUSAND	
					INPUT 5% HIGHER	INPUT 5% LOWER
Crops in fields	DCF method	Crops yield - tonnes per hectare	The higher the crops yield, the higher the fair value	2022: 3.6 – 7.2 (5.4) 2021: 3.0 – 5.5 (4.5)	4,384	(4,384)
		Crops price – per tonne	The higher the market price, the higher the fair value	2022: USD 157 – 498 (328) 2021: USD 255 – 617 (403)	4,384	(4,384)
		Discount rate	The higher the discount rate, the lower the fair value	2022: 42.7% 2021: 15.4%	(207)	212

71

71



Issue 4: measuring point-of-harvest fair value less costs to sell of produce

72

Measuring point-of-harvest fair value less costs to sell of produce

What do you think?

“Agricultural produce harvested from an entity’s biological assets shall be measured at its fair value less costs to sell at the point of harvest. Such measurement is the cost at that date when applying IAS 2 *Inventories* or another applicable Standard.” (IAS 41.13).

IFRS 13 *Fair Value Measurement* specifies how to measure fair value.

How is the point-of-harvest fair value less costs to sell of produce measured in practice?

73

73

Measuring point-of-harvest fair value less costs to sell of produce: market approach. *Observed practice example: MHP Agro & Industrial Holdings 2022 Annual Financial Statements*

21. AGRICULTURAL PRODUCE

The balances of agricultural produce were as follows as of 31 December 2022 and 2021:

SEGMENT	2022		2021	
	THOUSAND TONNES	CARRYING AMOUNT	THOUSAND TONNES	CARRYING AMOUNT
Grain	1,050	224,550	1,201	372,343
Chicken meat	70.6	127,908	72.3	128,757
Other various crops		8,967		9,181
Other various meat		2		986
		361,427		511,267

The fair value of Agricultural produce was estimated based on market price as of date of harvest and is within Level 2 of the fair value hierarchy.

As of 31 December 2022, agricultural produce in amount of USD 38,260 thousand was pledged as collateral to secure bank borrowings (2021: USD 38,188 thousand).

74

74

