30 Cannon Street, London EC4M 6XH, United Kingdom
Tel: +44 (0)20 7246 6410   Fax: +44 (0)20 7246 6411
Email: iasb@iasb.org   Website: www.iasb.org

International Accounting Standards Board

INFORMATION FOR OBSERVERS

Board Meeting:	**16 October 2006, London**
Project:	**Extractive Activities research project**
Subject:	**Identifying the unit of account for the fair value measurement of reserves and resources (Agenda Paper 4B)**

Purpose

1. This paper discusses alternative units of account that could be applied for the recognition and measurement in financial statements of an asset comprising minerals or oil & gas reserves and resources if these reserves and resources are measured at fair value.

2. This paper does not discuss unit of account in the context of historical cost accounting models. Although identifying the unit of account is necessary regardless of whether a historical cost or fair value measurement model is to be applied, the analysis of possible units of account may differ depending on the measurement model chosen. At a subsequent Board meeting, the research project team intends to discuss units of account that could be applied to reserves and resources measured at historical cost.

Context

3. A significant issue in accounting for reserves and resources is the identification of the unit of account for the recognition and measurement of a minerals or oil & gas reserve and resource asset. The unit of account determines the level of

detail/aggregation at which assets are recorded. This can affect both initial recognition and measurement, subsequent measurement and derecognition as well as presentation in the financial statements. Understanding the unit of account that would be used if reserves and resources were measured at fair value is therefore important in assessing the suitability of fair value for the measurement of reserves and resources.

4. The unit of account for reserves and resources may be considered in two different ways – being the types of assets included in the unit of account or the geographic boundaries of the unit of account. The geographic boundaries issue is exemplified by the full cost *vs* successful efforts dichotomy in current oil & gas accounting. Under full cost accounting rules, the unit of account is usually all properties within a country, while under successful efforts accounting, the unit of account is at an individual mine or field level. While this difference can have a significant impact under historical cost, in concept there should be no difference if the properties are measured at fair value – the fair value of the whole will equal the sum of the fair values of the separate properties.[1] The focus of this paper is on defining the unit of account in terms of the types of assets included in it – specifically whether the unit of account should include only reserves and resources or also other assets that are associated with the reserves and resources. These other assets are described in paragraphs 12-13.

5. In considering the unit of account that should apply to reserves and resources, this paper assumes that reserves and resources are capable of satisfying the definition and recognition criteria for an asset under the IASB's existing *Framework for the Preparation and Presentation of Financial Statements* and under the proposed revisions to the *Framework* that are currently being considered by the Board and the FASB. The application of the asset definition and recognition criteria to reserves and resources is to be addressed in a separate, but related, research topic that will focus on, among other things, identifying the point of initial recognition of the reserves and resources asset.

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[1] This might not be true if there are synergies between separate properties – but then synergies would indicate that these properties are not really separate. See the later discussion on determining the cash-generating unit.

Relationship of this paper within the agenda paper package

6. The primary purpose of this agenda paper package is to consider *if* minerals and oil & gas reserves and resources should be measured at fair value for either balance sheet measurement or note disclosure purposes. This question is addressed in Agenda Paper 4D. In making this assessment of fair value as a measurement or disclosure objective for reserves and resources, it is also necessary to:

   (a) identify which valuation techniques would be used to estimate the fair value of reserves and resources – this was addressed in Agenda Paper 4A, which concluded that the technique that is usually used to estimate the value of reserves and resources is the income approach;

   (b) identify the unit of account for the fair value measurement of reserves and resources – this is addressed in this paper; and

   (c) consider how the FAS 157 fair value hierarchy would apply to an estimate of the fair value of reserves and resources (noting that the IASB has a project that is proposing to introduce FAS 157 fair value measurement thinking into IFRSs).

7. Agenda Papers 4E and 4F follow on from this assessment of the suitability of fair value measurement of reserves and resources by briefly looking at:

   (a) the previous conclusions reached by standard-setters in relation to the fair value measurement of oil & gas reserves and other non-financial assets – refer Agenda Paper 4E; and

   (b) possible alternatives to the fair value measurement of reserves and resources that could be explored further by the research project – refer Agenda Paper 4F.

Outline of paper

8. This paper is structured as follows:

   (a) paragraphs 9-11 identify guidance in the IASB *Framework* and IFRSs that may be useful for selecting a unit of account for reserves and resources;

   (b) paragraphs 12-14 describe the general characteristics of a minerals or oil & gas property;

(c) paragraphs 15-23 describe current practice in valuing reserves and resources for financial reporting purposes;

(d) paragraphs 24-44 discuss alternative units of account that could be applied for the recognition and fair value measurement of an asset comprising minerals or oil & gas reserves and resources; and

(e) paragraphs 45-63 present the research project team's view regarding which unit of account for reserves and resources is considered most appropriate for fair value measurement.

Guidance on identifying the unit of account

9. The *Framework* and IFRSs provide guidance that can assist with the identification and selection of the unit of account for reserves and resources.

10. The existing *Framework* states, at paragraph 82, that "Recognition is the process of incorporating in the balance sheet or income statement an item that meets the definition of an element…". An item that does not meet the definition of an element should therefore not be recognised in financial statements. The *Framework* does not provide any specific guidance for identifying what is the 'item' that should be recognised on the balance sheet. Since the unit of account is a significant input to financial reporting, the research project team considers that the qualitative characteristics of decision-useful financial reporting information provide appropriate criteria in making a decision on the appropriate unit of account. The IASB's July 2006 Discussion Paper *Preliminary Views on an improved Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics of Decision useful Financial Reporting Information* defines these qualitative characteristics as:

(a) relevance – in other words, the unit of account should reflect the level of aggregation or disaggregation of items that provides information that is capable of making a difference in the decisions of users;

(b) faithful representation – in other words, the unit of account should faithfully depict real-world economic phenomena and, therefore, the measurement of these phenomena should be performed at the level that provides information that is verifiable, neutral and complete;

(c) comparability – in other words, the unit of account should enable users to identify similarities in and differences between sets of economic phenomena; and

(d) understandability – in other words, the unit of account should present information at a level that can be comprehended by competent and diligent users (i.e. users with a reasonable knowledge of business, economic activities, and financial reporting, and who study the information with reasonable diligence).

11. Various IFRSs provide standards-level guidance on unit of account selection. A summary of this guidance is included in the Appendix to this working paper. Although this guidance is specific to each IFRS, the research project team has reviewed the guidance and identified the following core principles that may influence the selection of a unit of account for reserves and resources:

(a) the unit of account should include items that are integral to and are not separable[2] from the reserves and resources;

(b) if an item's cash flows are not largely independent of the cash flows of the reserves and resources, this is a strong indicator that the item is integral to the reserves and resources;

(c) separate units of account are required when the subsequent accounting is different; and

(d) judgement is required to identify the unit of account.

General characteristics of a minerals or oil & gas property

12. A minerals or oil & gas property comprises an entity's interest (as determined by the legal rights it holds) in the deposit or deposits located on that property.[3] The property may contain:

(a) developed reserves;

(b) undeveloped reserves and resources; and/or

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2 The research project team notes that, at least for the purposes of IAS 38 *Intangible Assets*, 'separable' means "capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, asset or liability" (refer IAS 38.12(a)).

3 The IASC Issues Paper *Extractive Industries: An Issues Paper issued for comment by the IASC Steering Committee on Extractive Industries* of November 2000 defines a 'property' as "an area covered by a legal contract giving mineral rights to the party named in the contract" (page 373).

(c) exploration potential.

13. To the extent the property is developed or in development, the property may also include:

(a) development works to be able to access the reserve and resource – which, in general terms, may be described as a betterment of the reserve and resource as a result of completing work such as:

(i) for minerals properties: sinking shafts and underground drifts, making permanent excavations, building roads and tunnels, and removing overburden and waste rock in order to gain access to and be able to produce the reserve and resource; and

(ii) for oil & gas properties: gaining access to and preparing a well location for drilling, constructing platforms or preparing drill sites from which to drill wells, and drilling wells to gain access to and to be able produce the reserve and resource;

(b) infrastructure (such as equipment, machinery and facilities) used to extract, store, treat and transport the minerals and oil & gas.

14. In addition, an entity may have separate properties that are not located adjacent to each other but are interdependent because they share some infrastructure. For instance, an entity may have two mines on separate properties that share a treatment plant.

Unit of account – current valuation practice for financial reporting purposes

15. Determination of the current value of reserves and resources in current financial reporting practice is generally limited to:

(a) impairment testing and business combination accounting; and

(b) supplementary disclosures, such as the standardised measure of proved oil & gas reserves required by FAS 69 *Disclosures about Oil and Gas Producing Activities*.

16. Guidance on the selection of unit of account for impairment testing is provided in IAS 36 *Impairment of Assets*, which uses the concept of a cash-generating unit (CGU), and, for the standardised measure disclosures, it is provided in FAS 69 and also in Canadian securities regulations.

Impairment testing

17. In testing assets comprising minerals and oil & gas reserves and resources for impairment, the CGU is usually identified as the minerals or oil & gas property.[4] This is the smallest group of assets that generates cash inflows that are largely independent of cash inflows from other assets, in accordance with the definition of a CGU in IAS 36.

18. The PricewaterhouseCoopers publication *Real Time* – Delivering International Financial Reporting Standards in the Oil and Gas and Utilities Industries* observes, at page 11, that:

> A CGU in a petroleum upstream entity will often be identified as a field and its supporting infrastructure assets. Production, and therefore cash flows, can be associated with individual wells. The field investment decision is made based on expected field production, not a single well, and all wells are dependent on the field infrastructure.

Business combination accounting

19. In accordance with IFRS 3 *Business Combinations*, the acquirer recognises an acquiree's identifiable assets at their fair values (provided the assets satisfy the recognition criteria). Consequently, acquired assets that contain minerals and oil & gas reserves and resources will be measured at fair value. IFRS 3 does not include any specific guidance to identify the unit of account, but the research project team understands that general practice is to recognise a minerals or oil & gas property as an asset.

Standardised measure disclosures

20. FAS 69 requires oil & gas entities to prepare a standardised measure of the discounted future net cash flows relating to their proved oil & gas reserves.[5] The standardised inputs to that calculation include the use of year-end oil & gas prices, year-end costs and a 10% discount rate. While this is not a fair value, it is cash flow based and thus similar in its mechanics to the income approach to fair value measurement. The cash flows included in the standardised measure are, as outlined in FAS 69.30:

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4 Woodside Petroleum's 2005 financial report (which was prepared in accordance with Australian equivalents to IFRS) states that "Generally, the Group evaluates its oil and gas properties on a field-by-field basis" (page 9).

5 Being the proved oil & gas reserves as defined by the SEC Regulation S-X, Rule 4-10 *Financial accounting and reporting for oil and gas producing activities pursuant to the Federal Securities Laws and the Energy Policy and Conservation Act of 1975*

(a) future cash inflows “computed by applying year-end prices of oil and gas relating to the [entity’s] proved reserves to the year-end quantities of those reserves”; less

(b) future development and production costs “computed by estimating the expenditures to be incurred in developing and producing the proved oil and gas reserves at the end of the year, based on year-end costs and assuming continuation of existing economic conditions”; less

(c) future income tax expenses.

21. A similar disclosure requirement that is supplemental to the financial report has recently been introduced in Canada where National Instrument 51-101 *Standards of Disclosure for Oil and Gas Activities* (26 September 2003) requires the disclosure of future net revenue relating to oil & gas reserves, assuming current prices and assuming forecast prices. The disclosure requirement pertaining to future net revenue based on forecast prices is as follows:

> 2. Net Present Value of Future Net Revenue (Forecast Case) – Disclose, by country and in the aggregate, the net present value of future net revenue attributable to the reserves categories referred to in section 1 of this Item, estimated using forecast prices and costs, before and after deducting future income tax expenses, calculated without discount and using discount rates of 5 percent, 10 percent, 15 percent and 20 percent.
>
> 3. Additional Information Concerning Future Net Revenue (Forecast Case)
>
> (a) This section 3 applies to future net revenue attributable to each of the following reserves categories estimated using forecast prices and costs:
>
> (i) proved reserves (in total);
>
> (ii) proved plus probable reserves (in total); and
>
> (iii) if paragraph 1(g) of this Item applies, proved plus probable plus possible reserves (in total).
>
> (b) Disclose, by country and in the aggregate, the following elements of future net revenue estimated using forecast prices and costs and calculated without discount:
>
> (i) revenue;
>
> (ii) royalties;
>
> (iii) operating costs;
>
> (iv) development costs;
>
> (v) abandonment and reclamation costs;
>
> (vi) future net revenue before deducting future income tax expenses;
>
> (vii) future income tax expenses; and
>
> (viii) future net revenue after deducting future income tax expenses.

(c) Disclose, by production group, the net present value of future net revenue (before deducting future income tax expenses) estimated using forecast prices and costs and calculated using a discount rate of 10 percent.

22. The FAS 69 and NI 51-101 requirements to measure oil & gas reserves are not just related to measuring the cash inflows related to the reserves. The measure includes all the cash flows from oil & gas properties and therefore includes cash flows relating to all the assets comprising the oil & gas properties (including not only reserves but also development works and infrastructure assets).

Summary

23. Existing practice in valuing reserves and resources for financial reporting purposes appears to be based on a unit of account that includes the deposit and the associated development works and infrastructure assets (i.e. the unit of account is usually the minerals or oil & gas property, which is also usually the CGU).

Alternative units of account for reserves and resources

24. Consistent with existing practice in valuing reserves and resources for financial reporting purposes, the research project team has identified the CGU as the 'base case' for the unit of account. However, as the purpose of the research project is to take a fresh look at the financial reporting of minerals and oil & gas reserves and resources, this paper also examines the application of other possible units of account.

25. The units of account being considered are as follows.

(a) Base Case – This unit of account is the CGU.

(b) Alternative Case 1 – This unit of account is defined as the CGU *less* those infrastructure assets (e.g. plant and equipment) that are capable of being separated from a property's reserves and resources. Therefore, any infrastructure used to access or produce the deposit and that is capable of being separated from the reserves and resources and the development works is treated as a separate asset.

(c) Alternative Case 2 – This unit of account is the reserves and resources associated with a specific property. Therefore, any development works and infrastructure used to access or produce the deposit are treated as separate assets.

Base Case – the CGU

26. The unit of account under the Base Case is the CGU, as determined in accordance with IAS 36 principles. As mentioned earlier in the paper, this is the smallest group of assets that generates cash inflows that are largely independent of cash inflows from other assets. Identifying the CGU that includes minerals or oil & gas reserves and resources depends on the facts and circumstances of each case, and therefore requires judgement.

27. In practice, the research project team understands that the CGU is usually the individual minerals or oil & gas property; that is, it includes the reserves and resources associated with a specific property *plus* any development works to access the deposit *plus* any infrastructure used to produce the deposit. In other words, assets that are integral to the property's reserves and resources would be expected to be included in this unit of account. Depending on the facts and circumstances, the CGU may comprise more than one property (e.g. because an infrastructure asset is shared) or there may be more than one CGU associated with the property (e.g. if a mine and a treatment plant are located on the same property and the treatment plant also processes ore from other mines on commercial terms).

Estimating fair value for the Base Case unit of account

28. In relation to estimating fair value, the research project team considers that the use of the income approach and the identification of the unit of account as the CGU are related. In broad terms, the income approach works by discounting streams of cash flow and therefore can only value units of account that generate or are expected to generate independent cash flows. In the case of minerals or oil & gas reserves and resources, it is the property – rather than the individual assets such as the reserves and resources, development works and infrastructure – that generates the independent cash flows. Consequently, the income approach cannot be applied to a lower unit of account that seeks to value the reserves and resources exclusive of either development works or infrastructure assets, where those assets do not generate or are not expected to generate independent cash flows.[6]

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[6] Whether a fair value can be obtained at a lower unit of account by using the income approach in conjunction with other valuation techniques is discussed under Alternative Case 1.

Implications

29. Identifying the CGU as the unit of account means that all assets and liabilities in the CGU would be measured at a single fair value amount, computed from the set of cash flows that relate to all the assets and liabilities in the CGU. This has the following implications:

    (a) individual assets and liabilities within the CGU would not be reported separately in the financial statements, and as a result the unit of account would override the requirements – including the measurement objective – of the accounting standards that may otherwise apply to the individual assets and liabilities; and

    (b) the CGU will reduce the information that is available for individual assets that make up the property. For instance, an increasing commodity price might counter the effect of plant and equipment that is depreciating at a faster than anticipated rate. If the plant and equipment were separately recognised, that impairment of the plant and equipment would be observable in the change in its carrying amount.

30. Future cash flows associated with the development and production of reserves and resources may include, among other things, future cash inflows relating to inventories and receivables and future cash outflows relating to asset retirement obligations and employee benefit obligations. Each of these items are associated with the development and production of reserves and resources, but are also items within the scopes of other accounting standards – IAS 2 *Inventories*, IAS 18 *Revenue*, IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* and IAS 19 *Employee Benefits* respectively. Future cash inflows associated with inventories and receivables would not be expected to be part of the CGU as they would generate independent cash flows.[7] However, other assets and liabilities will be included in the fair value of the CGU, which means that to avoid double counting either those items cannot be recognised in accordance with the accounting standards that would otherwise be relevant or the scope of the CGU must be modified to 'back out' the items. Consequently, the research project team considers that some modifications to the CGU may be

[7] IAS 36.43(a) notes that financial assets such as receivables are an example of an asset that would generate cash inflows that are largely independent of the cash flows of the asset under review.

necessary for it to be a suitable unit of account for balance sheet recognition and measurement purposes.

31. IAS 36 provides guidance to avoid double counting. In determining value in use, IAS 36.43 says that estimates of future cash flows do not include cash inflows from other assets that generate largely independent cash inflows and cash outflows that relate to obligations that have been recognised as liabilities.[8] The research project team considers that this approach sets a precedent that should be followed if a decision is made that fair value should be the measurement objective for reserves and resources and the CGU is to be the unit of account. Furthermore, defining a unit of account that overrides the application of generally applicable accounting standards would effectively create an industry-specific accounting standard, and this would be inconsistent with the Board's policy of setting transaction-based accounting standards. However, an implication of 'backing out' items from the CGU is that it may increase preparation costs. One Advisory Panel member suggested that subjecting those items to a different recognition and measurement basis than would apply to the CGU would increase the compliance cost burden over and above that for measuring the CGU at fair value.

32. Whether or not development works and infrastructure assets included in the CGU should be capable of separate recognition is dealt with by the alternative units of account presented in this paper. The Base Case unit of account assumes that the development and infrastructure assets will not be separately recognised, and therefore IAS 16 *Property, Plant and Equipment* will not apply to those items. Alternative Cases 1 and 2, as explained further below, require the separate recognition of some or all infrastructure and development assets, in which case IAS 16 will presumably apply to those items.

8 IAS 36.78 acknowledges that sometimes it may be necessary to consider recognised liabilities when determining the recoverable amount of a cash-generating unit. This does not mean that, contrary to IAS 36.43, value in use should sometimes be estimated to include liabilities. Rather, it is understood to mean that sometimes fair value less costs to sell can only be estimated for the asset and related liability (see IAS 36.29 and also the example following IAS 36.78, which is about a mine and a mine restoration liability), and that as a consequence, to determine the recoverable amount (i.e. the higher of fair value less costs to sell and value in use), the value in use calculation has to be adjusted to include the affect of assuming the liability. IAS 36.78 states that "To perform a meaningful comparison between the carrying amount of the cash-generating unit and its recoverable amount, the carrying amount of the liability is deducted in determining both the cash-generating unit's value in use and its carrying amount".

CGU or the property as the unit of account

33. Even though the CGU will often be an individual minerals or oil & gas property, the research project team considers the CGU – rather than the property – to represent the Base Case unit of account. This is because the CGU concept is defined according to a principle (i.e. lowest aggregation of assets that generate largely independent cash flows) whereas the property is defined according to the legal rights attached to specific areas irrespective of whether that property, or alternatively, individual assets within that property are capable of generating independent cash flows. As a result, defining the unit of account as the CGU means that the:

    (a) income approach could always be applied to estimate the fair value of the unit of account; and

    (b) unit of account would be the same for initial recognition and for subsequent impairment testing. In contrast, if the property were defined as the unit of account, it is possible that, in some circumstances, a property may contain more than one CGU, in which case the unit of account for initial recognition would be larger than the unit of account that would otherwise apply for subsequent impairment testing in accordance with IAS 36.

Alternative Case 1

34. Alternative Case 1 defines the unit of account as the CGU, as determined in accordance with IAS 36 principles, *less* those infrastructure assets (e.g. plant and equipment) that are capable of being separated from a property's reserves and resources. In other words, the unit of account represents the aggregation of reserves and resources *plus* development works to access the deposit *plus* those infrastructure assets that are not capable of being separated from the reserves and resources. The difference between the units of account under Alternative Case 1 and the Base Case concerns whether any infrastructure (e.g. plant and equipment) used to access or produce the deposit and that is capable of being separated from the reserves and resources and associated development works should be treated as a separate asset. When the CGU does not include any separable infrastructure assets, the unit of account under the Base Case and Alternative Case 1 will be identical.

35. Alternative Case 1 treats development works as part of the same unit of account as the reserves and resources on the basis that development works are not a different asset from the reserves themselves – they are a betterment of the reserves. They cannot be bought and sold separately. Similarly, it may be considered that some infrastructure assets (i.e. some plant and equipment) are not able to be separated from the reserves and resources, such as casing on development wells, pumps, wiring and piping in an underground mine. These infrastructure assets would therefore also form part of the same unit of account as the reserves and resources and associated development works.

36. In contrast, other infrastructure may be considered separable from the developed reserves and resources in that it is physically separate and could be sold or used separately from the reserves or resources (e.g. earth moving equipment). Therefore, under this unit of account, infrastructure that is capable of being separated from the developed reserves and resources would be accounted for in accordance with other applicable accounting standards, most likely IAS 16.

Estimating fair value for the Alternative Case 1 unit of account

37. It is expected that the fair value for the unit of account defined under Alternative Case 1 (which excludes separable infrastructure assets from the unit of account) would have to be estimated by applying the income approach in conjunction with other fair value estimation techniques. Since, by definition, there can only be a single cash flow generated by all the assets in a CGU, it is not possible to use the income approach to measure the fair value of a subset of the assets in the CGU (i.e. the property excluding the separable infrastructure assets). Consequently, the fair value of this unit of account would be expected to be estimated by applying the income approach to measure the fair value of the property (including the separable infrastructure assets) and then subtracting the fair value of the separable infrastructure assets. This is consistent with the approach adopted in paragraph 25 of IAS 41 *Agriculture*, which says that one way to determine the fair value of a biological asset is to obtain a fair value for the combined asset of the biological assets, raw land, and land improvements

and then subtract the value of the land and land improvements from the fair value of the combined asset.[9]

38. The ability to apply the IAS 41 methodology to calculate the fair value of the unit of account under Alternative Case 1 depends on whether it is possible to separately estimate fair values for the separable infrastructure assets (i.e. by applying the market approach or the cost approach, as defined in Agenda Paper 4A). The research project team expects that fair values for the separable infrastructure assets will often only be able to be obtained under the cost approach (i.e. according to current replacement cost estimates). The market approach may only be able to be used to estimate a fair value for tangible assets that are capable of being used on other sites, such as movable mine equipment.[10]

Implications

39. In practice, the distinctions between development and infrastructure assets and between infrastructure assets that are separable and infrastructure assets that are inseparable from the reserves and resources will not always be clear-cut. Assets such as offshore oil & gas drilling and production platforms provide access to the reserves and resources and therefore may be viewed as development assets as they are an improvement to the reserves and resources, but they may also be used to operate and produce the reserves and resources and therefore may be viewed as infrastructure separate from the reserves and resources. Therefore, if Alternative Case 1 is selected as the unit of account, determining whether or not these assets are infrastructure assets and are capable of being separated from the developed reserves and resources will require judgement or the creation of rules. How the differentiation is made can have a significant influence on the subsequent accounting, as assets that are deemed not separable would be

9 The research project team notes that this approach would presumably result in any synergies that exist between the three assets (i.e. the biological assets, the raw land and the land improvements) being reflected in the fair value that remains after the value of the land and land improvements are subtracted.

10 Some may argue that, if the fair value of separable infrastructure needs to be estimated so that the fair value of the reserves and resources can be estimated, then the separable infrastructure assets should themselves be reported at fair value on an ongoing basis. This is because it may provide visibility of the cash flows expected to be generated from the property, which consists of the reserves and resources and the infrastructure. However, others will argue that other industries are not required to measure tangible assets at fair value on an ongoing basis, and that this requirement should not be imposed on the extractive industries. The research project team does not intend to consider the treatment of items that are not part of the chosen unit of account for reserves and resources (e.g. separable infrastructure assets) because this issue has broader relevance beyond the extractive activities research project.

measured at fair value as part of the same unit of account as the reserves and resources whereas assets that are separable would be recognised and measured in accordance with other relevant accounting standards, most likely IAS 16. Although IAS 16 permits the use of either the cost model or the revaluation model for subsequent measurement, the research project team expects that consistent with current practice the separable assets are likely to be measured according to the cost model.

40. In contrast, the distinction between development and infrastructure assets that are integral to the reserves and resources and those that are separable is not considered to be as significant under current historical cost based measurement models; firstly, because all the assets will generally be measured at cost (noting that cost may be measured through an allocation process) and, secondly, because the need to differentiate assets within a property generally only arises for either of the following two purposes:

(a) if subsequent accounting for the assets will be different, for example, if the assets will be sold or otherwise derecognised at different times or if they will be depreciated using different methods or useful lives[11] (see IAS 16.43-45); or

(b) if information on the separate assets is relevant to users of financial statements and the assets are therefore required to be separately presented in the balance sheet or in the notes to the financial statements (see IAS 16.73).

41. For example, Rio Tinto, in its 2005 financial report, explains what is included and excluded from its minerals property unit of account:

> …Once a mining project has been established as commercially viable, expenditure other than that on land, buildings, plant and equipment is capitalised under 'Mining properties and leases' together with any amount transferred from 'Exploration and evaluation'. (page 102)

Alternative Case 2

42. The unit of account under Alternative Case 2 is the reserves and resources associated with a specific property. This is considered to be the lowest possible

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11 The principle in IAS 40 *Investment Property* is that assets that are remeasured at fair value each period are not depreciated. Consequently, the research project team is not contemplating that depreciation would have to be calculated if a fair value measurement model is applied to initial and subsequent measurement of the asset.

unit of account available. Reserves and resources, as defined under existing minerals and oil & gas reserves and resources definition sets, may include elements that are classified as one or more of proved reserves, probable reserves, possible reserves, inferred resources, contingent resources etc. However, those different classifications do not represent different 'items' – they are different parts, aspects or descriptions of the same item, being the minerals or oil & gas deposit. The different classifications of reserves and resources are used to communicate different levels of confidence in the technical and economic recovery of quantities of minerals or oil & gas.

Estimating fair value for the Alternative Case 2 unit of account

43. Under this unit of account, the fair value of reserves and resources would be reported exclusive of the property's development works and infrastructure assets that exist at the time of estimating fair value, regardless of whether or not the development works and infrastructure assets are integral to or separable from the reserves and resources. However, similar to Alternative Case 1, it would only be possible to directly estimate the fair value of the reserves and resources by applying the IAS 41.25 model of, firstly, estimating the fair value of the CGU and, then, subtracting the separate fair value estimates for all of the development and infrastructure assets associated with that CGU. Consequently, this unit of account requires that the fair value of all development and infrastructure assets can be obtained. Because all development works and most infrastructure will be unique to each property, the fair value of these assets is only likely to be able to be obtained using the cost approach – if a fair value for all these items can be obtained at all.

A unit of account that has been dismissed as an alternative

44. Where deposits contain more than one mineral, one other alternative unit of account that was identified but quickly dismissed involves treating each mineral as a separate unit of account. For example, a deposit containing both gold and copper reserves and resources would be treated as comprising a gold unit of account and a copper unit of account. Similarly, there would be separate units of account for oil and gas when they are produced from the same property. This unit of account has been dismissed because there would not be distinct cash flows for the individual minerals, oil & gas – for instance, they would have

common development and operating costs – and so separate fair values could not be calculated.

Selecting the preferred unit of account

45. Selecting the preferred unit of account is based on:

    (a) which unit of account provides the most decision-useful information, in accordance with the proposed revisions to the *Framework's* qualitative characteristics of decision-useful financial reporting information; and

    (b) the practical implications associated with each unit of account.

Conceptual justification

Relevance

46. Users are interested in estimating future cash flows. A unit of account that is the lowest level for which cash flows are largely independent of cash flows from other assets or groups of assets is expected to provide information consistent with this user need. This unit of account would be the CGU (i.e. the Base Case unit of account).

47. Some may argue that selecting the CGU as the unit of account may obscure the reporting of individual assets and liabilities within the CGU, especially if those assets and liabilities would otherwise be subject to other accounting standards. For instance, for infrastructure and development assets that have different useful lives to the reserves and resources, including these assets in the unit of account with the reserves and resources would mean that the consumption of economic benefits embodied in those assets may not be apparent from changes in the fair value of the CGU. In addition, in terms of balance sheet presentation, having the CGU as the unit of account may limit the line items in the balance sheet as a result of many assets and possibly some liabilities being recorded as a single line item.

48. However, if fair value is the measurement objective, the research project team considers that the financial statements will provide more relevant information by:

    (a) identifying the unit of account as the assets that together generate or are expected to generate independent cash flows; and

(b) measuring those assets together at fair value.

49. A lower level unit of account (such as that envisaged by Alternative Cases 1 and 2) would lead to the separate recognition of individual assets within a CGU. This would result in a mixed measurement basis to the extent that assets within a CGU are separately recognised and treated in accordance with other applicable accounting standards, and consequently would obscure the ability of users to assess the amount of cash flows that are expected to be generated by the assets that make up the CGU.[12]

Faithful representation

50. Agenda Paper 4D assesses whether it is possible for the fair value measurement of reserves and resources to be representationally faithful. In the research project team's opinion, all three units of account (i.e. the Base Case and Alternative Cases 1 and 2) should be equally capable (or incapable, as the case may be) of providing information that is verifiable, neutral and complete. All three units of account are also considered equally capable (or incapable) of faithfully depicting the real-world economic phenomena they purport to represent, although the economic phenomena each unit of account purports to represent is different for each unit of account (e.g. it is the CGU for Base Case and only the reserves and resources for Alternative Case 2). However, the unit of account that most faithfully depicts the real-world economic phenomena relating to the generation of independent cash flows would be the Base Case unit of account because it is defined according to the level at which independent cash flows are generated. Consequently, the measurement of that unit of account corresponds with the independent cash flows that are expected to be generated. In contrast, if either of the alternative units of account were applied, the group of assets that generate the independent cash flows are likely to be measured on a mixed measurement basis (i.e. assuming the assets other than the unit of account are measured at cost rather than fair value). This measurement outcome is not considered to be a faithful depiction of those economic phenomena.

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[12] The research project team notes that the adoption of a principle of applying consistent measurement bases for assets within a CGU is a general accounting issue that is outside the scope of the extractive activities research project. This may explain why IAS 41 requires biological assets to be recognised separately from land and land improvements.

51. A unit of account would not provide representationally faithful information if, in estimating the fair value for that unit of account, an entity has to arbitrarily allocate fair value inputs to estimate the fair value of an asset or groups of assets (e.g. the inputs might be cash flows if the income approach is used or costs if a current replacement cost model is used). Such arbitrary allocations, if material, would result in different persons arriving at different estimates, which would not provide meaningful information. The research project team notes that such allocations are more likely to occur under the Alternative Case 2 unit of account, where fair values have to be estimated for all assets within the CGU (other than the reserves and resources) so that the IAS 41.25 model can be applied to compute the fair value of the reserves and resources.

Comparability

52. For items to be able to be compared across entities and over time, they must be capable of being presented and measured on a common basis. The unique characteristics of each minerals and oil & gas property (e.g. in terms of the size, quality and location of a deposit, among many other variables) means that, in theory, a fair value measurement is likely to provide the most comparable information because the individual characteristics of a specific property can be factored into a single fair value estimate.[13]

53. Given the unique characteristics associated with each minerals and oil & gas property, the scope of the unit of account that is to be fair valued will influence the ability to make comparisons across entities. The research project team believes that a larger unit of account is preferable for making comparisons because it enables the fair value measurement to factor in, for example, the mining method and plant and equipment that will be required to extract a particular reserve and resource.

54. Comparability is also influenced by the extent to which judgement is required to be exercised. Estimating the fair value for each of the three units of account generally requires, at least as a starting point, an estimate of the fair value of the CGU, and judgment is required to both identify the CGU and estimate its fair

[13] Agenda Paper 4D discusses whether, in practice, it is possible to obtain a fair value estimate for minerals and oil & gas reserves and resources that is considered to be comparable. Many Advisory Panel members disagree that a fair value measurement of reserves and resources would provide comparable information.

value. To compute the fair value of the units of account for Alternative Cases 1 and 2, judgement is also required:

(a) for Alternative Case 1 – to identify the infrastructure assets within the CGU that are separable and to then estimate the fair value of those assets so that they can be deducted from the fair value of the CGU; and

(b) for Alternative Case 2 – to identify all the assets within the CGU other than the reserves and resources and to then estimate their fair values so that they can be deducted from the fair value of the CGU.

55. Consequently, the Base Case unit of account may aid comparability by not requiring the exercise of judgment to the same extent as for the alternative units of account. The research project team accepts that the accrual basis of accounting requires the exercise of judgement, but the team considers that limiting the extent to which judgement is required may be preferable if it can improve comparability and at the same time does not also impair the relevance of the information being reported.

56. For these reasons, the Base Case unit of account is considered to provide more comparable information that the units of account defined by Alternative Cases 1 and 2.

Understandability

57. The Base Case unit of account is considered to provide the most understandable information because this unit of account is:

(a) identified according to a general principle – that is, the unit of account is the smallest group of assets that generates largely independent cash flows; and

(b) measured according to the net present value of those cash flows.

58. While the process for compiling the fair value estimate for the alternative units of account can be understood (e.g. by explaining that the estimate is determined using a combination of fair value estimation techniques such as the income and cost approaches), adopting either of the alternative units of account may adversely affect understandability because, as mentioned previously, it may obscure what cash flows are expected to be generated by the assets.

59. The research project team notes that understandability of the specific unit of account used by a company may be enhanced by good disclosures, which will be addressed if the decision is made to measure reserves and resources at fair value.

Practical justification

60. As explained earlier in the paper, the Base Case unit of account (i.e. the CGU) is defined in a manner consistent with the income approach, whereby the unit of account includes items that are integral to, and that do not generate separable cash flows from, other items in the unit of account. In contrast, estimating the fair value of the lower level units of account contemplated by Alternative Cases 1 and 2 would generally require the use of the income approach in conjunction with other fair value estimation techniques; usually the cost approach. Identifying current replacement costs for assets of this type is likely to be time consuming and difficult to reliably estimate due to the number of the assets that may be excluded from the unit of account and the fact that many of them will be specialised or self-constructed assets.[14] In contrast, applying this approach to agriculture assets (as per IAS 41.25) is not intended to impose the same level of compliance costs, as the agricultural land and land improvements are expected to comprise fewer assets than in a mining or oil & gas operation and also because more of those assets may be capable of being estimated in accordance with the market approach (e.g. the land).

61. Consequently, if fair value is to be the measurement objective, the research project team believes that selecting either the Alternative Case 1 or Alternative Case 2 unit of account would increase compliance costs by an order of magnitude because fair value estimates would be required both for the CGU and for assets that are within the CGU but not part of the unit of account. The research project's Advisory Panel members have already indicated that requiring fair value measurement for reserves and resources at a CGU (or similar) level would impose a significant compliance burden.

[14] If a fair value measurement model is to be applied, fair value estimates would be required for each annual and interim reporting period.

Recommendation

62. Of the three alternative units of account identified, the research project team considers the Base Case unit of account – the CGU – to be the preferred unit of account if fair value is the measurement objective for reserves and resources. This is because:

    (a) identifying the unit of account by reference to assets that generate independent cash flows is expected to provide information that is more decision-useful than if either of the alternative units of account were used; and

    (b) the compliance costs in estimating a fair value for the CGU would be less than under the alternative units of account.

Further research required if the Base Case unit of account is preferred

63. Notwithstanding that the Base Case unit of account (i.e. the CGU) is the research project team's preferred unit of account for reserves and resources, there are implications with the CGU being the unit of account for fair value measurement purposes. As mentioned in the above analysis, fair valuing the CGU could mean that some assets, other than development and infrastructure assets, and some liabilities that would otherwise be separately recognised and measured under other accounting standards could be part of the unit of account for reserves and resources. If fair value is considered to be the preferred measurement objective for reserves and resources, the research project will need to further consider how to distinguish between the assets and liabilities that should form part of the unit of account for reserves and resources and those assets and liabilities that should not.

APPENDIX

Guidance in IFRSs on identifying units of account

1. Identifying the unit of account is separately addressed in the following IFRSs dealing with non-financial assets:

   (a) IAS 16 *Property, Plant and Equipment*;

   (b) IAS 17 *Leases*;

   (c) IAS 36 *Impairment of Assets* (in respect of subsequent measurement only);

   (d) IAS 38 *Intangible Assets*;

   (e) IAS 40 *Investment Property*; and

   (f) IAS 41 *Agriculture*.

2. The common principles for determining the unit of account that emerge from these accounting standards:

   (a) judgement is required – see, in particular, IAS 16.9;

   (b) assets that are separable should be accounted for separately (noting that IAS 38.12(a) explains that 'separable' means "capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, asset or liability") – see, in particular, IAS 16.58 and IAS 38.12;

   (c) items that are integral to another asset may be recognised as part of that other asset – see, in particular, IAS 17.17 and IAS 40.50;

   (d) like items may be aggregated provided the aggregation is made according to significant attributes – see, in particular, IAS 41.15;

   (e) individually insignificant items may be aggregated – see, in particular, IAS 16.9 and IAS 16.46; and

   (f) significant components of an item should be identified separately if the subsequent accounting of the components will be different (e.g. when depreciable assets have different useful lives or are depreciated using different methods) – see, in particular, IAS 16.43.

3. IAS 36 applies to subsequent measurement when the asset is tested for impairment and not all of the asset's carrying amount is recoverable. Through the cash-generating unit (CGU) concept, IAS 36 contemplates using a higher-level unit of account than that which may have applied to the initial recognition and measurement of an individual asset when it is not possible to estimate the recoverable amount of the individual asset.

4. The key features of the CGU concept in IAS 36 are as follows:

   (a) "an asset's CGU is the smallest group of assets that includes the asset and generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets" (paragraph 68);

   (b) "Identification of an asset's cash-generating unit involves judgement" (paragraph 68);

   (c) "In identifying whether cash inflows from an asset (or group of assets) are largely independent of the cash inflows from other assets (or groups of assets), an entity considers various factors including how management monitors the entity's operations (such as by product lines, businesses, individual locations, districts or regional areas) or how management makes decisions about continuing or disposing of the entity's assets and operations" (paragraph 69);

   (d) "If an active market exists for the output produced by an asset or group of assets, that asset or group of assets shall be identified as a cash-generating unit, even if some or all of the output is used internally" (paragraph 70); and

   (e) "Cash-generating units shall be identified consistently from period to period for the same asset or types of assets, unless a change is justified" (paragraph 72).