

Issues paper: Mineral exploration and mineral deposits

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A Executive summary

1. The 1993 SNA introduced the concept of mineral exploration as a new category of produced assets with consequences for the treatment of the sub-soil deposits which were the subject of this exploration. Since then the discussions of the London Group on environmental accounting, in preparing the SEEA 2003, have elaborated several of the implications in greater depth than appears in the 1993 SNA. The Canberra II Group has confirmed the position taken in the SEEA and makes the following recommendations for the 1993 SNA Rev1.

- i. The produced asset “mineral exploration” should be described as “mineral exploration and evaluation” and the coverage should be described using the criteria of the International Accounting Standards Board (IASB).
- ii. The assets for mineral exploration and evaluation and for subsoil deposits should continue to be recorded as separate assets, the first a produced asset and the second non-produced.
- iii. The description of the valuation of mineral exploration should be clarified to ensure that actual market costs are used when specialised enterprises provide inputs to the activity.
- iv. The valuation of subsoil resources should be based on the current market value, which in practice may be estimated by the net present value of the resource rent of the resource. The resource rent is that part of gross operating surplus unattributable to other identified assets, specifically fixed assets including mineral exploration and evaluation.
- v. Payment by the extractor to the owner of the resource should be recorded as property income (rent) regardless of the label given to the payments.

2. These recommendations represent a clarification of the SNA and not fundamental change. They are the result of discussions among the London Group and the Canberra II Group and are consistent with proposals in the SEEA 2003. The recommendations have proved feasible in practice in countries having significant mineral deposits.

3. There is a further issue for decision, which is how the value of the resource should be attributed in the balance sheets of the extractor and/or the owner. A recommendation on this will be made in the context of the recommendation on leases and licences.

B Background and reasons for change

4. The 1993 SNA introduced the category of “mineral exploration” as a new form of produced intangible fixed asset (AN.1121). Further, there was explicit recognition of subsoil assets (AN.212) as a category of tangible non-produced assets. Since the publication of the 1993 SNA, a number of questions have been raised:

- i. How far does it make economic sense to keep the discovery activity separate from the value of the resource?
- ii. How should the exploration activity be measured?
- iii. How should the deposit be valued and how should double counting be avoided?
- iv. How are payments to the legal owner to be recorded in the SNA?
- v. In the balance sheet of which unit should the resource be recorded, the legal owner or the exploiter?

5. These questions were discussed at length in the preparation of the SEEA 2003 and more extensive guidance was included in that manual than appears in the SNA. In addition, the international accounting community has an exposure draft out for discussion with a view to promulgating a new international accounting standard on the subject from 1 January 2005.

6. A written consultation of the members of the Canberra II Group, confirmed at the March 2004 meeting, suggested that there is no need for substantive change in the SNA but that more extensive guidance should be given to avoid the ambiguities which have arisen since the publication of the 1993 SNA. These changes should be consistent with, but somewhat more prescriptive than, the SEEA 2003.

C Recommendations for change

Terminology and coverage for mineral exploration¹

7. The IASB uses the expression “mineral exploration and evaluation”. It specifies² that the following expenditures may be included in the initial measurement of exploration and evaluation assets:

- i. acquisition of rights to explore;
- ii. topographical, geological, geochemical and geophysical studies;
- iii. exploratory drilling;
- iv. trenching;
- v. sampling; and
- vi. activities in relation to evaluating technical feasibility and commercial viability of extracting a mineral resource.

¹ This specific suggestion arises from consideration of the IASB position and has not previously been discussed by the group.

² IASB, exposure draft ED6, Exploration for and evaluation of Mineral Resources, January 2004. Para 7 page 13.

8. This coverage is clearly substantially the same as the SNA coverage given by example in paragraph 10.91; “the expenditures include not only the costs of actual test drillings and borings, but also the costs incurred to make it possible to carry out tests, for example, the costs of aerial or other surveys, transportation costs, etc.” Further, since information compiled according to the IASB recommendations is likely to form source material for statisticians, and because it is desirable to avoid giving the impression that the SNA coverage is narrower, it would seem desirable to adopt the longer and more precise terminology used by the IASB.

One asset or two

9. One suggestion which has been floated since 1993 is that instead of keeping the discovery of the asset separate from the deposit itself, they should be combined and a new “developed natural asset” recorded instead. This would be treated as a produced asset so that, in effect, the value of the deposit became included in the total of produced assets and excluded from the total of non-produced assets. This proposal received support from only a very few members of the Canberra II Group and so the recommendation of the Group is to keep the assets separate as in the 1993 SNA.

Valuation of the exploration and expenditure activity

10. The 1993 SNA in paragraph 10.91, as quoted above, spells out some of the costs which are to be included in the value of the asset of mineral exploration and specifically includes the consumption of fixed capital on the assets used in exploration. This has led a number of users to assume that this activity is always to be treated as a non-market activity with no associated net operating surplus.

11. The conclusion of the London group in discussing what should appear in the SEEA, was that this interpretation came from inexact phrasing in the 1993 SNA. When exploration is carried out on own account, this is indeed how it would have been valued. (In accordance with other recommendations of the Canberra II Group, in future even own account production should include an estimate of the return to the capital being used.) However, when the activity is undertaken by a separate enterprise the full amount charged by this enterprise, including their net operating surplus, should be included in the value of mineral exploration and evaluation.

Valuation of the mineral deposit

12. Paragraph 13.60 of the SNA describes a number of alternative ways of valuing mineral deposits. One is via the present value of the net returns from commercial exploitation, one is via market prices and one is by using the owner’s own valuation. Each of these are subject to uncertainty.

13. Even if mineral exploration and evaluation as a produced asset and mineral deposits as a non-produced asset are not merged into a single asset, it is clear that the value of the two is intimately linked. The total revenue from extracting a given amount of oil, say, may be the same for equal amounts of the same quality of oil but the “profitability” to the extractor depends on the difficulty of extraction and the amount of the initial profits which are necessary to cover the previous exploration and evaluation. Just as the value of a produced asset is assumed conceptually to be equal to the net present value of the capital services it renders, so the value of a natural resource should be set equal to the net present value of the resource rent it earns over time. The resource rent is that part of gross operating surplus not accounted for by the return to the fixed assets used by the exploiter, including mineral exploration and evaluation in this set of assets. This

means that the greater the value of fixed assets needed to extract the oil and the greater the expenditure on discovery of the oil reserve in the first place, the lower will be the resource rent of the deposit and vice versa. When a mineral cannot be extracted profitably (without a government subsidy) it has no economic value because the resource rent is zero.

14. The SEEA 2003 recommends this way of estimating the value of mineral deposits. Further it notes that when, exceptionally, there may be alternative estimates of the mineral deposit, there may be a problem of consistency; the value of the exploration asset and the deposit may not exactly match the net present value of the earnings from the combined set of assets, but may be either higher or lower. Resolution of this possibility is discussed below.

Payments to the owner

15. The 1993 SNA makes it clear that payments made by the exploiter to the legal owner of the mineral deposit are to be treated as property income. The description of this treatment is given in para 7.133.

The owners of the assets, whether private or government units, may grant leases to other institutional units permitting them to extract such deposits over a specified period of time in return for the payment of rents. These payments are often described as royalties, but they are essentially rents that accrue to owners of the assets in return for putting them at the disposal of other institutional units for specified periods of time and are treated as such in the System. The rents may take the form of periodic payments of fixed amounts, irrespective of the rate of extraction or, more likely, they may be a function of the quantity or volume of the asset extracted. Enterprises engaged in exploration may make payments to the owners of surface land in exchange for the right to make test drillings or investigate by other means the existence and location of subsoil assets. Such payments are also to be treated as rents even though no extraction may take place.

16. Sometimes, when the owner of the resource is the government, the payments may be described as taxes even though they are still effectively appropriation of part of the resource rent.

17. There is no necessity that the payments to the legal owner of the resource should be equal to the total resource rent as described above, either on a year by year basis or even over time. It is often the case that the legal owner will allow the extractor to retain some of the resource rent. Alternatively the payments may have been agreed some time in the past and not always reflect current circumstances on the commodity price of the mineral concerned. For this reason, if estimates of the value of the resource to the legal owner are based on the revenues the owner receives from the extractor, an apparent value of the resource will be derived which differs from the resource rent derived as described above via the net present value of the residual element of gross operating surplus of the extractor. The use of the latter method to value the deposit should be preferred to methods depending on payments to the legal owner.

D Other issues

18. The recommendations submitted here are the result of discussions within the London Group on environmental accounting and the Canberra II Group on non-financial assets. They represent the view of a clear majority of both groups.

19. The recommendations represent a single conceptual solution. These are more restrictive than the solutions suggested in the SEEA 2003 where alternatives are suggested for the

calculation of the value of the resource and the attribution of the value of the resource in balance sheets.

20. It has been found feasible in practice to implement these proposals. The proposals only need to be implemented in countries having, or supposed to have, significant mineral deposits.

E Paragraphs of the SNA which need revising

21. There is reference to the borderline between intermediate consumption and capital expenditure in the case on mineral exploration in chapter 6 (para 6.166)

22. Paragraph 7.133 and other references to rent on sub-soil resources will need amending.

23. There is discussion of the coverage and valuation of both mineral exploration and sub-soil resources throughout chapter 10. There will need to be new text discussing the concept of resource rent as a parallel to economic rent on produced assets.

24. There are references to these assets in chapter 13 (paras 59 and 60) as well as in the annex giving definitions of all SNA assets.

25. In all these cases the text of the SEEA (paragraphs 8.46 to 8.65) provides a useful starting position.