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## **Recording the ownership of mineral-related assets**

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**RECORDING THE OWNERSHIP OF MINERAL-RELATED  
ASSETS**

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## Executive summary

1. SEEA 2003 presents two options for recording the ownership of mineral-related assets, options D1 and D2.
2. Option D1 places mineral exploration in the balance sheet of the extractor and the mineral resource in the balance sheet of the legal owner. Where the legal owner and extractor share the resource rents coming from the asset, ownership is partitioned accordingly.
3. Option D2 attributes ownership of both the mineral exploration asset and the mineral resource to the extractor. The extractor also has a financial liability towards the owner corresponding to their share of the resource rent. This amount is shown as a financial claim in the balance sheet of the owner.
4. Following recent decisions of the London Group and UNCEEA on the nature of mineral exploration assets, the attribution of ownership of these assets is now relatively straightforward. These groups rejected the notion that the mineral exploration knowledge asset be combined with the mineral resource to form a “developed natural asset” – a position consistent with the draft SNA93Rev.1. In all cases the mineral exploration asset is recorded in the balance sheet of the legal owner.
5. For the mineral resource itself, attributing ownership is less straightforward. Under the types of conditions typically governing the use of mineral resources, the legal owner of the resource is a separate entity from the extractor undertaking the development. Under these circumstances, the legal owner and the extractor will typically agree to an extractive licence under which risks and benefits associated with owning the resource are shared. This implies that neither the extractor nor the legal owner have exclusive ownership claims over the mineral resource.
6. This paper therefore suggests that under typical conditions governing the use of a mineral resource, it is appropriate to effect a partitioning of ownership of the asset between the extractor and the legal owner. The value of resource rents arising during the period of the extractive lease agreement is attributed to the extractor, with the remainder of the mineral resource value attributed to the legal owner. A financial lease is imputed, equal to the value of expected rental payments to the legal owner (the ‘lessor’). The expected rental (royalty) payments provide the basis for the imputed interest and principal repayments.
7. The partitioning of ownership of mineral resources utilising a financial lease arrangement was proposed during the current update of the System of National Accounts (SNA). It is acknowledged as giving rise to potentially significant measurement issues since there is a range of factors that could impact on the amount of the imputed loan (and associated loan repayments) associated with the imputed financial lease. Statistical agencies might reject the financial lease approach because it is not possible to generate estimates using this approach and/or because it produces unhelpful results. For these agencies, it is desirable that as far as possible a consistent approach to attributing ownership of the mineral resource is used.
8. It is therefore recommended that SEEA clearly identify a default position on this issue. The suggested default position is to simply allocate ownership of the mineral resource to the legal owner with rentals (royalties) paid by the extractor.

## Introduction

1. SEEA 2003 presents two options for recording the ownership of mineral-related assets:

**Option [D1]** shows mineral exploration in the balance sheet of the extractor and the value of the deposit in the balance sheet of the legal owner. If the agreement between the owner and the extractor allows for the extractor to retain some of the resource rent coming from the asset, the ownership of the asset should be partitioned accordingly.

**Option [D2]** shows both the mineral exploration and deposit as being in the de facto ownership of the extractor. In addition the extractor has a financial liability towards the owner corresponding to his share of the resource rent. This amount is also shown as a financial claim in the balance sheet of the owner.

2. Both options deal with sectoral allocation in the balance sheet of two distinct assets: the mineral exploration expenditure asset; and the mineral resource. The options therefore deal with two distinct questions: what is the appropriate sectoral allocation of the mineral exploration knowledge asset; and what is the appropriate sectoral allocation of the mineral resource. For both questions there is no issue with sectoral allocations where the extractor and the owner of the asset are the same entity, though for mineral resources this is not usually the case.

## MINERAL EXPLORATION

3. Dealing first with the question of how to allocate the asset 'capitalised mineral exploration expenditure', the London Group / UNCEEA response to SEEA chapter 10 options B1, B2 and B3 largely determines our response to this question. SEEA option B3 considered that the mineral exploration expenditure asset should be combined with the mineral resource asset to form a "developed natural asset". Had this position been accepted, it would follow that the mineral resource and the mineral exploration expenditure asset must both appear (combined) on the balance sheet of the same entity. The decision to treat the mineral exploration expenditure asset and the mineral resource as separate assets is consistent with draft chapters of SNA93Rev.1 and removes the compulsion to record both these assets in the balance sheet of a single entity.

4. Typically an asset is recorded in the balance sheet of the entity that purchases and uses the asset. Usually, but not always, the owner is both the legal and 'economic' owner. The draft SNA93Rev.1 (Chapter: 'Flows, stocks and accounting rules', paragraph 20) defines the legal owner of an asset to be the institutional unit entitled in law and sustainable under the law to claim the benefits associated with the asset. By contrast, the economic owner of an asset is entitled to claim the benefits associated with the use of the asset in the course of an economic activity by virtue of accepting the associated risks.

5. In many cases, the most obvious example being assets subject to a financial lease, the economic owner of the asset is not the legal owner. From an SNA perspective, the more important consideration is 'economic' ownership, that is, which entity is accepting the risks and rewards of ownership?

6. Mineral exploration knowledge assets are usually developed either by the extractor (as own account production) or else produced by a specialist exploration enterprise for sale to an extractor. It is clear that a business purchasing (or creating on own account) a mineral exploration knowledge asset for use in their extractive activities is both the legal and economic owner of the mineral exploration knowledge asset and that the asset should be recorded in their (the extractor's) balance sheet. In all cases, it is appropriate to record the asset in the balance sheet of the legal owner. In the vast majority of cases, this will be the extractor.

7. While the above situation is quite clear, there is a potential complication for our sectoral balance sheet allocation when mineral exploration knowledge assets must be made freely available to the public. For example, in Australia the detailed results of past mineral exploration must be provided to the government, which makes this information publicly available. Though the national balance sheet in the Australian system of national accounts records the mineral exploration knowledge asset as owned by the extractor, is there a case for allocating ownership to government?

8. The requirement to make the information publicly available reflects government regulation, rather than any attempt by government to assume ownership of the asset. The economic effect of this requirement is simply one of reducing the resale value of the mineral exploration knowledge asset – it does not affect how we assign ownership of the asset. Also, an extractor typically enters into an arrangement with the legal owner (often the government) to secure exclusive access to the resource in question and therefore the mineral exploration knowledge asset provides ongoing benefits to the extractor holding an extractive licence regardless of whether or not that information becomes publicly available.

## **MINERAL RESOURCES**

9. Recognising that mineral exploration and mineral resources are separate assets, and that mineral exploration is to be recorded on the balance sheet of the extractor, we now focus on mineral resources.

### **Using natural resources**

10. To begin, it is useful to examine the use of mineral resources in the broader context of natural resources. The draft SNA93Rev.1 (Chapter: 'Cross-cutting and other special issues', paragraph 271) identifies three sets of conditions that may apply to the use of natural resources:

1. The owner may permit the resource to be used to extinction;
2. The owner may allow the resource to be used for an extended period of time in such a way that in effect the user controls the use of the resource during the time with little if any intervention from the legal owner; or
3. The owner may extend or withhold permission to continue use of the asset from one year to the next.

## Using natural resources - mineral resources

11. Looking at the various possible arrangements to use mineral resources, the first option, whereby the resource is permitted to be used to extinction, clearly represents the sale of an asset. The draft SNA93Rev.1 states that when a unit owning a mineral resource cedes all rights over it to another unit, this constitutes the sale of the mineral resource. This is not considered to be a typical arrangement for ownership and usage of mineral resources.

12. The second set of conditions effectively represents a shift in economic ownership (i.e. the risks and rewards of ownership) from the owner to the user. The great majority of arrangements for the extraction of mineral resources are expected to be governed by these types of conditions. One potentially important consideration is the question of who is responsible for the costs of mine decommissioning. If decommissioning costs are wholly or mainly met by the government, then a potentially substantial portion of the risks of owning the mineral resource also reside with the government.

13. Finally, the third set of conditions suggests that the legal owner maintains economic ownership by assuming most of the risks and rewards of ownership. In particular, the users' absence of long term control and access to the resource points to a simple operating lease type of arrangement. In practice, given the often very significant start-up and operating costs associated with mineral extraction, it is unlikely that a lessee would commit to this type of lease arrangement.

14. Until an arrangement has been made with an extractor, ownership of the mineral resource continues to reside with the legal owner. By extension, ownership of the mineral resource resides with the legal owner at the conclusion of the extractive licence.

## Balance sheet allocation of mineral resource ownership

15. Under the first and third sets of conditions, the allocation of ownership of mineral resources in the balance sheet is relatively straightforward. In practice, the second set of conditions is the most likely to apply to mineral resource extraction. It also represents the more challenging and contentious of the sets of conditions from an environmental-economic accounting perspective. It crosses into the area of leases, licences and permits which was one of the more contentious areas of economic accounting during the most recent SNA update process. Under the second set of conditions, there are three distinct possible options to allocate ownership of the mineral resource:

1. record on the balance sheet of the legal owner;
2. record on the balance sheet of the extractor; or
3. partition ownership between the extractor and the legal owner.

16. The following sections provide a brief description of how these options would work in practice. Two possible treatment options are suggested for partitioning ownership of the mineral resource. In each case, a simple representation of relevant balance sheet entries is provided. The data used in these representations are consistent with the data contained in the numeric example provided in appendix 1.

## Recording ownership on the balance sheet of the legal owner

17. A widely considered alternative is to simply record the mineral resource on the balance sheet of the legal owner. It represents current practice within a number (perhaps the majority) of statistical agencies, including the Australian Bureau of Statistics (ABS). Using data from the example in appendix 1, the relevant balance sheet entries for this approach are shown in table 1.

**Table 1: Recording ownership on the balance sheet of the legal owner**

Balance sheet: legal owner		
	Assets	Liabilities
Mineral resource	910	

18. Under this approach, the flow accounts record actual rentals (royalties) paid to the legal owner by the extractor. The charge for depletion, however, is applied to the production / income of the extractor.

## Recording ownership on the balance sheet of the extractor – SEEA option D2

19. **Option [D2]** shows ... the ... deposit as being in the de facto ownership of the extractor. In addition the extractor has a financial liability towards the owner corresponding to his share of the resource rent. This amount is also shown as a financial claim in the balance sheet of the owner.

20. Option D2 attributes the entire ownership of the mineral resource to the extractor. Again, the flow accounts record actual rentals (royalties) paid to the legal owner by the extractor. The charge for depletion is applied to the production / income of the extractor.

21. This option requires that the extractor record a financial liability on their balance sheet equal to the NPV of their expected future rentals (royalties) on the mineral resource. The legal owner records a corresponding asset on their balance sheet. The relevant balance sheet entries are as shown in table 2 below, utilising data from the example in appendix 1.



**Table 2: Recording ownership on the balance sheet of the extractor**

Balance sheet: legal owner	
Assets	Liabilities
NPV expected rentals (royalties), mineral resource 270	

Balance sheet: extractor	
Assets	Liabilities
Mineral resource 910	270 NPV expected rentals (royalties), mineral resource

22. A characteristic of this approach is that the mineral resource recorded on the balance sheet of the extractor is at least partially off-set by the future obligation to make rental (royalty) payments to the legal owner. And the legal owner will show a decline in wealth as extraction proceeds over time. The item ‘NPV of expected future rentals (royalties) on the mineral resource’ is potentially subject to significant revision throughout the life of the extractive licence.

### **Partitioning the mineral resource – SEEA option D1**

23. **Option [D1]** shows ... the value of the deposit in the balance sheet of the legal owner. If the agreement between the owner and the extractor allows for the extractor to retain some of the resource rent coming from the asset, the ownership of the asset should be partitioned accordingly.

24. Option D1 suggests recording the mineral resource on the balance sheet of the legal owner. However, it further states that where the extractor is permitted to retain some of the resource rent, ownership of the mineral resource should be partitioned. Given that, in most cases, the extractor could be expected to retain some of the resource rent, option D1 will generally result in a partitioning of ownership.

25. If rental (royalty) payments equal or exceed the resource rent, the legal owner is deemed to also be the economic owner for balance sheet purposes. However, this approach acknowledges that rental payments made by the extractor do not always cover the full value of the resource rent and that therefore some of the benefits (and risks) of ownership of the asset may relate to the extractor. Where this is the case, it is considered appropriate to perform a simple partitioning of the mineral resource based on the relative shares of expected resource rents and expected rental (royalty) payments. If the mineral resource is already being valued using NPV of expected resource rents, it is a relatively straightforward method to apply in practice. Balance sheet entries shown in table 3 below (using data from appendix 1) illustrate this approach.

**Table 3: Partitioning ownership between the legal owner and extractor – SEEA option D1**

Balance sheet: legal owner

	Assets	Liabilities
Mineral resource	700	

Balance sheet: extractor

	Assets	Liabilities
Mineral resource	210	

26. The share of the mineral resource ‘owned’ by the legal owner commands the payment of rental (royalty) from the extractor. While the share attributed to the extractor requires no explicit payment.

27. Under option D1 new discoveries and reappraisals enter the balance sheet through the *other changes in volume of assets account*, but do not elsewhere impact on the flow accounts. New discoveries and reappraisals will alter both the value of the mineral resource itself and value of expected rental (royalty) receipts. A new sectoral partitioning of the mineral resource will therefore be reflected in the balance sheet. Changes to the value of the mineral resource (nationally, and by sector) between balance sheets are explained in the *other changes in volume of assets account*.

### **Partitioning the mineral resource – financial lease approach**

28. This approach also potentially results in a partitioning of the ownership of the mineral resource between the legal owner and the extractor under conditions typically governing the use of a mineral resource.

29. The SNA defines financial leases as those leasing arrangements where the lessor, as legal owner of an asset, effectively passes economic ownership to the lessee who then accepts the operating risks and receives the economic benefits from using the asset in a productive activity. Under a financial lease, the legal owner is shown as issuing a loan to the lessee with which the lessee acquires the asset. Thereafter the asset is shown on the balance sheet of the lessee and not the lessor. The corresponding loan is shown as an asset of the lessor and as a liability of the lessee.

30. When using an imputed financial lease approach to partition the mineral resource, there is a question of precisely what asset is subject to the financial lease. Is the entire mineral resource deemed to be leased to the extractor, or just a portion of this amount?

31. A financial lease arrangement could operate as follows. The mineral resource is valued according to the NPV of the future expected stream of resource rents arising from its extraction, and the benefits arising from use of the resource beyond the life of the current extractive licence are attributed entirely to the legal owner. Benefits arising during the life of the present extractive licence are attributed entirely to the extractor. The extractor makes rental (royalty) payments to the legal owner which may or may not equal the benefits secured. For example, where the extractor makes rental (royalty) payments that are less than the benefits secured, the legal owner has effectively provided a 'gift' to the extractor equal to the difference between rentals paid and benefits secured. This 'gift' requires no explicit accounting.

32. On the other hand, it does not make economic sense for an extractor to pay rentals for a resource they already 'own'. Instead, we can think of the rental (royalty) payments as being repayments for a loan used by the extractor to purchase the mineral resource. These 'repayments' are comprised of imputed principal and interest components, consistent with a financial lease arrangement. That is, the share of the mineral resource assigned to the extractor could be treated as being subject to a financial lease arrangement with a schedule of imputed interest and principal repayments. Appendix 1 provides a more detailed presentation of how this method would operate in practice. But, using data consistent with appendix 1, attribution of ownership of the mineral resource will broadly operate as shown in table 4.

**Table 4: Partitioning ownership between the legal owner and extractor – financial lease approach**

Balance sheet: legal owner

	Assets	Liabilities
Mineral resource	430	
Loan, mineral resource	270	

Balance sheet: extractor

	Assets	Liabilities
Mineral resource	480	270      Loan, mineral resource

**What is the position of the draft SNA93Rev.1?**

33. The draft SNA93Rev.1, provides relevant guidance in chapters 13 ('The balance sheet') and 17 ('Cross-cutting and other special issues'). Chapter 13: The balance sheet, paragraphs 52 and 53 relate to non-produced natural assets, specifically mineral and energy reserves. These paragraphs address the fact that the owner and extractor of the resource are frequently different entities. Paragraph 53 states that where there appears to have been a change of economic ownership to the extractor, that

*"in principle, a financial lease from the owner to the extractor should be imputed equal to the proportion of the net returns that the extractor may keep for the duration of the extraction agreement with the owner. Part of the reserve would then appear on the owner's balance sheet and part on the extractor's."*

34. Draft SNA93Rev.1 Chapter 17: 'Cross-cutting and other special issues', contains a section on 'sharing assets' which states that

*"When a licence is issued to use a natural resource exclusively for a period of time less than the expected life of the asset, the natural resource remains on the balance sheet of the legal owner with a value set equal to the rents expected from the end of the lease forward..."* (Paragraph 303)

That is, benefits expected to accrue after expiry of the extractive licence are reflected as an asset on the balance sheet of the legal owner.

35. The draft SNA93Rev.1 (Chapter: 'The balance sheet', paragraph 53) recognises that a partitioning of ownership of the mineral resource using a financial lease approach could prove challenging for some statistical agencies, and that it potentially produces results that are too variable to be analytically helpful. In such cases, it advises that

*"the whole of the reserve may be shown on the balance sheet of the legal owner and the payments by the extractor to the owner shown as rent."*

36. In short, draft SNA93Rev.1 advocates partitioning of ownership of the mineral resource involving use of a financial lease approach. Where this approach is not possible or where it produces results that are analytically unhelpful, ownership is attributed to the legal owner.

### **The 'least bad' solution?**

37. Four possible options have been identified for attributing ownership of the mineral resource. All these solutions have drawbacks and our task appears to be one of finding the 'least bad' solution. A primary guiding principle should be that SNA and SEEA reflect the economic realities underlying the legal constructs.

38. In the first instance, the legal owner has clear ownership claims to the mineral resource, and assigning complete ownership to the legal owner would be a straightforward solution to the problem.

39. Recording the mineral resource on the balance sheet of the legal owner is simple to implement, which is an important consideration because, unlike produced assets, natural assets are not necessarily mainly located in those developed countries with sophisticated statistical agencies. For this and other reasons, it is desirable to promote an integrated environmental economic accounting that is achievable in as many countries as possible. Allowing at least a fall-back option of recording the mineral resource on the balance sheet of the legal owner, as suggested by the draft SNA93Rev.1, is therefore a defensible position.

40. Where the legal owner of the mineral resource is the government and where the extractor is not required to put up a bond as surety against future decommissioning costs, it could be argued that the legal owner has retained a substantial portion of the risks of ownership of the mineral resource. While not conclusive of itself, this nevertheless represents a potentially important consideration in attributing ownership.

41. Recording the mineral resource on the balance sheet of the legal owner avoids some of the complexities of other possible solutions. See, for example, some of the concerns outlined in the discussion of financial leases below. Nevertheless, it too has its own set of drawbacks. In the first instance, net worth of the legal owner (generally, government) is inappropriately inflated when mineral resources belonging to the extractor (as economic owner) are attributed to the legal owner.

42. It also makes sense to charge depletion of the mineral resource against the production of the extractor, since this is the entity undertaking the relevant productive activity. That is, the extractor is generating resource rent through extractive activity and depletion is a component of this resource rent. Attributing depletion to the extractive activity leads to appropriate industry measures of income and operating surplus. However, if the mineral resource is recorded on the balance sheet of the legal owner, depletion is charged to the production account of the extractor and to the balance sheet of the legal owner. This treatment is untidy and has no clear parallels within SNA or SEEA.

43. Recording the mineral resource on the balance sheet of the extractor recognises that the extractor has taken on the risks and rewards of owning the asset during the life of the extractive licence even though another entity retains legal ownership.

44. Due to the usually very significant start-up capital costs associated with mineral extraction, the extractive licence will generally be long term. There is also typically a pre-agreement on the method of calculating the value of payments to be made by the lessee to the lessor under an extractive licence which significantly transfers economic risks and benefits to the lessee. Additionally, an extractive licence is often transferable to another party, including through merger and acquisition. Recording the mineral resource against the balance sheet of the extractor may also sit reasonably closely with commercial accounting. In Australia, for example, the value of the extractive licence (though not the value of the mineral resource itself) is recorded in the balance sheet of the extractor. All of these factors point to the lessee effectively assuming economic ownership under an extractive licence.

45. Assigning the entire ownership of the mineral resource to the extractor, however, does not satisfactorily show the link between rental income (royalties) received by the legal owner, and the decline in the value of the asset. The legal owner commands rentals (royalties) for an asset which does not belong to them (according to the national balance sheet). And the extractor is suffering both a decline in asset wealth and making rental (royalty) payments in relation to their extractive activity – a situation contrary to SNA principles. Simply recording the mineral resource on the balance sheet of the extractor results in zero wealth from the mineral resource being attributed to the legal owner, which means that the recorded wealth of the legal owner is completely unaffected by levels of extractive activity – again, an incongruous result.

46. Attributing the entire mineral resource to the extractor is not ideal for productivity analyses where, ideally, we want to compare output generated from extractive activity with relevant assets of the extractor. It is appropriate to include only those mineral resources over which the extractor holds economic ownership.

47. In order to partially counteract the above issues, option D2 requires that the extractor record a financial liability on their balance sheet equal to the NPV of their expected future rental (royalty) payments to the legal owner. The legal owner records the corresponding asset on their balance sheet. This means that the mineral resource recorded on the balance sheet of the extractor is at least partially off-set by the future obligation to make rental (royalty) payments to the legal owner. And the legal owner will show some decline in wealth as extraction proceeds over time. Introducing this financial asset/liability therefore better reflects the net position of both the legal owner and the extractor.

48. The extractor will typically lease the mineral resource for only a portion of its expected life. Expected resource rents for the period beyond the life of the extractive lease unambiguously belong to the legal owner of the mineral resource. However, option D2 implicitly assigns expected resource rents beyond the expiry of the extractive licence to the extractor.

49. In addition, the balance sheet items 'NPV of expected future rentals (royalties) payable and receivable on the mineral resource' are somewhat contingent in nature and the 1993 SNA (paragraph 13.22) recommends against recording such items on the national balance sheet. Of course, there is no reason why these items could not feature in an alternative analytical framework (such as SEEA), but the required data would not typically be produced within the national accounts. It's likely that these items would be subject to significant revision throughout the life of the lease agreement. Rental (royalty) payments are frequently levied as a proportion of the value of extractive output, or as a fixed amount per unit of physical output, though other arrangements are possible. (For example, in Australia, royalties on petroleum resources are levied as a proportion of profits arising from petroleum extraction.) In any case, the value of expected future rentals (royalties) arising from the use of a mineral resource would be dependent on a range of factors which are unlikely to be forecast with great precision. Such factors would include: changes in production rates; changes in market prices; changes to production methods/costs; among other things.

50. Under the type of lease arrangements typically governing the extraction of a mineral resource, it is reasonably clear that economic ownership of the resource resides with the extractor, for the duration of the extractive lease agreement. Beyond the life of the lease arrangement, ownership of the mineral resource equally clearly resides with the legal owner. Therefore, any proposal to assign the entire ownership of the mineral resource to either the extractor or the legal owner is not ideal.

51. Because mineral resources are, in practice, usually valued as the NPV of expected resource rents arising from the extraction of the resource, it is possible to assign a value to the mineral resource pertaining to the period of the lease agreement, and to the period beyond the lease agreement. A partitioning of the mineral resource therefore looks achievable as well as appropriate. Two possible approaches to the partitioning of the mineral resource are described in this paper. Both provide workable solutions and a financial lease approach is the 'in principle' preference of the draft SNA93Rev.1.

52. Option D1 is arguably the simpler of the two partitioning methods discussed here because it avoids the imputations of a financial lease (i.e. its imputed interest and principal repayments). Instead, it involves a simple partitioning of the mineral resource based on relative shares of expected resource rents and expected rental (royalty) payments.

53. While option D1 results in a partitioning of the mineral resource, unless the rentals (royalties) charged by the legal owner approximate the value of the resource rents, it could result in a poor representation of the partitioning. For example, if rentals (royalties) are less than the resource rents generated during the period of the extractive licence, then option D1 will understate the share of the mineral resource over which the extractor exercises economic ownership.

54. The proposed financial lease approach partitions ownership of the mineral resource according to the NPV of expected benefits during the period of the extractive licence (attributed to the extractor) against the NPV of expected benefits beyond the period of the extractive licence (attributed to the legal owner). Since the extractor is effectively the economic owner of the mineral resource for the period of the extractive licence, this approach provides the more appropriate partitioning.

55. An important feature of this financial lease approach is that it supports appropriate depletion adjustments to various aggregates. This is because the NPV of resource rents for the period of the extractive licence rests entirely with the extractor. That is, the extractor assumes economic ownership of the mineral resource for the period of the extractive licence. Therefore, it is a straightforward matter to generate depletion adjusted output, income and saving of the extractor. And the utility of data outputs for various analytical purposes (sustainability, productivity etc.) is thereby maximised.

56. During the life of the extractive licence, it is likely that the mineral resource in question will be subject to new discoveries or reappraisals. Proposals to account for these factors usually involve direct revisions to the balance sheet through the *other changes in the volume of assets account*. Ideally, the flow accounts should also reflect revised measures of benefits secured by the extractor. Under the financial lease approach, new discoveries or reappraisals associated with the mineral resource in question could readily be reflected in revisions to expected rental (royalty) payments by the extractor in the flow accounts. Of course, in many cases the rentals (royalties) will be less than the expected resource rents and therefore the flows will not reflect the full market value of the mineral resource.

57. The treatment of new discoveries and reappraisals under the financial lease approach does not amount to bringing these items within the production boundary of SEEA / SNA. New discoveries and reappraisals continue to enter the balance sheet through the *other changes in the volume of assets account*. They are not the output of an economic production process. The financial lease approach simply allows the flow accounts to reflect market values on relevant transfer items.

58. As stated, the financial lease approach is relatively complex. It involves imputing financial lease flows related to the extractor's share of the mineral resource. A significant number of assumptions are required and many of these assumptions may be subject to frequent and significant revision, for example, assumptions related to valuing the mineral resource and to interest rates.

## Conclusions

59. This paper considers options for recording ownership of two mineral-related assets: mineral exploration knowledge assets; and mineral resources.

60. It is clear that a business purchasing, or creating on own account, a mineral exploration knowledge asset for use in their extractive business is both legal and economic owner of the mineral exploration knowledge asset and the asset should be recorded in their (the extractor's) balance sheet. The specialist mineral exploration enterprise who develops a mineral exploration knowledge asset is the owner of this asset prior to its sale. In all cases, it is appropriate to record the asset in the balance sheet of the legal owner.

61. The question of who is the economic owner of the mineral resource is less straightforward. This paper suggests that SEEA recommend a partitioning of ownership involving a financial lease arrangement. The portion of the mineral resource 'owned' by the extractor would be valued according to the NPV of expected resource rents during the period of the extractive licence. This represents the value of the mineral resource over which the extractor has economic control. Any analyses of productivity of the extractive industry, for example, are thereby placed on the correct basis. If mineral resources are valued using a NPV methodology, it is also relatively straightforward to apply. The rentals (royalties) expected to be paid by the extractor are treated as repayments of the 'loan' used to 'purchase' the extractor's share of the mineral resource. Consequently, an appropriate net financial position is generated on the extractor's balance sheet, which aids analyses of wealth, for example. The suggested financial lease approach also greatly simplifies the generation of depletion-related measures of production, income and saving – and the related flow transactions.

62. However, where the financial lease approach produces unhelpful results and/or where statistical agencies otherwise struggle to generate these estimates on an ongoing basis, it is desirable that as far as possible these agencies record ownership in a consistent manner. The default position of both the 1993 SNA (paragraph 3.8) and the draft SNA93Rev.1 (Chapter: 'The balance sheet', paragraph 53) is to attribute ownership of the mineral resource to the legal owner and we would expect that most agencies measuring mineral resource stocks are therefore presently attributing ownership on this basis. With these facts in mind, combined with the knowledge that the legal owner generates rentals from the mineral resource during the life of the extractive licence and has unambiguous claims to the mineral resource beyond the life of the extractive licence, it is recommended that SEEA clearly identify a default position on this issue. The suggested default position is to simply allocate ownership of the mineral resource to the legal owner with rentals (royalties) paid by the extractor.



**Appendix 1: Ownership of the mineral resource under an imputed financial lease arrangement**

<b>Period of the extractive lease agreement</b>					
Expected:	Year 1	Year 2	Year 3	Year 4	Year 5
NPV – resource rent	100	98	96	94	92
NPV – royalties	56	55	54	53	52
Depletion	20	20	20	20	20
Income from extractive activity	80	78	76	74	72
<b>Period beyond the extractive lease agreement</b>					
Expected:	Year 6	Year 7	Year 8	Year 9	Year 10
NPV – resource rent	90	88	86	84	82
NPV – royalties	na	na	na	na	na
Depletion	20	20	20	20	20
Income from extractive activity	70	68	66	64	62

na: not applicable

NPV (resource rent) of mineral resource	910	
NPV (resource rent) of mineral resource period of lease	480	Allocate ownership to extractor, balance sheet year 1
NPV royalties period of lease	270	
Balance NPV lease period	210	
NPV mineral resource beyond life of lease	430	Allocate ownership to legal owner, balance sheet year 1
<b><u>ASSET</u></b>		
Mineral resource: Legal owner	430	
Mineral resource: Extractor	480	

## References

Comisari, P. (2007) Issues Paper: Depletion in the SEEA—narrowing down the options. Presented at the 11<sup>th</sup> meeting of the London Group on Environmental Accounting, Johannesburg, 26-30 March 2007.

Harrison, A. (2006) Leases and Licences. Presented at the 4<sup>th</sup> meeting of the Advisory Experts Group on National Accounts, Frankfurt, 30 January – 8 February, 2006.

United Nations, International Monetary Fund, Organisation for Economic Co-operation and Development, World Bank and Commission of the European Communities, *System of National Accounts 1993*, Brussels/Luxembourg, New York, Paris, Washington D.C., 1993.

Link to Draft chapters of SNA93Rev. 1.

<http://unstats.un.org/unsd/sna1993/draftingPhase/ChapterList.asp>

United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank, *Integrated Environmental and Economic Accounting 2003*, Brussels/Luxembourg, New York, Paris, Washington D.C., 2003.

Working Party on National Accounts (2007) Minutes of the meeting of the Working Party on National Accounts, Tour Europe, Paris la Défense, 10-12 October 2006.