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Issue #15a: The Treatment of Decommissioning Costs¹

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¹ This outcome paper has been prepared by the SEEA Editor. It is based on papers presented to the London Group of Experts on Environmental Accounting and discussions among those experts. Investigation and research for this outcome paper was led by Peter Comisari of the Australian Bureau of Statistics.

A. Introduction

1. The treatment of the environmental consequences of the disposal of fixed capital considers the treatment of such things as terminal costs related to the operation of mines, oil rigs and nuclear power plants, and remedial costs aimed at restoring former landfill sites. These transactions therefore relate to activities of great environmental importance. The revised System of Environment and Economic Accounts (SEEA) needs to provide clear, practical and widely accepted recommendations on accounting for the disposal of fixed capital.
2. The conclusions and recommendations offered in this paper are substantially consistent with the position taken in the SEEA-2003 and reaffirmed in the 2008 System of National Accounts (SNA). That is, terminal costs on disposal of fixed capital should be treated as an integral part of the associated fixed capital and appropriate consumption of fixed capital estimates should be put in place. For remedial costs, these should be recognised as gross fixed capital formation when they are incurred as they lead to the building or restoration of an associated asset, usually land, which will deliver economic benefits into the future. From an environmental accounting perspective, the capitalisation of these costs emphasises the importance of the services provided.
3. The treatment adopted in the 2008 SNA solution is, however, not perfect and was a somewhat controversial issue during the most recent revision of the SNA. However, it is a solution reached after lengthy and widespread discussion within a number of forums. While it raises some concerns, all other possible treatments also raise concerns. Given this background, it does not seem sensible to adopt a different treatment in the revised SEEA as this would serve only to confuse users without providing any great gains for the SEEA.

B. Consumption of fixed capital and asset values

4. Before discussing the details of the treatment for terminal and remedial costs a brief introduction to the concepts of consumption of fixed capital and asset values in the SNA is useful. Broadly, the economic assumption is that the cost of purchasing an asset, at any stage of its useful life, is equal to the net present value (NPV) of the expected stream of income arising from the remaining use of the asset.
5. The using up of a produced asset over time through its use in production is accounted for by means of an allowance for consumption of fixed capital (commonly known as depreciation). This is calculated as the decrease in the net present value of the future income stream expected from the continued use of the asset. In short, consumption of fixed capital represents the decline in value of the asset due to its use in production. This allowance should be deducted from income and recognised as a cost of production. It is noted that if a produced asset remains with a single owner throughout its life, the accumulated value of the consumption of fixed capital will equal the original purchase price of the asset (in the absence of inflation).

C. Definition of decommissioning costs

6. Two types of decommissioning cost are recognised – terminal costs and remedial costs. Terminal costs are defined as those costs incurred to prevent environmental problems when production ceases—such as decommissioning of nuclear power plants, final storage of nuclear waste, sealing of landfills and so on (SEEA-2003, paragraph 6.59).
7. Remedial costs are defined as costs occurring when production has already ceased and where no provision has been made while production was in progress for remedial action to be taken. Examples are the rehabilitation of sites contaminated by past activities; for example, storage of fuels, former landfill and mining sites (SEEA-2003, paragraphs 6.59 and 6.82).
8. The key distinction between terminal and remedial costs relates to timing of the costs and who incurs these payments since the nature of the goods and services purchased may

be very similar. Terminal costs are incurred by the enterprise who owns the associated asset (oil rig, nuclear power plant etc.) and form part of the link between the value of the asset to the enterprise and the value of services rendered by the asset over its life. In principle they should be anticipated by the owner of the asset even if the expenditure only takes place at the end of the operation of the asset.

9. On the other hand, remedial costs are incurred by a unit other than the operator of the site. Thus there can be no link between the remedial costs incurred and the underlying asset that has been used by the operator in production.

D. Treatment of terminal costs

10. Terminal costs are considered for two typical scenarios—those where environmental protection costs are overwhelmingly incurred at the end of the asset’s useful life (‘power plants and oilrigs’); and those where such costs typically occur throughout the life of the asset, as well as at the end (‘landfill sites’). The SEEA-2003 states that:

“The value of an asset at any point in time should be determined by discounting the income to come in future years. If instead of income, there are costs to be incurred in future, these also should be built into the value of the asset, discounted as for income. Any potential buyer of the asset would have to factor the disposal costs as well as the earning potential of the asset into his decision regarding whether to buy and, if so, then the price to offer.” (SEEA-2003, paragraph 6.67)

11. The 2008 SNA (2008 SNA, paragraph 20.57) pointedly cautions against ignoring terminal costs throughout the life of the asset. It argues that this could result in these large costs being treated as intermediate costs at a time when there is no longer any income being generated from production and could therefore lead to large negative value added.

“In principle, the value of consumption of fixed capital cumulated over the life of an asset, once price changes are taken into account, should be equal to the difference between the acquisition and disposal values. In the case of assets with actual costs at the time of disposal, this means that consumption of fixed capital should cover anticipated terminal costs. Terminal costs should therefore be written off over the whole life of the asset, regardless of the number of owners during the life of the asset. Immediately before the disposal, the value of the asset will have a negative value which is reduced to zero when the terminal costs incurred are treated as gross fixed capital formation. The apparent oddity of an asset with negative value reflects the fact that the owner not only could not sell it but would have to pay another unit to take over responsibility for the asset.” (2008 SNA, paragraph 10.161)

12. It is recommended, consistent with the 2008 SNA and SEEA-2003, that an estimate be made of terminal costs on disposal of fixed capital. Paragraph 10.161 of the 2008 SNA talks about the treatment of anticipated terminal costs, so implicitly it is necessary to estimate not only the extent of these costs, but also their likelihood. In this regard terminal costs present a dual problem— (i) it is often difficult to anticipate their final size, and (ii) businesses may seek to avoid responsibility for these costs. This may happen through: suggesting a surety/bond based on vastly understated terminal costs; declaring bankruptcy when terminal activity is imminent; or ceasing business in the country in which operations have taken place. There is the added factor that between the initial estimate of terminal costs and subsequent terminal costs actually incurred, community standards may have change markedly—meaning that the final terminal costs are meeting very different standards to those initially anticipated. This is especially true of operations conducted over very lengthy time periods.

13. Nonetheless, there are a number of indications that terminal costs can reasonably be expected: (i) if an upfront bond (or some other form of surety) has been provided; (ii) if the enterprise is required to progressively put in place contributions to fund the final decommissioning activities; (iii) the past record of the enterprise; and (iv) the strength and commitment of the government of the country in which operations are taking place.

14. It is suggested that the revised SEEA provide more guidance on estimating anticipated terminal costs. This may be more an issue for the compilation guide, rather than the SEEA standard itself. However, the implications are important because if neither business nor government intends to meet terminal costs, then no costs, provisions or assets need to be recorded.

15. Under the recommended treatment, consumption of fixed capital is calculated as the change in the value of the asset between the start and the end of the accounting period but it must take specific account of terminal costs, as well as the income earning capacity of the asset. As a consequence, immediately before the end of its life, the underlying fixed asset will have a negative value showing that it actually represents a liability to the enterprise about to incur the terminal costs. These costs should be recorded as capital formation when actually incurred but the deduction of these costs from income via consumption of fixed capital will have been made progressively over the life of the asset. That is, consumption of fixed capital is charged against income *before* the disposal/terminal costs are incurred (or fully known).

16. It is noted that terminal costs are written off over the entire life of the asset, regardless of how many owners the asset may have during this time. This is because termination costs occur once only—at the end of the life of the fixed capital asset—and are unaffected by the number of owners the asset may have had.

17. Under this recommended treatment, terminal costs must be estimated before being incurred. Four scenarios need to be accounted for.

(i) In situations where the terminal costs ultimately incurred exceed the cumulated consumption of fixed capital allowance put in place the recommendation is explained in the 2008 SNA. “In practice, it may be difficult to predict terminal costs accurately. In that case, cumulated consumption of fixed capital may not cover all the terminal costs. However, the full costs are still treated as gross fixed capital formation and any amount not already covered by consumption of fixed capital during the life of the asset is written off at the time the costs are incurred as consumption of fixed capital. This is a pragmatic recommendation and will lead to NDP being over-stated over the time the asset is in use and under-stated in the year when the remaining costs are incurred.” (2008 SNA paragraph 10.162)

(ii) Where no estimates of terminal costs have been made during the life of the asset it is recommended that these costs be treated as gross fixed capital formation and then immediately written off as consumption of fixed capital, provided that they are paid for by the operator.

(iii) The third scenario is that terminal costs are anticipated and a consumption of fixed capital allowance is put in place but the terminal costs are never actually incurred by the enterprise. It is recommended that the initial estimate of terminal costs must be removed from the balance sheet via the other changes in volume of assets account.

(iv) Similarly, if terminal costs are overestimated compared to actual terminal costs subsequently incurred, this overestimate is corrected in the asset account through a category of ‘other changes in the volume of assets’. Again, this occurs when the final terminal cost is observed.

18. Where an enterprise avoids its responsibility to meet terminal costs, the government might be expected to assume responsibility for the decommissioning action. Although the expected terminal cost was considered a component of the related asset value while the asset (e.g. the oil rig etc.) was in operation, if and when the government takes on the decommissioning activity there is no longer this associated asset. This expenditure undertaken by the government falls into the category of remedial costs and is treated accordingly.

Recommendation: That where terminal costs are anticipated the costs should be depreciated as consumption of fixed capital over the life of the underlying asset and the expenditure recorded as gross fixed capital formation when incurred.

Recommendation: That if the initial estimate of terminal costs is lower than the final costs actually incurred then these extra costs should be treated as gross fixed capital formation and immediately treated as consumption of fixed capital in that period? Further, that if the initial estimate of terminal costs is higher than the final costs actually incurred (or these final costs are zero for the operator) then the remaining value of the terminal costs at the time of decommissioning should be removed from the capital stock via the other changes in volume of asset account.

E. Treatment of remedial costs

19. For costs of a remedial nature, these costs are often incurred long after a site has been closed and the original operator has left. The SEEA-2003 outlines two distinct classes of remedial costs: (i) the restoration of land to allow its use for some other purpose; or (ii) to ensure no harmful emissions from waste deposits created by past activity are able to leach into surroundings and cause environmental damage.

20. Discussion in the London Group concluded that in both cases that relevant expenditures should be treated as gross fixed capital formation and give rise to a fixed asset – land improvement. In both cases the expenditures are treated as building or restoring an asset that can deliver ongoing benefits. When land reclamation is the motivation behind the operation of a landfill site, part of the output of the activity represents fixed capital formation as land improvement. The value of the output will be represented by the increase in the market value put on the resulting reclaimed land. Depending on the nature of this land improvement, there need not be an accompanying consumption of fixed capital to consider.

21. Note however, that remedial costs are by definition incurred after a site has ceased operation. In cases where environmental protection expenditures are incurred on an ongoing basis such that environmental damage is either inhibited or reduced on a continuing basis then these expenditures should be treated as intermediate consumption of the operator at the time they are incurred.

22. For remedial costs there is no consideration required as to the timing of reporting or questions over whether the costs are anticipated. By definition these costs are incurred after the operations at the site have ceased and are not incurred by the operator of the site.

Recommendation: That remedial costs be treated as gross fixed capital formation when incurred in circumstances in which the expenditure gives rise to a fixed asset – most commonly land improvements.

F. Links to the recognition of environmental protection expenditure

23. Depending on the nature of the activity and the expenditure, environmental protection expenditure (EPE) can be treated as intermediate consumption, government final consumption expenditure, household final consumption expenditure or gross fixed capital formation. It is recommended that the boundary lines and guidance provided in the 2008 SNA be used to determine appropriate treatment for EPE generally. At the same time, it is also appropriate that the treatment of terminal and remedial costs be consistent in EPE accounting and in SEEA accounting more generally. Thus, in cases where terminal and remedial costs are treated as gross fixed capital formation the same treatment is applied in EPE accounting.

References

Integrated Environmental and Economic Accounting, SEEA-2003,
<http://unstats.un.org/unsd/envaccounting/seea.asp>

System of National Accounts 2008, <http://unstats.un.org/unsd/nationalaccount/sna2008.asp>