



# Depletion in the SEEA—narrowing down the options


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## SEEA-2003

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- Two vertical decorative bars, one green and one yellow, are positioned on the left side of the slide.
- Characterised by multiple treatment options for some issues
  - If SEEA is to become a statistical standard, these 'options' must be reconstituted as clear accounting recommendations



## SEEA chapter 10: sections

- Depletion
- Defensive expenditure
- Degradation

### Depletion:

- Five sets of options
- Two targeted for resolution at this meeting

## Two issues for resolution

- 1. How best to view resource rent associated with extraction of natural resources?
- 2. How best to view discovery of mineral and energy resources?  
  
(i.e. what is the relationship between mineral exploration and new discoveries of mineral and energy resources?)

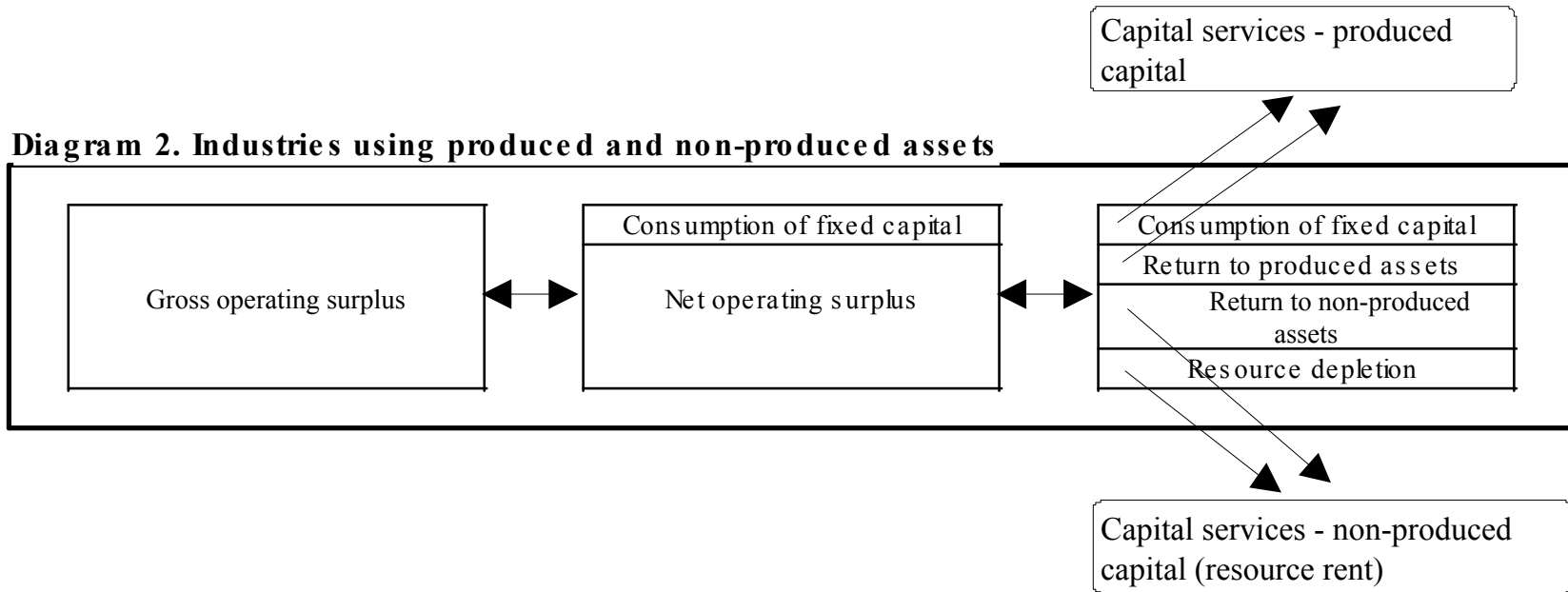
## Depletion and resource rent

- Resource rent: the value of capital service flows rendered by natural resources -- or their share in gross operating surplus.
- Depletion: change in value of a quantity of natural resource between two points in time.

# Operating surplus, decomposed



Diagram 2. Industries using produced and non-produced assets



## How to define the income element of resource rent?

- A1. Entire resource rent = income
- A2. No resource rent = income
- A3. Resource rent = part income and part depletion

## A1. Entire resource rent = income

- Position taken in 1968 SNA and in production account of the 1993 SNA
- Implies that natural resources are infinitely abundant
  - evidently not true for many natural resources
  - therefore contrary to a sustainable development information system



## A2. No resource rent = income

- Revenue from selling natural assets excluded from output / value added of extractive industries
- SEEA is an integrated environmental and *economic* accounting system
- Would extractive industries exist without an economic return to the owners?

## A2. No resource rent = income, *continued...*

- Price received by extractive enterprise is not equal to price paid by buyer.
- Ignores often substantial income earned by these industries – base for tax revenue etc.
- If revenue from natural assets is not income then SNA saving of extractive industries distorted. Certain income transfers should be reworked as capital transfers e.g. income tax, dividends?

## A3. Resource rent = part income and part depletion

- Resource rent split into: income and depletion components.
- As resource becomes scarcer, income share falls and depletion share increases.
  - an appropriate message to policymakers
- Treats natural assets more like fixed assets than inventories.
- Typically uses NPV – a method recognising the often lengthy time periods associated with mineral extraction



## Assets: mineral exploration and new discoveries of subsoil assets

- SNA records new discoveries as 'other volume changes' i.e. they are not the result of production processes
- SNA records mineral exploration expenditure as giving rise to a produced intangible asset (knowledge)
  - not a perfect solution: discoveries are not accidental, they are dependent on exploration



# Does mineral exploration 'produce' new discoveries of mineral resources?

- Does mineral exploration somehow *transform* inputs in order to 'produce' new discoveries?
- Can mineral resources be thought of as 'produced', in any sense?



# Does mineral exploration 'produce' new discoveries of mineral resources? *continued...*

- Output of mineral exploration = knowledge asset (information about the mineral resource)
- Value of this output is the price paid to the exploration company
  - mineral exploration (knowledge) asset is used in the subsequent extraction process



## Option B1: use market values to value mineral exploration and mineral resources

- Generally: SNA requires market prices
- But mineral resources rarely sold on market, especially in countries where they are owned by the government
- And market values for mineral resources tend to reflect combined value of mineral resources and associated mineral exploration i.e. risk of double counting

## Option B2: valuation of mineral exploration according to market prices and mineral resources according to NPV

- SNA93 Rev.1 recommends use of NPV where returns are spread over lengthy periods (e.g. for mineral resources)
- NPV systematically links resource rent with values of mineral resources and mineral exploration
  - value of mineral exploration excluded from resource rent used to value the mineral resource





## Option B3: combine mineral exploration and mineral resource to form a 'developed natural asset'

- Allows symmetrical treatment of 'new discoveries' and 'depletion' in the SNA production account
- Implies that the mineral resource discovery is an 'output' of the mineral exploration process

## Option B3: combine mineral exploration and mineral resource to form a ‘developed natural asset’, *continued...*

- ‘Developed natural asset’ is a produced tangible asset – comprised of mineral deposits (non-produced tangible asset) and mineral exploration (produced intangible asset)
- Therefore, inconsistent with SNA (and SNA93 Rev.1)
- Amortization of a ‘developed natural asset’ is problematic