Asset accounts

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9 September 2024

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Outline

- Assets in physical terms
- NPV

Energy accounts-Assets

SNA definition

a store of value representing a benefit or series of benefits accruing to an economic owner by holding or using the entity over a period of time.

SEEA definition

environmental assets are the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.

Energy accounts-Assets

Classification of environmental assets in the SEEA Central Framework

1	**Mineral and energy resources**
1.1	Oil resources
1.2	Natural gas resources
1.3	Coal and peat resources

Some notes:

* We also have uranium and other nuclear fuels.
* Renewables sources such as solar out of scope
* Timber asset accounts are separate.

Asset accounts

* But first how do we categorize energy assets?
  * Economic and social viability
  * Field project status and feasibility
  * Geological knowledge
* Need to collaborated with research institutes on this.

Asset accounts

Categorization of mineral and energy resources

		Corresponding UNFC-2009 project categories		
		E	F	G
	SEEA Class	Economic and social viability	Field project status and feasibility	Geological knowledge
Known deposits	Class A: Commercially recoverable resources[a]	E1. Extraction and sale have been confirmed to be economically viable	F1. Feasibility of extraction by a defined development project or mining operation has been confirmed	Quantities associated with a known deposit that can be estimated with a high (G1), moderate (G2) or low (G3) level of confidence
	Class B: Potentially commercially recoverable resources[b]	E2. Extraction and sale are expected to become economically viable in the foreseeable future[c]	F2.1 Project activities are ongoing to justify development in the foreseeable future	
			F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay	
	Class C: Non-commercial and other known deposits[d]	E3. Extraction and sale are not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability	F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay	
			F2.3 There are no current plans to develop or to acquire additional data at the time owing to limited potential	
			F4. No development project or mining operation has been identified	
Potential deposits (not included in SEEA)	Exploration projects Additional quantities in place	E3. Extraction and sale are not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability	F3. Feasibility of extraction by a defined development project or mining operation cannot be evaluated owing to limited technical data	Estimated quantities associated with a potential deposit, based primarily on indirect evidence (G4)
			F4. No development project or mining operation has been identified	

Source: UNFC-2009, figures 2 and 3.

Asset accounts

* Stocks can be compiled for all classes (what is in the ground)
* Assets are compiled for only class A

Scope of mineral and energy resources within SEEA-Energy and SNA asset accounts

SEEA-Energy classification	SEEA-Energy asset accounts		2008 SNA asset accounts
	Physical asset accounts	Monetary asset accounts	
Class A: Commercially recoverable resources	Quantities	Market values assigned to quantities associated with known deposits that can be estimated with high (G1), moderate (G2) or low (G3) levels of confidence in geologic knowledge	Market value assigned, but with some ambiguity about which estimate to use
Class B: Potentially commercially recoverable resources	Quantities	Market value assumed to be zero	Outside asset boundary
Class C: Non-commercial and other known deposits	Quantities	Market value assumed to be zero	Outside asset boundary
Potential resources		Outside asset boundary	

Energy accounts-Assets

Mineral and energy resources account (physical units)

	Type of mineral and energy resource			
	(Class A: Commercially recoverable resources)			
	Oil resources (thousands of barrels)	Natural gas resources (cubic metres)	Coal and peat resources (thousands of tons)	Uranium and other nuclear fuels (tons)
Opening stock of mineral and energy resources	**800**	**1 200**	**600**	
Additions to stock				
Discoveries				
Upward reappraisals		200		
Reclassifications				
Total additions to stock		*200*		
Reductions in stock				
Extractions	40	50	60	
Catastrophic losses				
Downward reappraisals			60	
Reclassifications				
Total reductions in stock	*40*	*50*	*120*	
Closing stock of mineral and energy resources	**760**	**1 350**	**480**	

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Asset accounts--valuation

* What is the value of the resource in situ? Problem is that energy assets are NOT bought and sold (usually)
* Net present value (NPV) as in the SNA for estimating asset values
* Need to be clear about our assumptions
  * Discount rate: tradeoff between current and future
  * Extraction profile: how much will be removed
  * Price of the extracted resource

Energy accounts-Assets in monetary terms

Conceptual form of the monetary asset account for energy resources

	Type of mineral and energy resource Class A: Commercially recoverable resources (Currency units)
Opening value of stock of resources	
Additions to value of stock	
Discoveries	
Upward reappraisals	
Reclassifications	
Total additions to stock	
Reductions in value of stock	
Extractions	
Catastrophic losses	
Downward reappraisals	
Reclassifications	
Total reductions in stock	
Revaluations	
Closing value of stock of resources	

Energy accounts-NPV

1. The future extraction profile in physical terms is established.
2. Estimation of resource rent for the current period is calculated by subtracting all extraction costs (e.g. operating costs, fixed capital costs, and specific taxes and subsidies). Resources rent is divided by physical quantity extracted giving unit resource rent
3. For each future period the total expected future earnings (total resource rent) is estimated by multiplying the physical extraction by the unit resource rent.
4. For each future period the net present value of the total resource rent is estimated by discounting to present period value.
5. Total net present value is calculated by adding up all future resource rents discounted to present period value.

Thank you