System of Environmental-Economic Accounting Central Framework and SEEA Experimental Ecosystem Accounting – some detail

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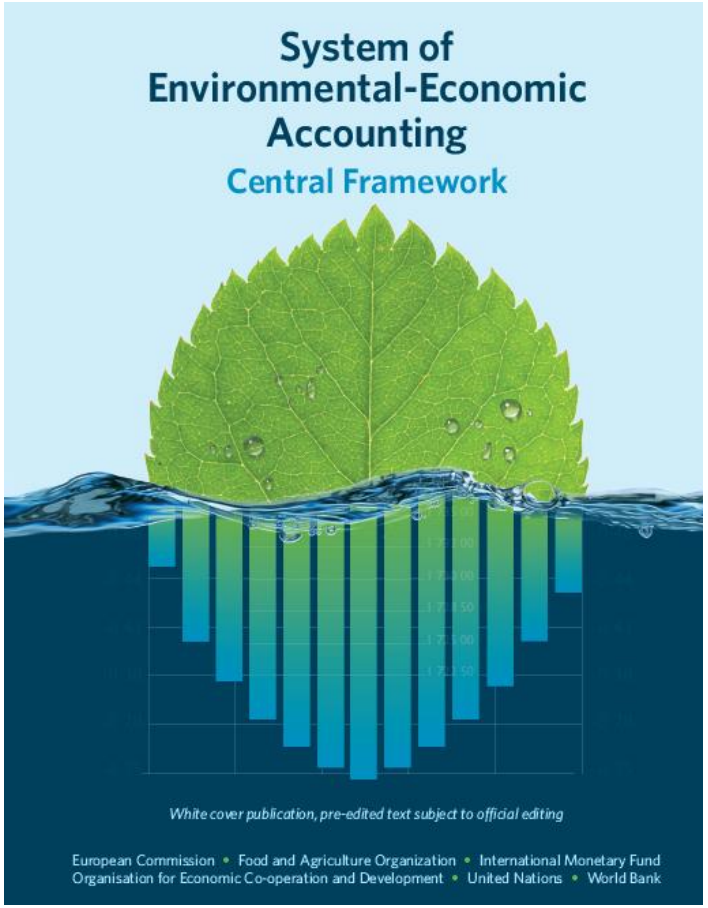
Overview of presentation

- *Extends the presentation held on 27 June offering more detail on accounting concepts and tables*
- *Set-up of a physical asset account – SEEA CF*
- *SEEA Experimental ecosystem accounts – basic issues and set-up of accounts for ecosystem services flows and ecosystem assets*
- *Conclusions*

Reminder - SEEA 2012 central framework

- **Accounting approach: measures stocks and flows in integrated manner, aligned with System of National Accounts**
- **Broad and inclusive approach covers physical and monetary flow accounts as well as asset accounts**
- **Asset accounts: mineral and energy resources, land (land use and land cover accounts, changes), soil, timber, aquatic resources (fish stocks etc.), other biological resources, water**



European Commission

SEEA physical asset account for timber resources (1 000 cubic meters over bark)

	Type of timber resource		
	Cultivated timber resources	Natural timber resources	
		Available for wood supply	Not available for wood supply
Opening stock of timber resources			
Additions to stock			
Natural growth			
Reclassifications			
Total additions to stock			
Reductions in stock			
Removals			
Felling residues			
Natural losses			
Catastrophic losses			
Reclassifications			
Total reductions in stock			
Closing stock of timber resources			
Supplementary information			
Fellings			

SEEA physical asset account for forest and other wooded land (hectares)

	Type of forest and other wooded land				
	Primary forest	Other naturally regenerated forest	Planted forest	Other wooded land	Total
Opening stock of forest and other wooded land					
Additions to stock					
Afforestation					
Natural expansion					
Total additions to stock					
Reductions in stock					
Deforestation					
Natural regression					
Total reductions in stock					
Closing stock of forest and other wooded land					

Reminder - Key aspects of the framework for experimental ecosystem accounting

Statistical units (basic spatial units - BSU, land cover/ecosystem functional units - LCEU and ecosystem accounting units – EAU).

Classification of ecosystem services (CICES)

- **Provisioning services (food, fibres etc.)**
- **Regulating services (air and water clean-up, flow regulation, etc.)**
- **Cultural services (recreation, knowledge…)**

Ecosystem assets

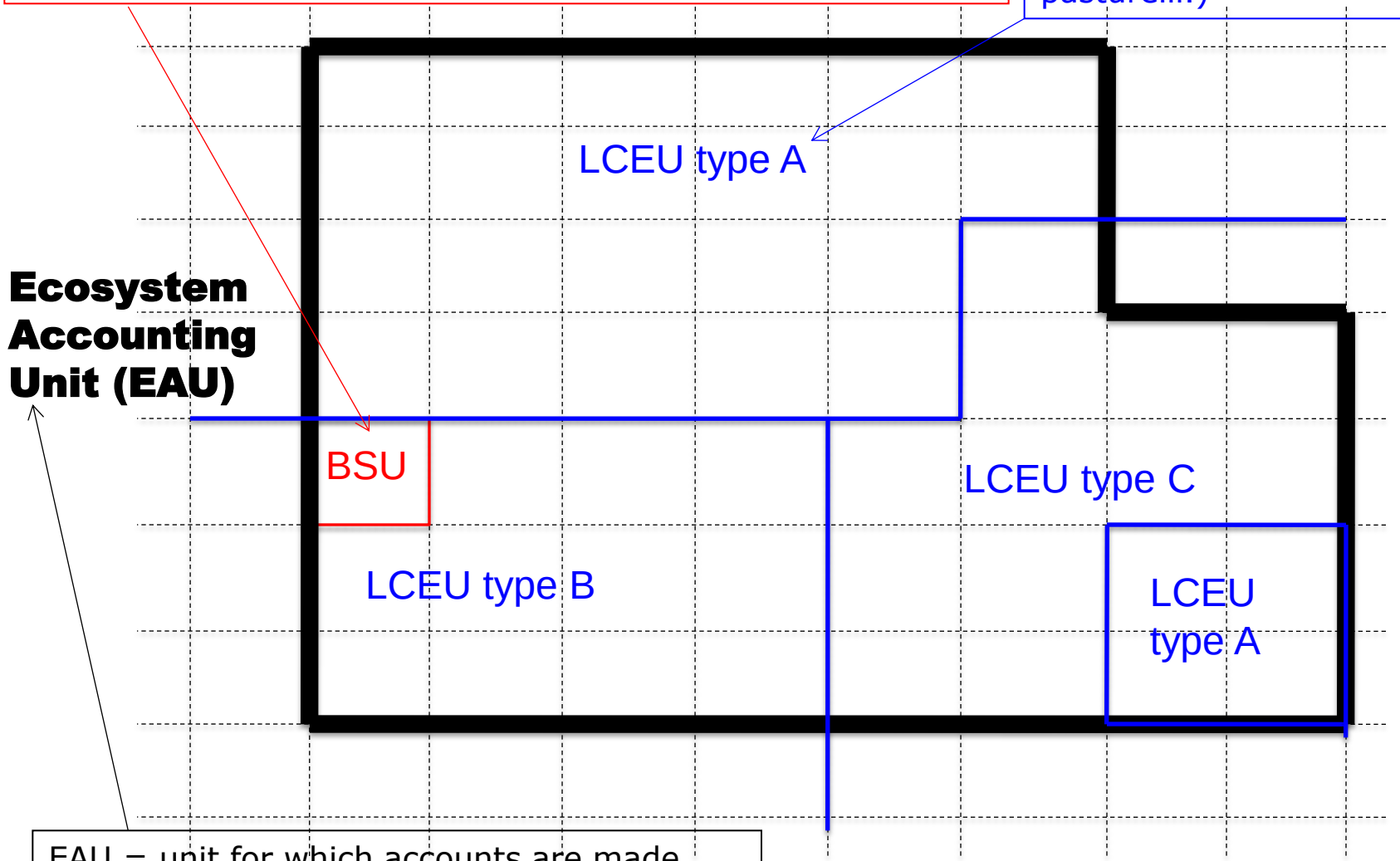
- **Ecosystem extent**
- **Ecosystem condition (measured through a range of indicators of characteristics)**
- **Expected ecosystem service flows**

Degradation and enhancement

Spatial Units

BSU = smallest unit for which data exist (e.g. satellite image)

LCEU = 'ecosystem'-type unit (e.g. a forest, wetland, agricultural mosaic, a pasture….)



EAU = unit for which accounts are made (often administrative area, catchment….)

General form of ecosystem service accounts

	Type of LCEU								
	Ag	Urban	Forest	Wetlands	…				
Type of ecosystem services (by CICES)									
Provisioning services									
Regulating services									
Cultural services									

Measuring ecosystem extent and condition

- **Extent measured as changes in areas and/or changes in composition**
- **Changes in ecosystem condition reflect changing characteristics / functioning / "performance" of the ecosystem asset**
- **Relevant characteristics (and associated indicators) will vary with the ecology and location of the area**

  Vegetation – canopy cover, leaf area index, change in biomass
  Biodiversity – species richness, relative abundance
  Soil – soil organic matter content, soil carbon, groundwater table
  Water – river flow, water quality (SEEA-Water), fish species

General form of ecosystem asset account

	Ecosystem extent	Characteristics of ecosystem condition				
		Vegetation	Biodiversity	Soil	Water	Carbon
	Area (proportion of EAU)	Indicators (e.g. Leaf area index, biomass index)	Indicators (e.g. species richness, relative abundance)	Indicators (e.g. soil fertility, soil carbon, soil moisture)	Indicators (e.g. river flow, water quality, fish species)	Indicators (e.g. net carbon balance, primary productivity)
Type of LCEU						
Forests						
Agricultural land						
Urban areas						
Inland water bodies						

Measuring expected ecosystem service flows

- **Conceptual links to standard asset accounting but adaptations as well**
  - Starting point is capital services from produced assets
  - Issues of multiple services, multiple users & regeneration
- **Assume current basket of ecosystem services will continue**
  - Basket will comprise a mix – e.g. for a forest there may be services from logging of timber, from air filtration, and from recreation
  - Basket relates to a particular use of an ecosystem asset
- **Need to assess sustainability to determine asset life & expected future services**
  - Assess condition relative to service flows
- **Degradation, enhancement and conversion**

Reminder - Conclusions

- *The SEEA Experimental ecosystem accounting provides basic terms and concepts for testing*
- *Starting point is land use and land cover accounts using spatial units adapted to needs of ecosystem accounting*
- *Further layers of data can be added as appropriate and available (leaf area index, net primary production, water availability and use, soil types, harvest data, etc.)*
- *Need to base accounts on the data generated already via satellites, reporting systems and main-stream statistical systems complemented by estimates where needed - > design information systems*
- *Leadership needed – in Europe the European Environment Agency*