



System of
Environmental
Economic
Accounting

Aligning SEEA and GEP

United Nations Statistics Division



United Nations

Outline

- Discussion on basic concept relationship between GEP, SEEA and GDP
- Comparison of related case study
- Concept and measurement approach of selected ecosystem services



Concept of GEP

GDP and GEP



For example:

- Mining
- Manufacturing
- Construction
- Transportation & storage
- Information & communication
- Wholesale and retail trade
- Financial, insurance, and real estate service
- Public administration
- Other services

For example:

- Agriculture
- Forestry
- Fishing
- Recreation & tourism
- Hydropower

For example:

- Water retention
- Flood mitigation
- Soil retention
- Sandstorm prevention
- Pollination
- Carbon sequestration
- Mental health
- Air purification
- Water purification
- Climate regulation

Discussion on GDP and GEP/SEEA

- The diagram represents a clear way to present the linkage between GEP and GDP which is easy for reader to understand. It was noted when going into details sometimes the relationship seems not to be so clear cut.
 - > The first issue encountered is that sometimes the value of regulating or cultural services may also be included in SNA in an implicit way.
 - > Another issue is the area of intersection of GEP/SEEA and GDP as shown in the diagram. In terms of biomass provisioning service, it is suggested there are differences on what goes into the GDP (benefit, for example agriculture product) and what goes into GEP (ecosystem service, ecological contribution to the agriculture product)
- It is suggested the meeting can further explore the relationship between GEP, SEEA and GDP building on the existing diagram.

Value of ecosystem services as % of GDP

Qinghai study

- *In Qinghai, GEP was greater than GDP in 2000 and 3/4th as large as GDP in 2015 as its market economy grew.*

Other country studies

- Netherlands (2020 publication) 1.9%
- UK (2019 published figures): 0.9 %
- South Africa (2017 publication): 7%

Discussion

- The variation of the results may point to difference in scope and measurement method.
- It is suggested that the meeting could explore the possible underlying causes of the difference of results among various studies.

Discussion on selected ecosystem services

- During the last meeting, the following observations were raised on whether the measurement approach on each ecosystem services are aligned between GEP and SEEA.
 - > Water yield – not aligned (difference in scope and treatment)
 - > Soil retention; grossly aligned, no use of counterfactual (absence of vegetation)
 - > Sandstorm prevention – aligned, model includes location of beneficiaries – but high value is surprising
 - > Flood mitigation – Could not follow how storage (a stock variable) is linked to (avoided) damages (flow variable)
 - > Air purification – partly aligned: the model does not have a link to the population / beneficiaries, assumes all filtered air is used
 - > Water purification – aligned (would be interested to learn more how the coefficients were estimated)
 - > Carbon sequestration – more or less aligned
 - > Eco-tourism– TCM – aligned, minor issue is whether to use also time spent in visit

Water supply in GEP

- Accounting item in GEP
 - > Water use in downstream agricultural irrigation
 - > Water use in households
 - > Water use in industry
 - > Hydropower production
- It is suggested that the meeting could further discuss treatment for water use in downstream and treatment of hydropower production
 - > Water use in downstream: The issue concerns the location of beneficiary. If the value associated with the downstream water use is accrued to the upstream province GEP, will there be a corresponding decrease of the value of the downstream GEP in order to avoid the double counting?
 - > Treatment of hydropower production: There is an ongoing discussion on whether hydropower production should be considered as ecosystem services or abiotic services.

Biomass provisioning services in GEP

- Accounting items
 - > Agricultural crop production ($\times 10^3\text{t}$)
 - > Animal husbandry production ($\times 10^3\text{t}$)
 - > Fishery production ($\times 10^3\text{t}$)
 - > Forestry production ($\times 10^3\text{m}^3$)
 - > Plant nursery production ($\times 10^9$)
- Issue to be discussed
 - > Relative contribution approach vs harvested approach

Biomass provisioning services in SEEA

- Current thinking in defining biomass provisioning services
 - > *the ecological contribution to the gross biomass harvested by economic units including households –*
- Two key challenges in measurement.
 - > The first concerns measuring the ecological contribution
 - > The second concerns measuring the gross biomass harvested.
- Discussion:
 - > It is suggested to explore if there is an attempt to measuring and valuing the ecological contribution as opposed to harvested product in GEP.

Other services

- Regulating services
 - > Flood mitigation
 - > Soil retention and non-point pollution prevention
 - > Water purification
 - > Air purification
 - > Sandstorm prevention
 - > Carbon sequestration
- Non-material/ cultural services
 - > Eco-tourism

Water purification services in SEEA

- Water regulation pertaining to maintenance of base flows
- Water purification pertaining to nutrient removal
- Water purification pertaining to sediment retention

Use contexts for water related flows for surface water bodies

Use / activity context	Key ecosystem services and related flows & benefits					
	Water regulation (base flows)	Water purification (nutrient removal)	Water purification (sediment retention)	Water supply	Biomass provision	Other benefits/ flows
Irrigation for agriculture	X		X	X	X	
Industrial use of water	X			X		
Domestic consumption of water	X	X		X		
Hydropower	X		X			Electricity
Release of nitrogen (N) (e.g. from agriculture)		X				
Commercial fishing	X	X	X		X	
Recreation / non-commercial fishing	X	X	X		X	Recreation
Recreation / swimming	X	X				Recreation
Navigation	X					Transport

Global climate regulation/carbon-related services in SEEA

- Terrestrial and marine ecosystems have the potential, through ecosystem processes, to reduce atmospheric concentrations and hence provide benefits to people/society. Those ecosystem processes involve the sequestration and storage of carbon which collectively provide an ecosystem service labelled *climate regulation*
- Assume that the primary driver of climate regulation services are stocks and flows of carbon
- The proposal here is that climate regulation services supplied by a single ecosystem asset (e.g. a forest) will be “embodied” in the total stock of carbon that it holds.
Thus:
 - > Higher levels of carbon stock will embody/imply higher levels of climate regulation service
 - > Increases in stock (through sequestration) will imply an increase in services supplied
 - > Decreases in stock through the release of carbon will imply decreases in services supplied.

THANK YOU

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