

2nd Expert Meeting on Aligning SEEA and GEP

Agenda

16 April 2020



Background

1. There is an increasing effort at the international and national level to develop an integrated information system to measure the linkage and interdependence between nature, economy and society for sustainable development. At the international level, the development of SEEA and the adoption of the SEEA Central Framework in 2012 brought environmental data and information into the realm of official statistics at the par with economic statistics allowing to go beyond GDP. The SEEA Experimental Ecosystem Accounting (SEEA-EEA), building on the Central Framework, constitutes an integrated statistical framework for organizing biophysical data, measuring ecosystem services, tracking changes in ecosystem assets and linking this information to economic and other human activity. The SEEA serves as the underlying statistical framework for natural capital accounting.
2. In China, there is an ongoing effort to develop a monitoring framework to measure sustainability. Gross Ecosystem Product (GEP) is a methodological framework developed by the Chinese scientists that aims to measure natural capital and the ecological contributions to the economy in monetary teams, with an objective to evaluate the effectiveness and progress of conservation effects and policy. GEP is being considered at the par with GDP, providing a summary information on the performance on the environment. GEP is increasingly being accepted as a measure to evaluate the performance of government at the provincial level with respect to the environment.
3. SEEA-EEA and GEP are largely compatible and there is an ongoing effort to bring alignment of the two frameworks. Considering also on-going efforts by NBS to develop guidelines on the implementation of the SEEA EEA in China based on the experience of Guangxi and Guizhou, and the plan from CAS to develop guidelines for GEP compilation in China, discussions to align the two frameworks is very timely.
4. The technical meetings will bring together the SEEA and GEP experts to foster technical exchange, with an objective to resolve technical difference, to develop a strategy to bring alignment, integration and common approach of the two frameworks to advance natural capital accounting at the global level and in China.

 Discussion items for the 2nd meeting

1. The first meeting was held on 10 March 2019, during which an overview of the GEP and the latest insight from the SEEA EEA revision were presented at the meeting. It was noted that there are lot of similarities between SEEA and GEP framework, recognizing some difference pertaining to some measurement concepts exists between two frameworks. It was agreed to have a series of follow up meeting to address these issues and to work together towards aligning the concepts and methods to implement both.
2. The purpose of the 2nd meeting is to discuss in greater details the following issues:
	1. The relationship between GEP, SEEA and GDP
	2. Comparison of related case study.
	3. Discussion on concept and measurement approach of selected ecosystem services

Relationship between GEP, SEEA and GDP

1. During the first meeting, the relationship of GDP and GEP was presented using the following diagram. 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.



1. The first issue encountered is that sometimes the value of regulating or cultural services may also be included in SNA in an implicit way. During the recent development of the Guidance on valuation for ecosystem accounting, a preliminary analysis was undertaken to examine whether the value of selected ecosystem services is included in SNA or not.

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| --- | --- | --- | --- |
| Ecosystem service | Included in SNA | Sectors | Methods/Comments |
| Cultivated biomass from agriculture | √ | Agriculture | Market rental value of land if available. Residual value if not.  Both used in some pilot accounts |
| Cultivated biomass from forests | √ | Forestry | Market rental value of land. Implicit User Cost.  Both used in some pilot accounts |
| Cultivated biomass from fisheries | √ | Fishery | Production function.  Residual value.  Only residual value used in some pilot accounts |
| Uncultivated biomass from agriculture | √ | Agriculture | Replacement cost.  Crude production function possible. |
| Wild animals | Partial | Agriculture | Residual value from market transactions used in some pilot accounts |
| Uncultivated biomass from forests | Partial | Forestry | Stumpage value (2)  |
| Uncultivated biomass from fishery & marine environments | √ | Fishery | Production function (Capture fishery). Residual value (Seagrasses) |
| Carbon sequestration | No | Several | Marginal cost of abatement. Carbon related instruments such as taxes are recorded in the national accounts in many countriesSocial cost of carbon. |
| Air filtration | Partial | Health | VSL or DALY plus Costs of Morbidity (3) |
| Soil erosion prevention | Partial | Agriculture  | Production function. Replacement cost. |
| Water purification | Partial | Utility | Market Transactions (4).Avoided artificial purification costs and costs of artificial treatment (5) |
| Water regulation | Partial | Utility | Value of services based on damages avoided and costs of provision (5) |
| Water supply | Partial | Utility | Residual value. Production function. |
| Recreation enabling services | Partial | Public service | Value of services estimated from revealed preference or stated preference and costs of provision (5) |
| Habitat & biodiversity-related services | YesPartialNoNo | AgricultureRural public service | Nursery: Residual valueHabitat: Prospecting transaction dataCultural: Travel costNon-Use:  Stated Preference |

1. Methods are listed in order of priority if more than one is proposed.
2. A lot of transactions are in the informal sector and illegal, which makes valuation difficult.
3. The service would appear in the SNA accounts as lowering GDP, because it reduces health costs
4. Market data on price of water is highly regulated and often not close to MTWP
5. The appropriate value is somewhere between the demand value and cost of supply.  Methods for fixing it are in development.
6. 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)
7. It is suggested the meeting can further explore the relationship between GEP, SEEA and GDP building on the existing diagram.

Comparison of related case studies

1. The GEP study in Qinghai noted that *In Qinghai, GEP was greater than GDP in 2000 and 3/4th as large as GDP in 2015 as its market economy grew*.”. However, the comprehensive studies done on valuation in statistics community find results in the order of 2 – 8 % of GDP, which is much lower than the results in Qinghai). Please refer to the appendix of this document for the breakdowns of the value of ecosystem services from the above studies.
* Netherlands (2020 publication) 1.9% of GDP

*Source:* [*https://www.cbs.nl/en-gb/background/2020/04/monetary-valuation-of-ecosystem-services-for-the-netherlands*](https://www.cbs.nl/en-gb/background/2020/04/monetary-valuation-of-ecosystem-services-for-the-netherlands)

* UK (2019 published figures): 0.9 % of GDP

*Source:*[*https://www.ons.gov.uk/economy/environmentalaccounts/datasets/uknaturalcapitalaccountssupplementaryinformation*](https://www.ons.gov.uk/economy/environmentalaccounts/datasets/uknaturalcapitalaccountssupplementaryinformation)

* South Africa (2017 publication): 7% of GDP

*Source: Turpie et al. (2017): Mapping and valuation of South Africa's ecosystem services: A local perspective*

1. 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 concept and measurement approach of selected ecosystem services

1. During the last meeting, the following observations were raised on whether the measurement approach on each ecosystem services are aligned between GEP and SEEA.
	1. Water yield – not aligned (difference in scope and treatment)
	2. Soil retention; grossly aligned, no use of counterfactual (absence of vegetation)
	3. Sandstorm prevention – aligned, model includes location of beneficiaries – but high value is surprising
	4. Flood mitigation – Could not follow how storage (a stock variable) is linked to (avoided) damages (flow variable)
	5. Air purification – partly aligned: the model does not have a link to the population / beneficiaries, assumes all filtered air is used
	6. Water purification – aligned (would be interested to learn more how the coefficients were estimated)
	7. Carbon sequestration – more or less aligned
	8. Eco-tourism– TCM – aligned, minor issue is whether to use also time spent in visit
2. It is suggested that the meeting could discuss in greater details on the each of the following services, in order to compare the concept and measurement approach used in GEP and SEEA, and to address the issue on alignment
	1. Material/provisioning services
		1. Production of ecosystem goods (e.g. cultivated crops)
		2. Water supply, hydropower and renewable energy
	2. Non-material/ cultural services
		1. Eco-tourism
	3. Regulating services
		1. Flood mitigation
		2. Soil retention and non-point pollution prevention
		3. Water purification
		4. Air purification
		5. Sandstorm prevention
		6. Carbon sequestration
3. Please refer to the following document for the definition and scope of selected ecosystem services in the GEP and SEEA framework.

GEP:

<https://seea.un.org/sites/seea.un.org/files/gep-_qinghai_case_pnas_final_submission_20200117_1.pdf>

SEEA: <https://seea.un.org/sites/seea.un.org/files/documents/EEA/seea_eea_dp3.2_es_treatments_feb2020.pdf>

1. The accounting item of water supply in GEP covers the water use in downstream agricultural irrigation, households and industry as well as the hydropower production. It is suggested that the meeting could further discuss treatment for water use in downstream and treatment of hydropower production
	1. Water use in downstream: The issue concerns the location of beneficiary. If the value associated with the downstream water use is accrue 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?
	2. Treatment of hydropower production: There is an ongoing discussion on whether hydropower production should be considered as ecosystem services or abiotic services.
2. As for the biomass provisioning (e.g. cultivated crops), the current thinking in SEEA is to define biomass provisioning services as the ecological contribution to the gross biomass harvested by economic units including households. It is suggested to explore if there is an attempt to measuring and valuing the ecological contribution as opposed to harvested product in GEP.

Appendix: Results from Netherlands, UK and South Africa

**Netherlands**



Source: <https://www.cbs.nl/en-gb/background/2020/04/monetary-valuation-of-ecosystem-services-for-the-netherlands>

UK



Source: <https://www.ons.gov.uk/economy/environmentalaccounts/datasets/uknaturalcapitalaccountssupplementaryinformation>

**South Africa**



Source: *Turpie et al. (2017): Mapping and valuation of South Africa's ecosystem services: A local perspective*