



System of  
Environmental  
Economic  
Accounting

## **2<sup>nd</sup> Expert Meeting on Aligning SEEA and GEP**

### **Summary report**

**16 April 2020 (Online)**



**United Nations**

## Discussion items for the 2<sup>nd</sup> meeting

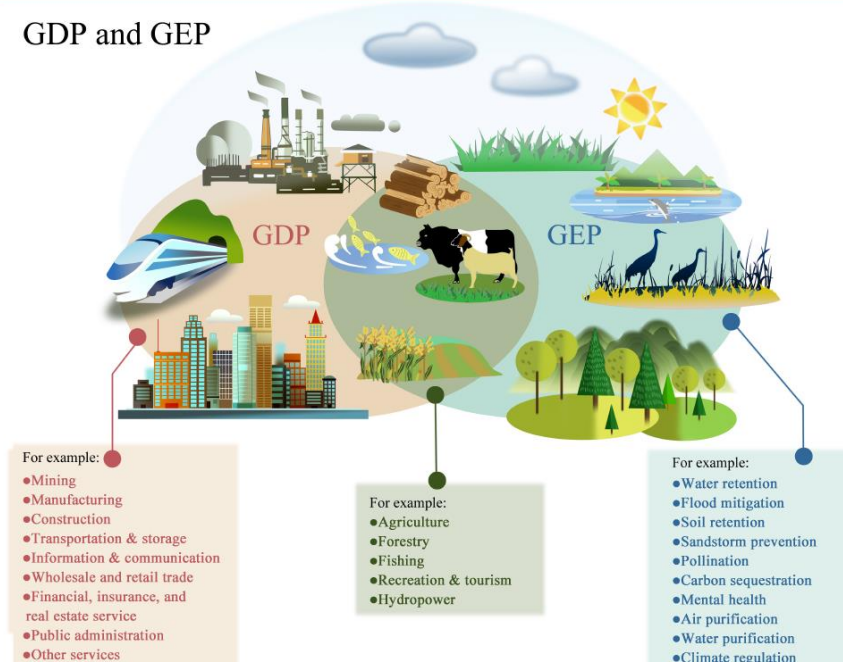
1. Two online meetings were organized to bring together the SEEA and GEP experts to discuss the alignment of SEEA and GEP, with an objective to resolve technical difference and to develop a strategy to bring alignment, integration and common approach of the two frameworks to advance natural capital accounting at the global level and in China.
2. The first meeting was held on 10 March 2019, during which an overview of the GEP and the SEEA EEA, including the current thinking emerged during the revision process were presented. It was noted that there are lot of similarities between the SEEA and GEP framework, recognizing that some differences pertaining to measurement exist between the two frameworks. It was agreed to have a follow up meeting to further understand these issues and to work together towards aligning both concepts and methods.
3. The 2<sup>nd</sup> meeting, which took place on 16 April, discussed in greater details the following issues:
  - a. The relationship between GEP, SEEA and GDP
  - b. Comparison of related case studies on accounting for ecosystem services, in particular concerning the relationship between the total value of ecosystem services and GDP
  - c. Discussion on concept and measurement approach of selected ecosystem services

## Relationship between GEP, SEEA and GDP

4. During the first meeting, the relationship of GDP and GEP was presented using the following diagram. The diagram represents an easy-to-understand relationship between GDP and GEP. However, the diagram is a simplification of the reality and some considerations are not clear cut.

# Concept of GEP

## GDP and GEP



5. The first issue encountered is that the SNA may implicitly in some cases include the value of regulating or cultural services. Another issue is the area of intersection of GEP/SEEA and GDP as shown in the diagram. In terms of biomass provisioning service, GDP includes the benefit, that is the agriculture product, while the GEP includes the ecosystem service, the ecological contribution to the agriculture product.
6. It was clarified that the focus of GEP is a measure of ecological contribution. It was also clarified that the focus of GEP is to measure final ecosystem services, and that intermediate ecosystem services will not be reflected in GEP to avoid double counting. It was observed that bringing in the input-output relationship will be useful to clarify the relationship between GEP and GDP.
7. It was clarified that the focus of measurement of the SNA / SEEA is on measuring outputs (e.g. health services provided), not outcomes (such as better mental health / well-being). However, it may be useful adding another diagram to demonstrate how SEEA/GEP can contribute to the broader measurement of welfare and well-being to supplement the discussion.

## Comparison of case studies

8. The context of the discussion on case studies comparison was driven by the observation that the value of GEP as a portion of GDP seems high in the Qinghai study as compared to other case studies. 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, comprehensive studies done on valuation by national statistical offices find results in the order of 2 – 8 % of GDP, which is much lower than the results in Qinghai).
  - Netherlands (2020 publication) 1.9% of GDP
  - UK (2019 published figures): 0.9 % of GDP
  - South Africa (2017 publication): 7% of GDP
  
9. The variation of the results may point to difference in scope and measurement method. The meeting explored the possible underlying causes of the difference of results among various studies. The following observations were noted:
  - a. Location – some regions are more natural than others and will have higher ecosystem services.
  - b. It was pointed out that water provisioning services contribute to more than 40% of GEP in Qinghai, because it is the province where three major rivers originate, and this could be the major factor to explain the difference.
  - c. Treatment of downstream areas. It was also noted that the Qinghai study considers water supplied to downstream provinces as ecosystem service of Qinghai . Question was raised on whether such service will be excluded from the calculation of downstream GEP to avoid double counting. It was concluded that the supply of water downstream could be considered as import/export of the service and/or as intermediate service.
  - d. According to the World Bank Change in Wealth of Nations report, the contribution of natural capital is lower for high-income economies. This may explain the low number obtained in studies valuing ecosystem services in developed countries.
  - e. It was noted that some ecosystem services are not included in some country studies due to lack of data availability, which may result in underestimating the total value.
  - f. It was also suggested that decomposing the value into price and volume measures will be useful to understand whether the differences over time are due to changes in volume (quantities/ quality) or due to changes in prices.

## Discussion on concepts and measurement approaches of selected ecosystem services

### *Water supply*

10. The accounting item of water supply in GEP covers the water use downstream by agriculture for irrigation, and water used by households and industries as well as for hydropower generation. The meeting discussed in details the treatment of water supplied downstream and in particular for hydropower production:
  - a. Water use by downstream provinces: it was agreed that the issue here is primarily an issue of allocation/attribution. It was clarified that as the value associated with the downstream water use is accrued to the upstream province's GEP, and as such it will not be attributed again to the downstream province's GEP in order to avoid double counting.
  - b. Treatment of hydropower production: There is an ongoing discussion in the context of the SEEA revision on how to treat water used for hydropower production, as an ecosystem service or as an abiotic flow.
11. To understand cross-province ecosystem service flows, there was a suggestion to develop an ecosystem service account for the whole river basin that spans across provinces, and subsequently apportion the service flows to each individual province. This will provide a comprehensive assessment and at the same time avoid the issue of double counting.
12. Regarding the issue of attribution of the water supply service, the approach recommended in the SEEA is (in principle) to record the final service at the point of intersection between economy and environment (this is sometimes called the ecological end-point), that is when the service enters the economy or is used by people. This recording helps to separate intermediate flows (which takes place between ecosystems) from final services. The reason of the choice of this approach in recording the ecosystem services is that it may become unclear how far we would go back in the chain of ecosystem services (e.g. water supply; precipitation; maintaining rainfall patterns by forests etc.).
13. Notwithstanding the chosen approach in the SEEA, alternative recordings are possible especially if there is a policy demand for recording the services in a different way to support policy decisions. In the case of Qinghai, it is important to record the contribution of the province's ecosystem to water supply to downstream provinces, so it makes sense to use the alternative recording as the accounts should provide this type of information.

14. It was agreed that the SEEA would allow attributing downstream water uses to Qinghai province, in particular as imports/exports of ecosystem services, to respond to policy needs and as intermediate ecosystem services, consistent with the SEEA EEA recommended approach.
15. Considering the particular situation of China, where eco-compensation schemes are widespread (with more than 200 million people participating) and actual transactions/payments are already taking place with corresponding recording in the SNA, it may be more logical to record these ecosystem services as imports and export of services. It was clarified that if an export of service is recorded in the accounts of the upstream province, then there should be a corresponding entry on the import of services in the accounts of the downstream province.
16. It was mentioned that in the context of the SEEA EEA revision process, there is a discussion on whether water supply should be considered as an ecosystem services or as an abiotic flow, although it was generally agreed that water supply should be recognized in the framework. Many argue that water supply should be considered an ecosystem service in view of the importance to people and for related management decisions.
17. On hydropower, it was suggested that GEP aims to account for the ecological contribution of water to hydropower production. Due to data lack of data, the total value of output of hydropower generation was used as proxy for the value of the ecosystem services. Therefore there are no conceptual differences between the SEEA EEA and GEP but measurement issues. It would be good if this is clearly mentioned in the guidelines.

#### *Biomass provisioning services*

18. Both SEEA and GEP are conceptually aligned in valuing biomass provisioning services (e.g. cultivated crops), in that they both aim to value the ecological contribution to the gross biomass harvested by economic units including households.

#### *Water purification services*

19. On water purification services, it was noted that the current thinking in the SEEA EEA is to cover the following:
  - a. Water regulation pertaining to maintenance of base flows
  - b. Water purification pertaining to nutrient removal

c. Water purification pertaining to sediment retention

20. In the SEEA EEA, effort has been made to connect water-related ecosystem services to their use context. The following table presented at the meeting was considered a conceptually sound way to describe the service and the use context. It was also noted that a similar exercise was conducted in GEP.

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

21. One of the main issues is to identify an appropriate method to provide an aggregate measure when these services are measured independently, such that the overlapping part will be netted out.

*Climate regulation/carbon-related services*

22. On carbon related services, the discussion within the SEEA EEA revision process was briefly summarized. Everybody agreed on the physical carbon accounts describing stock and changes in stocks (e.g. due to sequestration). It was noted that there is an emerging school of thought in the SEEA EEA revision process to consider climate-regulation as the service. The main idea is when defining the service to move away from focusing on carbon sequestration, but rather to measure carbon retention/storage as the key service (although the SEEA EEA would still allow flexibility, as some countries may wish to focus on sequestration and/or storage). Practically, when it comes to valuation, the proposal is to estimate carbon stocks, multiply this with a suitable carbon price, and then turn this in an annual service flow by multiplying this value with a suitable rate of return (an annuity).

23. The rationale for doing so is as follows: 1) in many countries/areas we are seeing net carbon emissions (a negative externality), and as accounts cannot handle externalities well (as they are not considered transactions), we would be introducing an asymmetry – we record an

ecosystem service flow when there is net sequestration, but only record emissions in physical units when there are emissions 2) focus on storage provides the right signals to policy makers; if we lose carbon we have lower storage services; ecosystems with high storage (e.g. tropical rainforests) would get high storage values (even though oftentimes they have low sequestration (as they are in equilibrium / old growth)); a key concern with the focus on sequestration is that there would be a reward for replacing rainforest with fast growing bamboo. 3) Finally, the focus on storage aligns well with well-known carbon finance schemes such as REDD+. However - the above is still under discussion – and no conclusions have been reached yet.

24. It was mentioned that the use of carbon-related services is preferred to describe such service in GEP, as the scope of global climate regulation seems too complex. Also, there were concerns that there could be an issue of double counting if both sequestration and storage are counted.

#### *Disservices*

25. The discussion on disservices was brought up at the meeting. It was clarified that GEP does not cover disservices. It was also suggested to share examples on what is the most important issue associated with disservices, and such issues could be further explored.

### Summary and next step

26. There was a general agreement that that the GEP and SEEA conceptual frameworks are aligned with both frameworks apply similar concepts. Some differences in application/measurement exist, but these are mostly due to data availability. Considering the 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, CAS's work to develop guidelines for GEP compilation in China, and the SEEA EEA revision process, it was recommended that the three documents come up with aligned methodologies and approaches. Although the three documents follow slightly different processes, timelines and have different audience. It was considered important that they all build on each other and drafts are shared among the group to ensure coherence and consistency among the documents. The usefulness to include the concept of GEP in SEEA EEA was also pointed out.



27. Suggested next step

- a. UNSD to circulate the SEEA EEA revision materials and related documents including the valuation guidelines. Members of the group are invited to comment on the revision documents.
- b. CAS to share the draft GEP guidelines once they become available.