



# The System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries

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## ABSTRACT

Economic activities depend on the environment and its resources and in turn also have an impact on it. The development of a System of Environmental-Economic Accounting Central Framework (SEEA CF) – a UN statistical standard (adopted in 2012 by the UNSC) – aims at organizing relevant statistical information within an integrated framework, coherent with the System of National Accounts (SNA 2008), to facilitate analysis of key processes and their evaluation. FAO and the UN Statistical Division (UNSD) have further developed a satellite application of the SEEA Central Framework (SEEA CF), the SEEA for Agriculture, Forestry and Fisheries (SEEA AFF). This paper aims to supply overview and updates of SEEA AFF.

**Keywords:** Environment, economy, accounting, agriculture, forestry, fisheries.

## PAPER

### 1. Introduction

1.1 SEEA Agriculture Forestry and Fisheries (SEEA AFF) is a sub-system of the SEEA Central Framework (SEEA CF), the international statistical standard for environmental economic accounting, and is consistent with this framework. SEEA AFF aims to apply the SEEA CF to Agriculture, Forestry and Fisheries activities, pointing out linkages among and between these sectors, the environment and the economy and also highlighting the connections between underlying physical data in these areas and the conceptual framework of the SEEA.

1.2 The development of a System of Environmental Economic Accounting for Agriculture, Forestry and Fisheries was proposed by the FAO in 2010 and endorsed by the UNCEEA in June 2011. In 2013 FAO, in collaboration with UNSD and other relevant international partners, initiated the drafting of the SEEA AFF, including the description of new accounting tables, as an application of the SEEA-CF needed to cover agriculture, forestry and fisheries activities.

1.3 The feasibility of compiling the accounts and the relevance of the information was tested and further refined in four pilot countries: Australia, Canada, Guatemala and Indonesia. Based on the experiences gathered, a SEEA AFF revised draft was elaborated with contributions from FAO technical divisions, UNSD and relevant international partners.

1.4 The SEEA AFF was presented and discussed at a dedicated Expert Group Meeting at FAO (Rome, Oct 7-8 2014), with representatives from SEEA pilot countries, experts from UNSD, Eurostat, OECD, and FAO. The participants highlighted that initial activities in SEEA AFF pilot countries had generated productive cross-agency engagement towards improved national statistical systems.

1.5 The revised SEEA AFF was further presented to the 9th UNCEEA meeting (June 2014) and at the 20th London Group on Environmental Accounting meeting (October 2014).

1.6 Based on comments and suggestions gathered through the above processes, an updated SEEA AFF draft was submitted for the first Global Consultation in December 2014. Constructive feedback was received from more than 30 experts in National Statistical Offices other government agencies and international agencies on the scope, coverage and content of SEEA AFF.

1.7 A plan for further development of the SEEA AFF, including plans for country implementation, were presented at 10th UNCEEA Meeting (June 2015) and at 21st London Group on Environmental Accounting meeting, receiving broad support (November 2015).

1.8 The second and final Global Consultation process was carried out through December 2015 and January 2016. Constructive feedback was again received from more than 30 experts in National Statistical Offices and international agencies, showing broad endorsement of the content of the submitted SEEA AFF draft.

1.9 A revised SEEA AFF draft was then submitted for adoption to the UN Statistical Commission (UNSC) at its 47th session, in March 2016, under agenda item 3(e) Environmental Economic Accounting,

accompanied by a technical document detailing specific changes made in response to the feedback from the second Global Consultation. During the discussions, in line with the tenor of the feedback from the Global Consultation, there was a broad welcoming of the SEEA AFF (EU, Samoa), with one country (Sweden) suggesting more testing in countries.

1.10 Since the UNSC meeting, FAO has continued discussion with experts in countries and in other international organizations in order to effectively incorporate all of the comments received through the consultation process. The additional findings have been incorporated in the SEEA AFF draft submitted to the UNCEEA 11th Meeting (June 2016). The UNCEEA agreed on endorsement of SEEA AFF as an "Internationally Agreed Methodological Document in support of the SEEA CF".

## 2. OVERVIEW AND UPDATE OF THE SEEA AFF

2.1 The SEEA AFF applies the environmental-economic structures and principles described in the SEEA Central Framework to the activities of agriculture, forestry and fisheries. The SEEA Central Framework was adopted in 2012 as an international statistical standard by the UNSC. It was jointly published in 2014 by the United Nations, the European Commission, FAO, the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD) and the World Bank (United Nations et al., 2014a).

2.2 The SEEA AFF also applies the conceptual framework of the System of National Accounts (SNA), the most recent edition being the 2008 SNA (EC, et al., 2009). The value-added of SEEA AFF lies not in terms of conceptual advances in accounting, but rather in the integration of information that is considered standard from either an SNA or SEEA perspective.

2.3 The data coverage of the SEEA AFF is broad including data in both monetary and biophysical terms. More in details SEEA AFF has ten data domains:

- i. Agricultural products and related environmental assets
- ii. Forestry products and related environmental assets
- iii. Fisheries products and related environmental assets
- iv. Water resources
- v. Energy
- vi. Air Emissions Fertilizers, nutrient flows and pesticides
- vii. Land
- viii. Soil resources
- ix. Other economic data

Specific accounting tables are then associated to each domain.

2.4 Asset Accounts and Physical Flow Accounts (or Physical Supply and Use table) are the two main types of SEEA AFF base accounts.

2.5 Physical Flow Accounts are structured to record the total supply of products against their total; the required balance between these, i.e. total supply for each product must always equal total use of each product, is the accounting identity.

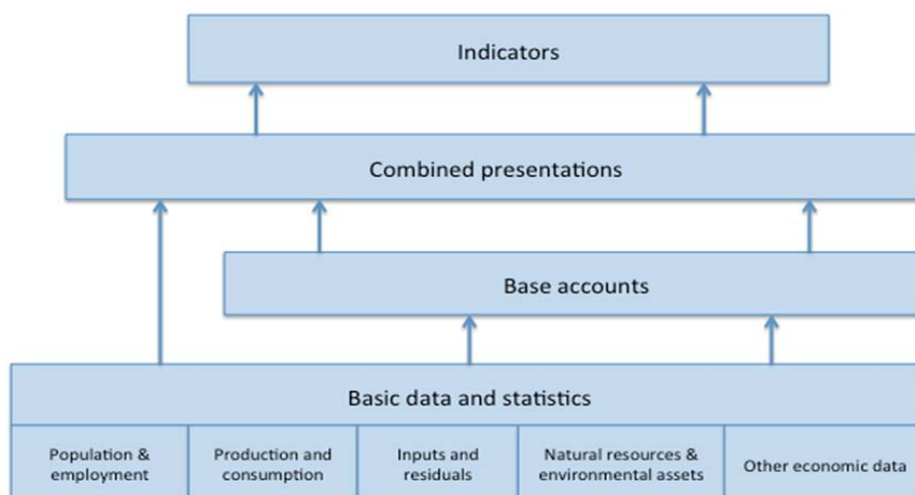
2.6 Environmental and Economic Asset Accounts instead record information on stocks of assets at the beginning and end of an accounting period, and changes in them during the accounting period.

2.7 Environmental and economic information are integrated into combined presentations that include monetary and physical information. They are not strictly accounts in that the information they contain does not need to be in the same measurement units, and not all entries in a physical flow or asset account need be translated into a combined presentation. The content of combined presentations may change over time to reflect changing analytical and policy priorities, but the structure of the base accounts will be relatively stable. The SEEA AFF describes five combined presentations

- i. Activity-specific and product-specific inputs
- ii. Food product consumption, losses and waste
- iii. Sustainable use of environmental assets
- iv. Cross-industry and cross-activity perspectives
- v. Reference Combined Presentation

2.8 Combined presentations are valuable mechanisms to focus on a particular theme or to have a synthetic overview of key selected economic and environmental variables (as in the Reference Combined Presentation). Moreover combined presentations enable the extraction of variables relevant to the derivation of indicators.

**Figure 1 - SEEA AFF information pyramid (Source: System of Environmental-Economic Accounting for Agriculture Forestry and Fisheries, White Cover version)**



2.9 A critical concept of the SEEA AFF is the phased, tiered approach to implementation. It is recommended that users proceed in three successive phases, starting with the use of national-level default data, including from international organizations (tier 1); it is then foreseen a wider engagement of the country and data gaps estimation (tier 2); and a very complete and full implementation of the SEEA AFF accounts through the use of modelling and GIS information is expected at tier 3.

2.10 SEEA AFF has been already tested in Australia, Canada, Guatemala and Indonesia and additional countries volunteered after the June 2016 UNCEEA meeting (Australia, Canada, and The Netherland). Interaction with the country through a tiered approach is a key element of SEEA AFF methodology and capacity development activities. The capacity development module has been successfully applied during the Uganda Training on Environmental Economic Accounting and Greenhouse Gas Emissions (15 - 17 April 2016, Kampala, Uganda) and further capacity development activities are foreseen on December in Morocco.

2.11 As next step, Technical Notes will supply additional details on SEEA AFF accounting tables' compilation to facilitate SEEA AFF country implementation.

## References

European Union (EU), Food and Agriculture Organization of the United Nations (FAO), International Monetary Fund (IMF), Organization for Economic Co-operation and Development (OECD), The World Bank, United Nations (2009), New York. Available on line at: <http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf>

European Union (EU), Food and Agriculture Organization of the United Nations (FAO), International Monetary Fund (IMF), Organization for Economic Co-operation and Development (OECD), The World Bank, United Nations, (2014), System of Environmental-Economic Accounting 2012 – Central Framework (SEEA CF), New York. Available online at: [http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA\\_CF\\_Final\\_en.pdf](http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf)

Food and Agriculture Organization of the United Nations (FAO), United Nations Statistics Division (UNSD) Accounting for Agriculture, Forestry and Fisheries, (2016) Draft document presented to the Forty-seventh session 8 – 11 March 2016, Item 3(e) of the provisional agenda Environmental-economic accounting. Available online at: <http://unstats.un.org/unsd/statcom/47th-session/documents/BG-2016-8-SEEA-Agriculture-E.pdf>

Food and Agriculture Organization of the United Nations (FAO), United Nations Statistics Division (UNSD), System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries (2016) Draft for consideration by the UN Committee of experts on Environmental Accounting (UNCEEA), 31 May 2016. Available on line at [http://unstats.un.org/unsd/envaccounting/ceea/meetings/eleventh\\_meeting/BK-11-3c-2.pdf](http://unstats.un.org/unsd/envaccounting/ceea/meetings/eleventh_meeting/BK-11-3c-2.pdf)

FAO (1996) System of Economic Accounts for Agriculture, Rome

FAO, UN and World Bank (2010) Global strategy to Improve Agricultural and Rural Statistics, Rome. Available at: [http://www.fao.org/fileadmin/templates/ess/documents/meetings\\_and\\_workshops/ICAS5/Ag\\_Statistics\\_Strategy\\_Final.pdf](http://www.fao.org/fileadmin/templates/ess/documents/meetings_and_workshops/ICAS5/Ag_Statistics_Strategy_Final.pdf)