AREA C: Establishing global SEEA-related databases – Updated roadmap and next steps

This note informs about recent developments supporting the establishment of global SEEA databases (Area C) and outlines a roadmap for next steps for discussion at the UNCEEA meeting in June 2018. It should be read together with the notes dedicated to energy accounts, air emission accounts and SDMX/DSDs that provide additional detail. It will be revised and finalised after the UNCEEA meeting.

Area lead: OECD. Group members: Eurostat, FAO, OECD, UN Environment, UNSD (plus UNECE and the World Bank for SDMX/DSD work).

Priority topics for global SEEA databases: air emissions, energy, material flows, land, water.

1. Background

At its 10th meeting in June 2015, the UNCEEA considered the dissemination of SEEA-based data at the international level as an important step in the promotion and implementation of the SEEA (regular production, dissemination and use). It agreed to work towards the establishment of global SEEA-related databases on environmental-economic accounts to showcase the SEEA. At its 11th meeting in June 2016, the Committee agreed to focus its efforts on a small set of priority accounts for which data could easily be brought together and disseminated, i.e. energy accounts, air emission accounts, material flow accounts, land accounts, and possibly also water accounts. This was further supported by the UNSC at its 47th session in March 2016.

The ***aim*** is to provide coherent data sets that can inform integrated policy making and analysis at the national and international levels, and that can be used to monitor and analyse progress towards the SDGs and the 2030 Agenda.

The ***approach*** taken is a pragmatic and cost-efficient one. It draws as much as possible upon existing global datasets and on established international arrangements, applying the subsidiarity principle and adopting a layered approach, to minimise the response burden on countries. To ensure that the different work streams and the required data transfers are efficient, modern data exchange and dissemination formats and technologies are used. This includes the development and implementation of SDMX-standards and Data Structure Definitions (DSDs) (see the note on SDMX/DSDs).

The UNCEEA ***reviews progress*** made with the priority accounts at its annual meetings and provides guidance on next steps. This is supported with an ***updated roadmap*** prepared by the Area lead and short-term work plans prepared by group members.

2. Recent developments and current status of activities supporting the establishment of SEEA related databases

Since the 2017 meeting of the UNCEEA, important progress has been made with the elaboration of estimation methods to fill data gaps and populate accounts for which national data are not yet available (air emissions, energy), the preparation and updating of manuals (economy-wide material flow accounts), and the development of global DSDs.

Most of this work is now mature or close to mature for being applied and tested. Progress has also been made with the provision of data on land cover by the FAO and the OECD.

Developments concerning air emission accounts, energy accounts, a global manual on material accounts and SDMX/DSDs are described in the corresponding notes. Developments concerning land accounts will be presented at the UNCEEA meeting. An overview of the status of work on priority accounts is given in Table 1. Further details on recent developments concerning material flow accounts, and a reflection on ongoing work on water data and accounts, are given below.

2.1. Material flow accounts

Eurostat updated its Compilation Guide for Economy-wide Material Flow Accounts (Eurostat, 2013a) that will be released as "*Economy-wide material flow accounts (EW-MFA) handbook – 2018 edition*". The draft versions of the new handbook underwent two written consultation rounds involving experts from national statistical institutes, international organisations, and research institutes.

UN Environment (with the International Resource Panel, IRP) is developing a *Global Material Flow Accounting Manual*, using Eurostat's EW-MFA compilation guidelines and earlier OECD work as a starting point. The manual proposes a modular approach and a few adjustments to adapt the guidelines to developing countries. The aim is to (i) encourage non-EU countries to establish their own MF accounts, (ii) support the harmonised monitoring of material flows at global level, and (iii) calculate related SDG indicators (targets 8.4 and 12.2). The manual is planned to be released jointly by UN Environment, Eurostat and the OECD.

A first draft version, prepared by a team of MFA experts[1], was available mid-2017 and pilot tested by volunteering countries, including Chile, the Lao People's Democratic Republic, the Philippines and South Africa. The draft manual was subsequently revised and submitted for review to Eurostat and the OECD. It is currently being reviewed by the SEEA-CF Technical Committee (comments expected by end of July). This is to be followed by a global consultation (possibly before the end of 2018), and a submission to the UNCEEA for endorsement (timing to be defined) and to the UNSC for adoption.

The **OECD** organised with Eurostat and UN Environment a 3rd international expert workshop to advance the development of an internationally *harmonised methodology for estimating demand-based measures of material flows* (September 2017). A consensus was reached on the measurement approach to use (i.e. an input-output based approach) and on the statistical developments that are required (e.g. selecting one institutionalised international MRIO database as a global core reference database; preparing a standard method for disaggregating MRIO databases; developing physical use extensions). A ten-year *roadmap* is being developed, including the roles of the various international bodies involved. Next steps will include country benchmarking case studies, the further development of the methodology and the subsequent preparation of a guidance document[2]. The timelines for completion will depend on the availability of additional funding.

[1] CSIRO, Vienna University of Economics and Business, Institute of Social Ecology in Vienna, Nagoya University.

[2] Possibly to be integrated in an updated OECD Guide on "Measuring material flows and resource productivity", and in UN Environment's Global MFA Manual.

2.2. Water accounts

Unlike other priority accounts, work on water accounts did not progress since the 2017 UNCEEA meeting. While the collection and provision of data on water is well established globally, the establishment of specific water accounts has so far proven to be difficult, mainly due to data availability problems and a lack of interest in water accounts in some countries.

Water data are collected regularly since the early 1980s. The main vehicles for official data collection are the ***OECD/Eurostat questionnaire*** on inland waters, and the coordinated ***UNSD/UNEP questionnaire***, which together provide a quasi-global country coverage, and include several tables that are based on the principles of water accounts and that collect data with an ISIC breakdown (e.g. freshwater abstraction, water supply and use, wastewater generation and discharge). Efforts are underway to improve these data in close cooperation with countries. The OECD, Eurostat and UNSD also plan to further harmonise and amend some of the tables in the water questionnaire(s) to ensure that the data collected from countries can be used to calculate the corresponding global water related SDG indicators (e.g. 6.4.1 water use efficiency and 6.4.2 water stress). These efforts could pave the way for improving the availability and quality of data on water abstraction, supply and use by industry, and providing internationally harmonised "*SEEA friendly*" water data.

Some water data are also available from the ***FAO Aquastat*** database. And the FAO, as the custodian agency for some of the global SDG water indicators, has recently developed an Aquastat questionnaire that was sent to countries in May this year. The stated aim is to collect water data at global level to populate the Aquastat database and calculate related SDG indicators. As this new international questionnaire overlaps with the OECD/Eurostat and UNSD/UN Environment questionnaires, and duplicates the data collection that will be carried out later this year, discussions have been initiated among the agencies involved to agree upon harmonised questionnaires and data collection processes. This will be discussed by the OECD Working Party on Environmental Information at its meeting on 3-4 December 2018.

In this context, it is suggested to discuss the feasibility of establishing global SEEA core accounts on water in greater detail at the UNCEEA meeting in 2019. This would be supported with a scoping note (Area C lead in cooperation with the other agencies involved). The SEEA Technical note on water accounting[3], an earlier review of the OECD/Eurostat questionnaire on inland waters, and countries' response rates to existing questionnaire, could be used as a basis.

3. Next steps and updated roadmap

Next steps will include the finalisation of estimation methods and compilation guidelines and their application and testing at international level, supported with proper training and capacity building in countries (link to Area D). This needs to be accompanied by further discussions among group members on the governance structure and practical working arrangements concerning global SEEA databases and their management. An overview is given in Table 2.

[3] https://seea.un.org/sites/seea.un.org/files/water_note_final_27-10-17_clean_0.pdf

A decision will also need to be taken as regards the establishment of a global SEEA database on water accounts (cf above).

3.1. Governance and institutional arrangements

While lead agencies have been identified for the priority accounts on energy, air emissions, material flows and land, the role of the other agencies involved, the organisation and sharing of the work, and the technical arrangements for data exchange and transfers, need to be further clarified and agreed upon. It goes with the implementation of the SDMX/DSDs that are currently being tested.

This concerns in particular (i) the compilation, collection and estimation of priority accounts, (ii) the quality assurance and validation of the data, and (iii) the dissemination and publication of the data.

3.1.1. Compilation, collection and estimation of priority accounts

It was agreed that the establishment of priority accounts should use as much as possible existing international work and arrangements, and apply a layered approach. This requires a clear allocation and sharing of tasks and responsibilities among the involved agencies, and a consensus on the way to proceed and on the organisation of the associated data flows. Continuity in the work on priority accounts in each agency involved, proper funding and proper internal coordination are prerequisites. Area C group members will discuss this in greater detail during Q3-Q4 2018. The results of these discussions will then be used to work out the technical arrangements for data exchange.

3.1.2. Quality assurance and validation

Quality assurance and validation of the data that populate the accounts are essential to establish trust in the accounts made available. It requires commonly agreed upon validation procedures and criteria, and work flows.

A distinction can be made between data collected from countries, and data that are estimated using internationally agreed upon methodologies. Another distinction that can be made is between quality assurance carried out by international agencies, and quality assurance in countries.

For ***data collected from countries***, the quality assurance and validation processes with countries already in place will be used. One example is data for which reporting is mandatory in the European Union (including energy, air emissions, material flows). These data are validated by Eurostat and subsequently used and complemented by the OECD and other agencies. At the same time, quality assurance in countries before reporting the data to an international organisation may need to be supported by providing targeted training.

For ***data not or not yet collected from countries***, and estimated using other source data in combination with correspondence tables, bridging tools or conversion factors, data quality will be ensured:

- First, by using ***harmonised methodologies*** that benefit from an international consensus and have been endorsed through a formal process ((i.e. endorsement by the SEEA-CF TC and the UNCEEA; possible adoption by the UNSC).

- Second, by using commonly ***agreed upon validation processes***. For estimated air emission accounts for example, the OECD plans to make the estimates available to countries for review, documentation and possible amendment before release. This is also expected to (i) provide useful feedback that will help refine the international estimates, and (ii) encourage countries to set up their own accounts. Whether such a process can be applied to all estimated accounts needs to be discussed.

In all cases, the principle of ***mutual recognition*** should apply, i.e. once an international agency, member of the UNCEEA, has validated a dataset, the result gets recognised by all other agencies.

3.1.3. Dissemination and publication

The purpose of global SEEA databases is to bring together harmonised international data that can be used for international work, to showcase the SEEA to a broader audience and to make SEEA related data available to users outside the statistical community. This requires databases that use harmonised compilation formats, and that are ***easily accessible and well documented***, supported with good communication to inform about the existence of the databases and to raise interest in their use.

Documentation

All databases on priority accounts will be well documented, describing the underlying data sources, the compilation methods and validation criteria applied, and clearly distinguishing between nationally sourced data and data estimated by international agencies. This could be done by flagging all data accordingly, or by releasing "official" and "estimated" data in two separate datasets. Doing so will help publicising coherent messages at international level, and is particularly important for data used to measure progress in areas covered by the 2010 agenda and the SDGs.

Access

Access will be provided by using the ***statistical platforms***, data portals and other dissemination tools ***of the international agencies involved***, mainly Eurostat, FAO, OECD, UN Environment and UNSD for the priority accounts on energy, air emissions, material flows and land. This will create mutually reinforcing communication channels in accordance with each agency's mandate and policy work.

SEEA databases could further be ***cross-referenced by placing hyperlinks*** on the respective websites of the involved agencies to all other SEEA accounts hosted by other agencies. This would create a network of SEEA data, and point users interested in a given topic or account to other relevant databases.

Access to the priority accounts could further be facilitated by the creation of a ***dedicated webpage or portal on the SEEA website***.

In the longer term, the creation of ***consolidated SEEA databases*** could be envisaged. Such databases would combine several selected SEEA related datasets using a common structure and industry breakdown, and SDMX/DSDs. The OECD considers heading in this direction, but it will take time to make such as database fully operational.

4. Questions for discussion

1. Does the UNCEEA agree with the proposed roadmap and timelines?
2. What are the views of the UNCEEA on the proposed validation process for estimated accounts?
3. What are the views of the UNCEEA on the best way to disseminate global SEEA databases?
4. What are the views of the UNCEEA on the possible establishment of a SEEA core database on water? Does the UNCEEA agree with the proposal to discuss water accounts in greater detail at the 2019 UNCEEA meeting?

Table 1. Current status of SEEA related databases for priority accounts

Priority topic	Agencies involved	Country coverage	Time coverage	Classifications used	Data sources	Available databases/datasets	Status of methodology (compilation, estimation)
Air emissions	Eurostat, OECD	Official data: EU, CHE, NOR, KOR, SRB, TUR, (AUS, CAN) Estimated data: CAN, ISL, JPN, KAZ, NZL, RUS, UKR, USA	Official: 2000-2016 Estimated: 2008-2014 (for CO2, CH4, N2O) Annual updates	ISIC Rev4 Households	Country reporting and OECD methodology to estimate accounts using UNFCCC data	Eurostat: http://ec.europa.eu/eurostat/data/database , tables env_ac_ainah_r2, env_ac_aibrid_r2, env_ac_aeint_r2, env_ac_io10 OECD: https://doi.org/10.1787/data-00735-en	Mature Based on Eurostat manual and OECD estimation methodology (endorsed by SEEA-CF TC)
Energy	Eurostat, IEA, UNSD	Official data: EU, AUS, BHU, BWA, CAN, COL, CRI, FJI, GEO, JAM, KEN, MYS, MUS MEX, FSM, PLW, PRY, RSA, TUR Estimated data: none	2008-2015	ISIC Rev4 Households	Country reporting, IEA estimates and UNSD methodology to estimate accounts	Eurostat: http://ec.europa.eu/eurostat/data/database , tables env_ac_pefasu, env_ac_pefa04, env_ac_pefa05	Mature Based on Eurostat and IEA manuals, and UNSD conversion methodology (to be submitted to SEEA-CF TC)
Economy-wide material flows	Eurostat, OECD, UN Env. (and IRP)	Global	1970-2017 Annual updates	Material groups (no ISIC breakdown)	Country reporting and international databases from Eurostat, UN Environment, (*and OECD**)	UN Environment/IRP: http://uneplive.unep.org/material OECD: https://doi.org/10.1787/data-00695-en Eurostat: http://ec.europa.eu/eurostat/data/database , tables env_ac_mfa, env_ac_mfadpo, env_ac_mfabi, env_ac_mfain, env_ac_rme, env_ac_rmefd and others for derived indicators	Production-based: Mature Based on Eurostat manuel, OECD guide and UN Environment global manual (under review by SEEA-CF TC) Demand-based: Under development (OECD with Eurostat and UN Environment-IRP)
Land (cover)	FAO, OECD (EEA, JRC)	Global (countries, macro-regions, metropolitan areas)	1992-2015 (tbc)	Land cover classes (SEEA-CF)	ESA and Université catholique de Louvain Geomatics – Climate Change Initiative - Land Cover (via FAO and OECD)	FAO: FAO Geonetwork site; http://www.fao.org/faostat/en/#home :Land Cover Domain OECD: http://dotstat.oecd.org/Index.aspx?DataSetCode=LAND_COVER	Mature ? To be reviewed by SEEA-CF TC ??
Water (resources, use)	*Eurostat, OECD, UNSD, UN Env., FAO*	*Selected countries depending on data availability (EU, OECD, other)*	*1970-2016 (limited availability)*	*ISIC industries (limited availability)*	*Country reporting: OECD/Eurostat coordinated with UNSD/ UN Environment* *FAO Aquastat* **	..	*(cf SEEA water and SEEA Technical note)*

* The OECD database used to be compiled on the basis of (i) Eurostat data for EU countries, and (ii) OECD estimates performed by research institutes for other OECD members, partner countries and world regions. As of 2018, the OECD database is compiled on the basis of (i) Eurostat data for EU countries, and (ii) UN Environment/IRP data for other countries and world regions.

** The FAO has recently developed a specific Aquastat questionnaire to collect water data from countries for the Aquastat database and the calculation of related SDG indicators. As this questionnaire overlaps with the OECD/Eurostat and UNSD/UN Environment questionnaires, discussions have been initiated to agree upon harmonised questionnaires and data collection processes.

Table 2. Proposed roadmap (to be completed and finalised after the 2018 UNCEEA meeting)

Topics/work elements	Lead agency/agencies (partner agencies)	Current and planned tasks	Timelines
Overall coordination and roadmap	**OECD** (Area lead)	Overall coordination: international co-operation and working arrangements; roadmap and work plans	continued
Responsibilities for data collection/compilation	All involved	Clarification and agreement on (sharing) responsibilities for data collection, compilation and estimation	Q4 2018
Responsibilities for quality assurance and validation	All involved	A. Consensus on a common approach and process for data quality assurance, checking and validation for: (i) estimated accounts, (ii) data collected from national sources, (iii) data shared among international agencies	Q4 2018
		B. Agreement on (sharing) responsibilities for data quality assurance and validation	Q2 2019
Dissemination of priority accounts (global, regional)	All involved	• Dissemination on the statistical platforms of involved agencies • Establishment of a UNCEEA webpage (or portal) providing links/access to priority accounts hosted by lead (and partner) agencies	See details below Q4 2018?
Data ownership and copyright	All involved	Clarification of, and agreement on, data ownership and copyrights	Q2 2019?
Data transfers			
Development of Global DSDs for SDMX transmissions	Eurostat, OECD, UNSD, FAO (in collaboration with UNECE, UN Environment, and World Bank; managed by a sub-group of the SDMX-MES OG)	• Public review (Conceptual review and testing of data model for the DSDs and associated code lists for priority accounts) • Preparation of final Version 1.0 of the SDMX DSDs for SEEA • Publication in the SDMX Global Registry	Q1-Q2/3 2018 Q3/4 2018
Technical arrangements across IGOs (data flows)	All involved	Specification and agreement on technical arrangements for data exchange and transfers	Q2 2019?
Priority accounts			
Air emissions (GHG, air pollutants)	**OECD** (with Eurostat)	Estimation methodology: Review and endorsement by SEEA-CF TC Endorsement by UNCEEA SEEA database - estimated accounts (selected countries) Next steps: (i) estimate 'bridging items' territorial vs residence, (ii) include LULUCF emissions, and (iii) extend estimation to non-Annex-I countries (using IEA energy data and EDGAR)	 June 2018 June 2018 As of Q3 2018 tbd
Energy	**UNSD** (with Eurostat and in collaboration with IEA)	Estimation methodology: • Review by SEEA-CF TC • Endorsement by UNCEEA SEEA database - estimated accounts (selected countries) Next steps: • Testing of excel based tool by countries • Testing results to be synthesize by UNSD and discussed by the SEEA CF TC • UNCEEA to consider the excel based tool	 Q3 2018 Q4 2018 ??
Economy-wide material flows (EW-MFA)	**UN Environment** (with Eurostat and OECD)	Estimation methodology: • Draft global manual for (production-based) EW-MF Accounting** • Review by Technical Committee: ongoing (comments by end July) • Global consultation	 Q3 2017-Q1 2018 Q2/3 2018 Q3/4 2018

Topics/work elements	**Lead agency/agencies** (partner agencies)	**Current and planned tasks**	**Timelines**
		• Endorsement by UNCEEA • Submission to UNSC	??
		SEEA database: UNEP/IRP global material flow database	As of Q3/4 2017
		Next steps: • Capacity building in countries • Options for data exchange with countries to facilitate national reporting (possibly using SDMX) • Further development and testing of harmonised methodology for demand-based EW-MFA (input-output approach) (OECD)	
Land (cover)	**FAO** (with OECD)	Estimation methodology: *To be completed*	
		SEEA database: • FAOSTAT Land Cover Domain + *(OECD land cover database)*	As of 08.2017 *As of 05.2018*
		Next steps: *To be completed*	
Water (resources; use)	***Tbd** (involved IGOs = Eurostat, OECD, UNSD, UN Environment, FAO)*	*To be discussed*	*Tbd*