State of debate note on the Environmental Goods and Services Sector (EGSS)

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The purpose of this state of debate note is to outline where the statistical community is with respect to EGSS in terms of compilation guides and training material, activities of countries, policy uses, data demand and outstanding technical issues. The note is partly designed to serve as the basis for a future technical note on EGSS. **This note contains questions to participants – please be prepared to have an opinion and/or present the situation in your country.**

1. Existing guidance on EGSS

The OECD/Eurostat manual "The environmental goods and services industry – Manual for data collection and analysis" was released in 1999. The 2003 SEEA provided a summary in its chapter 5 (paragraphs 5.86 to 5.94 and 5.168 to 5.189). A Eurostat handbook was released in 2009. The SEEA 2012 central framework describes EGSS statistics in its chapter 4 (in particular paragraphs 4.92 to 4.120). Eurostat is currently completing a practical guide towards the compilation of EGSS statistics and plans to update the 2009handbook.

A European Statistical Training Programme (ESTP) course on EGSS was held in June 2013 in Vienna. Training material is available on the European Commission's Communication and Information Resource Centre for Administrations, Businesses and Citizens (CIRCABC) at https://circabc.europa.eu/w/browse/0a31d17c-7446-4242-a802-9d1ef73e8119. A new such course is foreseen for October 2014.

Main classifications and categories used in the context of EGSS include:

- Classification of EGSS activities or environmental domains (classification of environmental protection activities (CEPA) and classification of resource management activities (CReMA) in the EU, the SEEA 2012's CEA which is partly an interim proposal). See Annex 1 for detail.
- Categories of environmental products (specific products, connected or sole purpose products, adapted or cleaner and resource efficient products, 'environmental technologies')
- Categories of producers (own account or ancillary, non-market and market producers; specialist and non-specialist producers…)

Recent experience in Europe suggests that for practical implementation some of these categories and terms are more useful or important than others. For example, while the classifications in Annex 1 and the ancillary/market/non-market categories are indispensable, the categories of products and the distinction between specialist and non-specialist producers seem to be less relevant for practical measurement of EGSS.

The ILO has been working on a definition of jobs in the environmental sector and of green jobs. A proposal for guidelines[1] to measure employment in the environmental sector was discussed at the 19th International Conference of Labour Statisticians 2-12 October 2013 and a revised version of the guidelines was adopted on 9 October (the guidelines are starting on page 21 of the report of the discussion at that conference). (The London Group had been consulted in 2012 on an early draft.)

The scope of EGSS is defined by the SEEA 2012 as all producers of environmental goods and services, i.e. the producers of goods and services produced for environmental protection (EP) and resource management (RM). To be comprehensive, EGSS statistics should describe output, value added, employment and exports for the set of environmental domains shown in Annex 1, for all types of producers (market, non-market, own account/ancillary) and for all types of products (including cleaner and resource efficient products).

Analytical uses of EGSS statistics are described in the SEEA Applications and Extensions.[2] This includes indicators and the use of input-output models to derive multiplier effects.

Do you consider the existing guidance documents and classifications are clear and useful? What improvements are needed?

2. Current work in countries

Several countries have undertaken studies and pilot work in the area of EGSS. A set of over 20 pilot studies undertaken within the EU can be found here. Studies have also been undertaken in the US and in Canada. For example, the US Department of Commerce has estimated EGSS ("Measuring the Green Economy", 2010), and the US Department of Labour has in 2013 released the "Employment in Green Goods and Services 2011". Canada has for many years measured environmental goods and services. Work began in the late 1990s with the publication of estimates on the 'environment industry' in Canada[3]. More recently, this program underwent a review and the statistics produced today are more focused on a specific set of industries that provide environmental goods and services. The pilot *Survey of Environmental Goods and Services* was conducted in 2008 with a second survey in 2010. Work continues on the 2012 reference year survey, currently in the field. Future work will focus on the integration of environmental protection expenditures and EGSS, and on clean technologies.

Statistics Canada is also working with other federal partners to define the technologies that make up 'clean tech' and the industries where these activities take place. Work is also underway to compile a list of businesses in Canada that produce or supply clean technologies. Statistics Sweden is currently undertaking similar work to identify 'clean tech' on commission from the Department of Enterprise, Energy and Communications. The results will be disseminated during 2014.

Countries regularly producing comprehensive EGSS statistics - i.e. statistics that cover all or most of the EGSS as defined in the SEEA 2012 - include Austria, France, Germany, the Netherlands and Sweden. Austria, France[4], the Netherlands[5] and Sweden[6] publish these comprehensive estimates as

[1] For details see room document 5 and its Appendix which can be downloaded here.
[2] The version presented to the UN Statistical Commission in 2013 can be found here.
[3] Statistics Canada, *Environment Industry Survey – Business Sector*, various publications 1995-2004, catalogue no. 16F0008XWE and 16F0007XPE. http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?lang=eng&catno=16F0008X.
[4] Results are published in French, see e.g. Les éco-activités et l'emploi environnemental en 2011

part of their statistical activities. In the case of Germany, the German federal environmental agency commissions regular comprehensive estimates of environmental employment[7]. The German federal statistical office conducts an annual survey of EGSS producers mainly covering manufacturing and construction companies thus supplying important input data for the comprehensive estimates. In Sweden tests have also been made to estimate the size of suppliers to the EGSS, as a way to calculate downstream employment and contributions to the GDP[8].

In order to ensure comprehensive coverage of the results, these countries use data integration (accounting) approaches. The estimates are compiled based on a variety of existing sources using accounting techniques to consolidate the data and to make sure no data gaps remain. Using the same approach, Eurostat has developed a method which allows estimating the size of EGSS for the EU.

Direct surveys of EGSS producers are conducted in very few countries on a regular basis (Germany and Canada being the main examples). However, in several countries there are some specific data sources that can be used for EGSS purposes such as data from trade associations, surveys of specific EGSS sub-sectors undertaken by economic or environmental ministries, or administrative databases of EGSS companies that receive investment grants or subsidies (e.g. renewable energy subsidies).

In part, the data integration approach can directly use existing data from the national accounts or business statistics. For other parts, when comprehensive direct surveys of EGSS producers are not available, the approach relies on indirect estimates of EGSS activities. These estimates may be based on demand side data such as environmental expenditure or investment in renewable energy plants which are used to derive production of the relevant environmental goods and services. Price times quantity methods may be used for other areas, e.g. estimating organic farming activities based on hectares of land under organic agriculture or the production of renewable energy based on physical quantities of renewable energy produced. Typically, value added and employment figures are not separately estimated but are derived from output ratios.

> *Please feel free to present activities in your country especially when these are not sufficiently described in this note (please present your approach, scope of data produced, outstanding issues).*

3. Policy uses and data demands

The main policy uses relate to broad measures of economic activity and employment in EGSS and how they evolve.

The European Commission has proposed to the European Council and Parliament to amend the existing Regulation (EU) 691/2011 on European environmental economic accounts by adding 3 new modules, including one on EGSS. The new EGSS module would require Member States to provide data on EGSS market activities: output, value added, exports and employment in a breakdown by 21

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[5] Results are published e.g. in the annual publication 'Environmental accounts for the Netherlands'. See for example the 2012 edition.

[6] www.scb.se/MI1301-EN

[7] For an overview in English see Report on the Environmental Economy 2011. More recent reports are available only in German. For renewable energy see the 2012 report Renewably employed.

[8] Environmental Goods and Services sector in Sweden – suppliers
http://www.scb.se/statistik/_publikationer/MI1301_2010A01_BR_MIFT1002.pdf

industry groupings (basically the letter or sections level of NACE/ISIC) and by 14 environmental domains following CEPA and CReMA.[9]

For certain policies, there is interest in specific activities or environmental domains (i.e. certain CEPA or CReMA classes). For example, in the Netherlands there is great policy interest in the so called sustainable energy sector, which is equal to all EGSS activities related to renewable energy and energy savings (CReMA 10 and/or CEPA 1.1.2 and 1.2.1). Decision makers are interested whether this subsector is growing and how much it contributes to economic growth.[10] Another subset that may be of particular interest is the 'clean tech sector'. Although there is no (international) definition of this sector it could be seen as equal to the manufacturing part of EGSS where environmental technologies, connected and adapted products are made. Some parts of services (installation, engineering and architectural services that typically contribute to capital formation) and of specialised construction could also be included. This is a part of the EGSS that may particularly contribute to new economic opportunities.

Interest is also expressed in fields where definitions go beyond EGSS, e.g. the 'low carbon economy' or various definitions of the 'green economy'.

> *Please feel free to report about the policy uses and user demands in your country. Are there main policy uses or user demands not mentioned in this note?*

4. Outstanding issues

Conceptual clarifications may be needed for application of compilation methods

Given the policy interest in broad measures of economic activity and employment, a key issue for EGSS statistics is compilation of comprehensive estimates – i.e. estimates covering at least all quantitatively important categories of EP and RM. Such estimates have to be based on a variety of sources as few countries have available or could afford comprehensive supply side surveys of EGSS producers. This data integration approach combines existing sources in an accounting approach, using modelling where needed. This approach poses conceptual as well as a compilation challenges.

A conceptual challenge is to fully understand how the different sources measure EGSS activities. Generally, there is not a one-to-one relationship between relevant concepts and there is not yet guidance on the concordance of different concepts. For example, how does information about capital formation for environmental protection or for renewable energy production relate to the production of different EGS? What is the relation between the definition of product categories for EGS (e.g. sole purpose products) and related definitions for expenditure accounts (e.g. connected products)? How do EGSS concepts relate to national accounts concepts (e.g. environmental technologies)?

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[9] For detail see the European Commission Proposal of 2 May 2013 for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 691/2011 on European environmental economic accounts. This proposal is currently being discussed in the relevant working groups of the Council and European Parliament and may therefore change.

[10] See Statistics Netherlands (2013): Economic radar of the sustainable energy sector in the Netherlands, 2013 edition.

Is coherence of terms and understanding the relationships of concepts from different environmental accounts areas an issue that should receive further attention?

Scope of EGSS

The EGSS includes many activities. The activities that are included, but also the methodological approaches chosen, to a large extent influence the outcome and thus international comparability. Specific issues many of which are also mentioned in the 2012 SEEA research agenda are described below.

Definition of resource management

Shall only management of natural resources be included or also the management of 'cultivated' resources – for forest resources in particular?

The general decision in the SEEA 2012 has been to exclude resource use. Shall water supply be included which seems to have a special place between resource use and resource management?

Should all renewable energy production be included under resource management or only that part where the main purpose is resource management?

Minimisation of natural hazards

There is a close link between managing some natural resources and the minimisation of natural hazards (forests, water, some wild biota). Should natural resource management include the protection of the resources from natural hazards (e.g. forest fires)?

Classification of resource management

Current classifications use a list of natural resources as the main headings – see Annex 1. This approach is logical from a resource perspective but does not align well with the basic principle of ISIC/NACE to group activities based on the character of products, their uses, and the technical similarity of production processes. For example, the activities 'materials recovery' (ISIC Rev. 4/NACE Rev. 2 group 38.3) and 'wholesale of waste and scrap' (NACE Rev. 2 class 46.77) relate to protecting several natural resources (forests, minerals, fossil energy…).

Splitting data by natural resource requires that already detailed data (NACE/ISIC 3 or 4 digit activities) have to be split up and assigned to several 1 digit headings of the resource management classification. This reduces data quality as further layers of estimation have to be added. An alternative could be to base the 1 digit layer of the classification of resource management on a combination of resources and similarity of activities (such as recycling, renewable energy…) and introduce the natural resources as a 2 digit layer where useful. In practice, some countries use lists that suit their own needs (or fit their data sources).

In Europe, a small group of countries looked into the issue of classifications and made tentative recommendations. The main conclusion was that in the longer term the existing classification of resource management should be reviewed but given the relatively limited practical experience it was too early to finalise a proposal to replace the current CReMA.

In the case of materials recovery (recycling), does policy interest justify trying to separate the economic activities by natural resource?

Do you consider further work on classifications is urgent or should be a long-term aim?

Measurement of adapted (cleaner and resource efficient) products

Practice suggests that the measurement of such products can be very difficult and expensive. Given the transitory nature of adjectives such as clean and resource efficient there is also an issue of comparability over time and across countries. An example is energy-efficient household appliances (washing machines, etc.). When standards are redefined (e.g. the energy label), then the boundary between environmental and normal products is shifted. There are also doubts about the usefulness of information on turnover or employment related to the production of the share of such products that are cleaner or more resource-efficient.

An issue here is also the boundary between cleaner and resource efficient products on the one hand, and specific (or "characteristic") products on the other. For example, output of organic farming and energy from renewable sources are considered characteristic rather than cleaner and resource efficient products. In this way some important cleaner and resource-efficient products are fully included. This approach would for example allow fully including production of electric cars in EGSS whereas all other cars are excluded and no further categories of 'cleaner' conventional cars are introduced.

> *Do you think it is possible and useful to estimate a share of the production of cleaner and resource efficient products for areas such as household appliances, industrial motors, vehicles, washing detergents, etc.?*

Relationship between EGSS and the "green economy"

The outcome document (The future we want) of the UN Conference on Sustainable Development (Rio+20 Conference held in June 2012) considers the green economy as an important tool for achieving sustainable development (paragraph 56); invites governments to improve knowledge and statistical capacity on job trends, developments and constraints and integrate relevant data into national statistics (paragraph 62); and invites the United Nations system, in cooperation with relevant donors and international organisations, to coordinate and provide information methodologies for evaluation of policies on green economy (paragraph 66).

For understanding the implications of implementing green economy policies on growth, employment etc. both EGSS statistics and the analytical uses of these figures can help. Unfortunately, the Rio+20 outcome document does not contain a definition of the green economy. ILO[11] concluded in 2013 that '*Whilst there has been a great deal of debate in the policy arena about the promotion and measurement of the green economy, the meaning of the term is far from universally consistent. Many organizations have developed their own definitions.'*

While there is no international definition of 'green economy', it seems clear that environmentally enhanced products, renewable energy production, clean fuels, energy efficient buildings and the like are covered by the term. National studies suggest that the scope of the green economy is sometimes understood to extend well beyond the EGSS to include all kinds of clean technologies and clean and low carbon products and investments, whereas some traditional areas covered by the EGSS (e.g. waste collection) are not considered to be "green" enough.

[11] http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_220734.pdf

What is your national experience with 'green economy' concepts? How do you see the relation between EGSS and the green economy?

5. Core tables for EGSS

The standard tables for EGSS are tables showing industries and environmental domains, or aggregates thereof, for the main variables output, exports, value added and employment. A breakdown by NACE/ISIC sections and some aggregation of the environmental domains as e.g. proposed below seems realistic. The most important supplementary information is a breakdown into market/non-market/ancillary. Further detail could be added for types of products.

Eurostat uses a more detailed questionnaire with a full breakdown of products, types of producers and CEPA/CReMA, and a breakdown by about 40 industries.

Standard table for output (identical tables for exports, value added and employment and for market/non-market/ancillary)

	Environmental domains														
	CEPA							**CReMA**							
	1	2	3	4	5	6	7+8+9	10	11	13			14	12+15+16
										total	13A	13 B		
Industries (NACE A*21 = ISIC sections)														

6. References and links

For references and links please see the hyperlinks provided in the earlier sections.

Annex – Environmental domains (main classification headings) for EGSS statistics

Classification included in the European Commission Proposal of 2 May 2013 for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 691/2011 on European environmental economic accounts:

EP part

CEPA 1 - Protection of ambient air and climate
CEPA 2 - Wastewater management
CEPA 3 - Waste management
CEPA 4 - Protection and remediation of soil, groundwater and surface water
CEPA 5 - Noise and vibration abatement
CEPA 6 - Protection of biodiversity and landscapes
CEPA 7 - Protection against radiation
CEPA 8 – Environmental research and development
CEPA 9 - Other environmental protection activities.

RM part

CReMA 10 – Management of water
CReMA 11 – Management of forest resources
CReMA 12 – Management of wild flora and fauna
CReMA 13 – Management of energy resources
    CReMA 13A – Production of energy from renewable resources
    CReMA 13B – Heat/energy saving and management
    CReMA 13C – Minimisation of the use of fossil energy as raw materials
CReMA 14 – Management of minerals
CReMA 15 – Research and development activities for resource management
CReMA 16 – Other resource management activities

Proposal presented in the Annex 1 of the SEEA 2012:

EP part

CEPA categories as presented above

RM part (interim)

10 Management of mineral and energy resources
11 Management of timber resources
12 Management of aquatic resources
13 Management of other biological resources (excl. timber and aquatic resources)
14 Management of water resources
15 Research and development activities for resource management
16 Other resource management activities