

DRAFT

SEEA Technical Note: Environmental Goods and Services Sector (EGSS)

June 12, 2015

SEEA Technical Notes

This note is a part of a series of Technical Notes prepared to support the development of data based on the System of Environmental Economic Accounts (SEEA) Central Framework, the first international standard in environmental economic accounting. Since SEEA is not a single account but a series of modules, the accounts in each of the various modules can be developed separately in accordance with the priorities and the resource availability in each country.

The series of Technical Notes is comprised of a) a note addressing general issues that cut across domains focusing on institutional arrangements and institutional processes that encourage efficient implementation of the standard and associated data compilation exercises (see *Institutional Arrangements and Statistical Production Processes for the Implementation of the SEEA-Central Framework*) and b) a number of notes on specific modules. It is recommended that those wishing to develop data related to any of these specific modules should read the cross cutting note in conjunction with the note on the specific modules to be developed.

The notes on modules summarize the data requirements and other operational considerations in 10-15 pages designed to provide sufficient guidance to initiate the development of the accounts. The notes also provide reference information for additional publications that will support the full development of the accounts and provide information on extensions and linkages that can be exploited once the accounts and tables are in place.

I. Introduction

1. The increased awareness of the need for combating environmental pollution and preserving natural resources has led to the further development of technologies, equipment and production processes in order to achieve changes. The production of goods and services to meet these demands is a growing part of the overall economy and there is increasing interest in how these efforts contribute to economic activity.
2. The statistics on environmental goods and services sector (EGSS) measure the supply of goods and services and which sectors of the economy are providing the means to respond to the challenges of environmental degradation and the depletion of natural resources. EGSS statistics provide indicators of the national production of environmental goods, services and technologies; the contribution of this production within the economy as a whole; and the extent of related employment, investment and exports from the sector.
3. This technical note provides an overview of EGSS statistics according to the System of Environmental Economic Accounting 2012 Central Framework (SEEA CF) which was adopted by the United Nations Statistical Commission in 2012 as the international statistical standard for environmental-economic accounts. The general purpose of SEEA Technical Notes is to summarize the key features for a given topic to support countries in the implementation of the SEEA.
4. EGSS statistics also provide an information source for assessing (a) the potential for economic activity and employment to be based on environmentally friendly and more resource-efficient activities and (b) the extent to which the economy is responding to various public policies and initiatives that have this objective in mind. Defining these statistics in an internationally comparable way also permits cross-country comparison and assessment of best practices. EGSS statistics may also provide valuable source data for the Environmental Protection Expenditure Accounts¹ (EPEA) or resource management expenditure accounts (ReMEA).
5. In principle, there is a wide range of economic variables that might be considered within an EGSS context but, owing to the complexity of measurement in this area, focus is on the variables that give an indication of the relative economic size and contribution of the EGSS. Thus, the main variables included are the output, value added, employment, exports, and the value of environmental goods and services used in gross fixed capital formation. SEEA-CF does not define a full functional account for the EGSS².
6. Section II has a brief discussion of the definition of EGSS. Section III describes the core table for EGSS that will ultimately be important in developing international data sets. Section IV deals with the data sets required to produce the core table including the main concepts, data sources and compilation methods. Section V describes how the core tables and related datasets

¹ The Environmental Protection Expenditure Account, also part of SEEA-CF, approaches this topic from a different perspective, see Table 2 for a comparison.

² The Eurostat has developed a EGSS functional account member countries are preparing preliminary estimates.

may be extended to address broader issues and may be linked to other data sets. Section VI provides references and links to supporting material.

II. SEEA-CF Environmental Goods and Services Sector (EGSS)

7. The EGSS consists of economic activities that produce environmental goods and services. Thus, all products (goods and services) that are produced, designed and manufactured for purposes of environmental protection and resource management are within scope of the EGSS. Whereas many SEEA accounts result in the integration of physical data on the environment with economic information, the EGSS calls for the decomposition of existing national accounts information³ to focus on the production of environmental related activities (see Table 1 for the Classification of Environmental Activities). However, the data in other SEEA accounts, including those in physical terms, may be useful in estimating the required decompositions.

Table 1: Classification of Environmental Activities: overview of groups and classes

Group	Classes
I: Environmental Protection (EP)	1 Protection of ambient air and climate
	2 Wastewater management
	3 Waste management
	4 Protection and remediation of soil, groundwater and surface water
	5 Noise and vibration abatement (excluding workplace protection)
	6 Protection of biodiversity and landscapes
	7 Protection against radiation (excluding external safety)
	8 Research and development for environmental protection
	9 Other environmental protection activities
II: Resource Management (RM)	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

8. The scope of environmental activities encompasses those economic activities whose primary purpose is to reduce or eliminate pressures on the environment or to make more efficient use of natural resources. Production activities are deemed to be environmental activities only if the primary purpose of the activity is consistent with the definitions of the two types of environmental activity listed as environmental, i.e., environmental protection and resource management. In practice, the primary purpose must be attributed to particular transactions or groups of transactions as recorded in the accounts. Examples of these activities are restoring polluted environments, conservation and resource management, and investing in technologies designed to prevent or reduce pollution.

³ With adjustments as necessary items such as for intra-firm transactions or goods sent abroad for processing.

9. These activities are grouped into two broad types of environmental activity:

Environmental protection activities are those activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment.

Resource management activities are those activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion.

10. Given the variables for EGSS are estimated within the context of the national accounts allows the accounting structure of the national accounts to contribute to the quality of the estimates.

11. The SEEA divides environmental goods and services into four types: environmental specific services; environmental sole-purpose products; adapted goods; and environmental technologies. The definitions of these goods and services are outlined below.

12. Environmental specific services comprise environmental protection and resource management products that are “characteristic” or typical of those activities. Environmental specific services *are environmental protection and resource management specific services produced by economic units for sale or own use*. Examples of environmental specific services are waste and wastewater management and treatment services, and energy and water-saving activities.

13. The second type of environmental goods and services are environmental sole-purpose products. *Environmental sole-purpose products are goods (durable or non-durable) or services whose use directly serves an environmental protection or resource management purpose and that have no use except for environmental protection or resource management*. Examples of these products include catalytic converters, septic tanks (including maintenance services), and the installation of renewable energy production technologies (e.g., solar panels).

14. The third type of environmental goods and services are adapted goods. *Adapted goods are goods that have been specifically modified to be more “environmentally friendly” or “cleaner” and whose use is therefore beneficial for environmental protection or resource management*. For the purposes of the EGSS, adapted goods are either:

(a) “Cleaner” goods, which help to prevent pollution or environmental degradation because they are less polluting at the time of their consumption and/or scrapping, compared with equivalent “normal” goods. Equivalent normal goods are goods that provide similar utility except for the impact on the environment. Examples include mercury-free batteries and cars or buses with lower air emissions;

(b) “Resource-efficient” goods, which help to prevent natural resource depletion because they contain fewer natural resources in the production stage (e.g., recycled paper and renewable energy, heat from heat pumps and solar panels); and/or in the use stage (e.g., resource efficient appliances and water-saving devices such as tap filters).

15. Adapted goods differ from environmental specific services and sole-purpose products because, while they serve an environmental protection or resource management purpose (through being cleaner or more resource-efficient), they are a subset of a goods with another primary purpose. For example, the primary purpose for manufacturing buses is transportation. The current use of fossil fuels in busses is the “normal” state. Thus adjusting the fuel mix in buses to non-fossil fuels, is an adaptation, but with the primary purpose intact.

16. The fourth type of goods and services are environmental technologies. *Environmental technologies are technical processes, installations and equipment (goods), and methods or knowledge (services), whose technical nature or purpose is environmental protection or resource management.* Environmental technologies can be classified as either:

(a) *End-of-pipe (pollution treatment) technologies*, which are mainly technical installations and equipment produced for measurement, control, treatment and restoration/correction of pollution, environmental degradation, and/or resource depletion. Examples include sewage treatment plants, equipment for measuring air pollution, and facilities for the containment of high-level radioactive waste. End-of-pipe technologies generally treat pollution, environmental degradation and resource depletion after it has occurred.

(b) *Integrated (pollution prevention) technologies*, which are technical processes, methods or knowledge used in production processes that are less polluting and less resource-intensive than the equivalent “normal” technology used by other producers. Their use is less environmentally harmful than that of relevant alternatives. Note that some integrated technologies will include components that are included in the earlier categories of sole-purpose products and thus measures to avoid double counting will be required. Integrated technologies are designed to avoid producing pollution in the first place.

17. Excluded from the scope of environmental goods and services are goods and services produced for purposes that, while beneficial to the environment, primarily satisfy technical, human and economic needs or that are requirements for health and safety. Goods and services related to minimizing the impact of natural hazards and those related to the extraction and mobilization of natural resources are also excluded.

18. Many of the products supplied by the EGSS are also recorded in the EPEA (see comparison in Table 2). The EPEA can be an important data source for the EGSS (and vice versa) and, in principle, the two systems can be fully reconciled. A reconciliation would need to take into account, for example, that the EPEA includes all of the gross fixed capital formation for environmental protection characteristic activities but that not all of the products used for this gross fixed capital formation can be identified as being specifically manufactured for environmental purposes in the EGSS. Hence, the EGSS output of capital goods designed for environmental protection will differ from the total gross fixed capital formation recorded in the EPEA. In practice, a full reconciliation is a complex operation that is rarely achieved.

Table 2: Relationship between the EPEA and the EGSS

Environmental Protection Expenditure Account vs. Environmental Goods and Services Sector		
Area of difference	EPEA	EGSS
Accounting structure	Full functional account	Table of production related statistics
Coverage of environmental activities	Environmental protection characteristic activities	Production of goods services used for environmental protection and resource management
Coverage of goods and services	All environmental protection goods and services and expenditure on other goods and services for environmental protection purposes	All environmental protection and resource management goods and services
Coverage of environmental producers	Producers only included in relation to environmental protection specific services	Producers included in relation to all environmental goods and services
Valuation of adapted goods	Net / extra cost only	Full value (at basic prices)
Coverage relating to international trade	Imports included in aggregate measures of expenditure	Exports included in aggregate measures of production
Treatment of taxes and subsidies	Valuation of expenditure at purchasers' prices	Valuation of output at basic prices

19. In the EGSS, specialist producers are those producers whose primary activity is the production of environmental goods and services, including specific services, sole-purpose products, adapted goods and environmental technologies. This scope is broader than the scope of specialist producers in the EPEA which is limited to producers whose primary activity is the production of environmental protection specific services.

20. In practice, the measurement of environmental sole-purpose products and adapted goods relies on the development of lists of relevant goods and services. For sole-purpose products, the purpose of goods or services is predominantly determined based on the technical nature of the product and its technical suitability for use in environmental protection or resource management. In certain boundary cases, where the technical nature of the product does not provide a definitive guide, consideration may be given to the intent of the producer of the product. For adapted goods, the lists are formed without reference to the primary purpose of the good but are formed

based on an assessment of whether, by virtue of its technical nature, the good is environmentally friendly or cleaner⁴.

21. Because of the production focus of EGSS statistics, structuring information by type of economic activity following International Standard Industrial Classification (ISIC) will be important.

III. Core Tables and Aggregates / Indicators for EGSS

22. The core table for EGSS presents estimates for the main variables: output, exports, value added and employment broken down by ISIC sections. Each main variable is further broken down between environmental protection and resource management activities, with of which categories recommended for the output variables (Table 3). Further detail could be added for types of environmental protection or resource management activity.

23. Initial efforts could either focus on those environmental protection or resource management activities and industries that are most important for the country and its policy needs, or where the information is most readily available. Also, initial efforts in developing these tables should focus on the production of specific services, sole purpose products and end-of-pipe technologies as these are likely constitute the largest part of production. The values for adapted products and integrated technologies are often less important and/or often more challenging to measure.

24. The development of time series for these data provides the primary indicators as policy makers are interested in the growth of this sector relative to overall economic activity and environmental and resource management policies.

⁴ The challenges of distinguishing adapted goods is further discussed in paragraphs 4.74 – 4.78 of SEEA-CF.

Table 3

Core Table EGSS					
		Industries			
		21 ISIC Sections and Total			
Output of environmental goods and services					
	Environmental protection				
	Of which: Waste management				
	Resource management				
	Of which: Renewable energy				
	Total				
Gross value added					
	Environmental protection				
	Resource management				
	Total				
Exports of environmental goods and services					
	Environmental protection				
	Resource management				
	Total				
Employment ('000 people)					
	Environmental protection				
	Resource management				
	Total				

25. The core table provides the basis for the following indicators:

- Level of value added in the EGGS as a proportion of total value added in the economy, also by industry or for specific activities
- Level of employment in the EGGS as a proportion of employment in the economy, also by industry or for specific activities
- Level of environmental and resource activities
- The trend of the sector and the changes in types of environmental and resource activities.

These indicators provide information on the evolving role of environmental goods and services in the overall economy broken down by industry and potentially environmental activity.

IV. Compilation

25. The compilation of SEEA accounts should be founded on the GSBPM as outlined in the first note in this series “Statistical Production Processes for Implementation of the SEEA-Central Framework”.

Overarching Management Functions							
1 Specify Needs	2 Design	3 Build	4 Collect	5 Process	6 Analyze	7 Disseminate	8 Evaluate

26. It is often the case when building accounts (SEEA or SNA for example) that one of the goals is to use existing data sources as much as possible. In such a case, the Specify Needs, Design and Build phases will often need to be undertaken simultaneously and iteratively, as one evaluates the capacity of existing data sets to meet needs relative to the potential costs of initiating new data development.

Specify Needs, Design & Build

27. These initial steps may not need to be undertaken for each data cycle but should be revisited periodically in conjunction with longer term planning cycles.

28. Following the definition above, identify the sector in terms of producers (i.e. enterprises/establishments) based on their activities and products. Decide the level of disaggregation (e.g. industry, type of product, i.e. sole-purpose, adapted etc., resource type) and consider which other data could be linked (e.g. economic statistics, social statistics, population).

28. Consult with policy makers, stakeholders and potential data providers on the environmental and resource management activities of interest for the country. Consider links to other environmental data initiatives planned or underway that could be potential data sources or provide guidance in classifying or identifying environmental goods and services (EPEA for example). Setting out the specific activities that would be of interest to the information needs of the country should be done at this stage. This will provide a basis to examine the adequacy of the existing data and assess where additional information may be required.

29. Some activities and products such as operation of the waste water treatment system or waste management and associate services (ISIC 37-39) will be totally within scope for EGSS. However, in many other cases EGS activities will only form part of the activities of some producers and lists of products or activities within broader groups may have to be established. The development of such a list should take in to account the size of such activities in the

economy with priority being given to activities with sufficient importance. Table 4 below provides an example of activities that the Netherlands has used in estimating EGSS⁵.

30. Identify potential data sources and assess their suitability for estimating the desired variables for the full range of EGSS activities. In this step the metadata associated with the data sources should be closely examined to assess coherence between data sources and consider where methodologies for differences in concepts, coverage (including units of observation), timing and classification will be required.

Table 4 EGSS Activities used in the Netherlands

Activity	Main source
Sewage and refuse disposal services	National accounts, supply and use tables
Wholesale in waste and scrap	National accounts, supply and use tables
Environmental related inspection and control	Employment registers
Government governance related to the environment	Environmental Statistics, EPE statistics
Organisations and associations on the environment	Employment registers and business register
Internal environmental activities at companies	Environmental Statistics, EPE statistics
Renewable energy production	Energy Statistics, Renewable energy statistics
Energy saving and sustainable energy systems	Own constructed database and Production Statistics
Insulation activities	National accounts
Organic agriculture	Agriculture statistics, area of organic agriculture
Recycling	National accounts, supply and use tables
Second hand shops	Production Statistics
Water quantity control by waterboards	National accounts, Government accounts
Environmental advice, engineering and other services ¹	Own constructed database and Production Statistics
Industrial environmental equipment ¹	Own constructed database and Production Statistics
Environmental technical construction ¹	Own constructed database and Production Statistics
Environmental related education	Education statistics

31. If one needs to go beyond existing data sources, in particular to split out detailed activities there are few options available to obtain the data. One is to perform a survey⁶, the other is to compile a register of enterprises and build a separate database for EGSS⁷. It is also possible to perform a combination of the two approaches. The approach to estimating these variables is generally from the supply side but the costs of broad supply side surveys means that there are only a few countries with such surveys on a regular basis.

32. Many of the efforts to estimate EGSS have been based on using proxies from other data sources to estimate ratios that are applied to national accounts information. (e.g. from the Dutch SEEA training presentation, 17% of all paper products were identified as being environmental.) This information is used to provide an estimate of the number of full-time, part-time employees and/or person hours dedicated to environmental purposes in the paper industry.

⁵ See the following link for further information on the Netherlands example:

<http://www.cbs.nl/NR/rdonlyres/6048B589-C79F-416E-A5E2-BD93E3DCA29C/0/2012EGSSCBSbackground.pdf>

⁶ Canada and Germany are two examples that conduct surveys

⁷ Netherlands and Sweden are two examples that compile a register

33. Environmental data sets used for other SEEA accounts may provide information on EGS activities. Also, economic data programs may provide some data of use for the identification of these activities.
34. It is important to thoroughly assess the metadata for the available datasets. First, assess whether or not the definitions conform to and/or support those set out for the required activities in the design stage. If not, is the shortcoming important or can it be overcome with estimates based on alternate sources? Also, key at this stage is to clearly ascertain the classification, conceptual and coverage differences across the various data sets to be used as basic inputs.
35. Assess if there are readily available concordances between the classification systems and if there are reliable sources that can be used to estimate adjustments for conceptual and coverage difference.
36. At this point, if sufficient basic data is not available to produce estimates for one or more important EGS activities, it may be necessary to initiate a project to establish a new source of data. This may mean that the development of the sector splits into two paths: one that can provide partial coverage with existing data and one where development would have to await the availability of basic data.
37. In some cases where partial data exist but there are some important data gaps, it may be a good idea to construct a preliminary set of estimates based on related flows or modelling to fill the gaps. This could be done to aid in the development of the missing basic data.
38. In the case where basic data must be developed, it is recommended that a separate project be initiated to develop the necessary data. This project should follow the GSBPM steps and generic principle as set out in the first note in this Technical Note series. Depending on the organization of responsibilities within the statistical infrastructure of the country, this step may involve additional agencies or sectors of the NSI.
39. Secure access to data, associated metadata and the rights to disseminate the estimated variables that are derived from that data. Where needed, obtain access to expertise in organizations from which data is being sought to assist with analysis and/or training.
40. SEEA compilers will at an early stage need to ensure access to these data if sharing agreements do not already exist. The terms of access under current institutional arrangements are key. The terms should support cooperative working arrangements and the release of data with sufficient detail to address the policy issues important for the country.
41. This step can take considerable effort and time in cases where institutional arrangements are not yet established. It will be important for all agencies involved to clearly appreciate the mandate of the other agencies and associated constraints.
42. Establishing and maintaining good working relations with the agencies that are the source for basic data can pay dividends later in the production process when estimation challenges require expertise to overcome.

43. Set out a plan for the progressive implementation of EGGS based on the availability of resources and basic data.

44. Databases for the basic data and the associated accounts must be established. Given the SEEA links to the SNA, existing database structures and associated processing systems may be a good source for this development. Some adjustments will be required to add components not in the SNA such as intra-enterprise flows.

45. Use of the same systems and processes will facilitate aligning of data sets and should help reduce the development costs for the new accounts and facilitate the integration of data for the production of indicators.

Collect

46. Import data and process data including applying concordances that may be required between the classifications used in the imported data and the classifications to be used in the estimates.

Process

47. Prepare estimates, including the estimation of data for any data gaps. Given the use of proxies to estimate some data and the varying quality and coverage of these, it is likely that different methods will need to be considered for each industry/sector of the economy.

Analyse

48. Analyse tables and graphic representations including undertaking an analysis of time series where possible and recognising the likely need for multiple iterations of this and the previous step. Data quality should be assessed and documented at this stage.

49. The steps in the above three paragraphs are the core activities in building the estimates and will be repeated in cycle during each production period. This allows the strength of the accounting approach to be used to confront the various data sources and check for consistency and reasonableness in comparison to other datasets such as the related national accounts values.

50. The first time accounts are estimated for a new program, particular attention needs to be made with regard to adjustments required to the source data to ensure the methods used are appropriate and sound. Given that proxy data and ratios are likely to be used for these estimates, the reasonableness of the initial estimates needs to be thoroughly assessed.

51. It is recommended that in cases where significant basic data come from other agencies, the staff of those agencies be asked to participate in the analysis of the estimates. These experts often have in depth knowledge that can allow the identification and resolution of inconsistencies.

Disseminate

52. Disseminate estimates, including material to assist interpretation (e.g. indicators, methodological notes and statements of data quality.)

53. The dissemination of data should always be accompanied by sufficient documentation and metadata to allow users to fully understand the information being disseminated. This is particularly important for the initial dissemination of a new program of data where one might want to identify the initial data as ‘experimental’ or ‘preliminary’ and make it clear that user input is being sought in order to improve future releases.

Evaluate

54. Archive data and related methodological and other documentation. Review estimates, data sources, methods and systems, including actively seeking user feedback.

55. These last two steps are very important for all statistical programs but when initiating a new program of data, seeking user feedback is crucial. This in turn depends on the existence of good documentation on the methods and systems so as to properly inform users and assess their feedback.

V. Extensions and links

52. The Core table in Section II focuses on four key variables but others may be added to expose other dimensions of this sector. Exports may be of interest as producers find opportunities to grow through the provision of broader markets. Given the detailed nature of trade data, if exports are significant, this may be a good source to enhance the overall quality of the estimates for some products/industries.

53. The extent to which production is being used to enhance the capital stock for environmental purposes may provide information on the sustainability of current efforts.

54. Information on specific products or industries may also be of interest depending on the situation in the country. Such detail will depend on the source data available or on efforts to collect additional data, should this be warranted.

55. Finally, it should be noted that with the heightened interest in environmental and sustainable development issues, there is considerable technological progress in product development for this domain. It will be important to update product and services lists on a regular basis. Again, maintaining strong working relationships with other agencies can be useful in this regard.

VI. References

Eurostat EGSS 2007

[National insitute of Romania \(2014\) Environmental accounts: Environmental protection expenditure accounts \(EPEA\), Air emissions accounts \(AEA\), Environment industry accounts \(EGSS\)](#)

[Statistics Norway \(2013\) Environmental goods and services sector \(EGSS\)](#)

See Eurostat excel of grants, there are more like the studies above in it:

<http://ec.europa.eu/eurostat/documents/1798247/6079569/Catalogue-of-pilot-study-reports-09-12-2014.xls>

Examples of dissemination of statistics, country level:

UK environmental goods and services sector (EGSS): 2010-2012

http://www.ons.gov.uk/ons/dcp171778_401418.pdf

Turnover in environmental sector increases in Sweden

http://www.scb.se/en/_Finding-statistics/Statistics-by-subject-area/Environment/Environmental-accounts-and-sustainable-development/System-of-Environmental-and-Economic-Accounts/Aktuell-Pong/38171/Behallare-for-Press/379413/

Other ones?

Contacts at national level:

UK's mailbox for questions and further contacts: Environment.Accounts@ons.gsi.gov.uk

Sweden's mailbox for questions and further contacts: miljorakenskaperna@scb.se

...Other countries???

There are a few examples available for practical implementation listed below:

Eurostat: <http://ec.europa.eu/eurostat/web/environment/overview>

Statistics Sweden: http://www.scb.se/Statistik/MI/MI1301/ dokument/MI1301_BS_2003-2013_Miljosektorn_150119.pdf (in Swedish)

Statistics Spain:

<http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft26%2Fp067&file=inebase&L=0> (in Spanish)

Annex: Specific considerations of EGSS activities (suggested annex from Nancy Steinbach)

- **Plumbing:** In cases where plumbers also install wastewater technology they should be included.
- **Skylights:** In cases where the skylights are more energy efficient than their counterparts they can be included. It will be difficult to determine what the energy efficiency rate should be to be considered better than average skylights. It will therefore be most likely that skylights are excluded.
- **Pest control:** Some exterminators use non-toxic methods to control pest. In those cases it can be proper to include in EGSS.
- **Aquaculture:** Aquaculture are not automatically included in EGSS. There will be a need for a certification of some sort related to the environment for them to be included.
- **Biomass:** Especially ethanol production is debated whether they should be included or not as an EGSS due to the impact on biodiversity that ethanol production can have. However, ethanol can be a replacement for fossil fuel use. It could be beneficial to mark out biofuel producers specially as Biofuel and allowing them to stay included, but could then be separately identified.
- **Noise barriers:** The production and installation of road noise barriers are included as Noise and vibration abatement.
- **Electricity distributors:** These businesses are not included in EGSS. To do so would potentially lead to a double counting of the activities related to renewable energy. The SEEA also delimitates the area to the produces, excluding suppliers and retailers.
- **Organic farming:** How can organic farming be classified according to the more detailed domains. *Organic farming:* farming can be sustainable but not organic. Organic farming is a specific certification procedure while sustainable agriculture entails reducing general environmental impact. By convention organic/sustainable farming should be recorded as protection of soil and groundwater. This is also the recommendation of the EGSS 2007 manual (p. 55)
- **Installation services:** Where to draw the line of installation services for environmental equipment (such as e.g. solar) or more energy efficient equipment (such as e.g. air conditioners)? One proposal is that if the installation require special skills then perhaps they should be within scope. The EGSS manual (page 34) specifies that if the installer is specialised on environmental technologies than they should be included. Not for general equipment.
- **New products made of recycled materials:** How about including manufacturers using recycled material for their non-environmental products into EGSS. The EGSS manual states (page 54) that products made from secondary raw materials are considered as resource management products. This would for example mean that jewellers would be included that recycle gold. The manual goes on explaining that products produced through recycled metals,

glass and ceramics should be recorded in 10 (management of minerals and energy resources). The classification does not have a category for recycled textiles (not second hand clothing but textiles that are recycled). One example of using cotton to make paper could be classified as either 10 Management of timber resources or 13 Management of other biological resources.

- **More efficient production process:** What about companies that has taken steps to be more energy or water efficient in their production process, should they be included in scope or not? One example is if the company has installed light sensors to only be on while there is movement or if they are more conscious about their water use and has reduced the use. It could be seen as those activities should not be included as the scope covers the technology of minimising water use or becoming energy efficient.
- **Charities that assist developing countries only.** There are some charities that search for funding in a country but spends those funds abroad. So, even if the charity has a specific environmental purpose it is not aimed for the specific territory. Those activities would therefore be excluded from concept. Those activities would rather be captured within the EPEA framework.
- **Cartridges:** cartridges made from recycled materials are included but a cartridge refill is out of scope.
- **Education, training, networking:** included in scope and classified as category: monitoring, consulting and domain: depending on type of network, education etc other EP or other NR
- **Animal shelters:** In some cases, animal shelters are aiding wild life and restoring them to the environment. During their convalescence time the shelters are open to the public who can come and watch and learn about the wildlife. In general, animal shelters are not within scope of EGSS. However if the shelter is accepting endangered or threatened species and carrying out educational activities then those could be considered within scope as protection of biodiversity and landscape.
- **Recycling of concrete:** classified as domain 10 management of mineral and energy resources
- **Rain water tanks:** classified as 14 management of waters resources
- **Financial activities:** excluded from scope
- **Designers of solar panels:** included as 10 management of mineral and energy resources.
- **Enterprises offering renewable energy solutions:** classify as 10 management of mineral and energy resources.
- **Design of products/systems/services:** the EGSS manual include design activities as part of the scope. See Annex 2 in the EGSS manual, each specific domain.
- **Organic clothing:** It is clear that the retailing of organic clothing is not part of the scope. However, in some cases the manufacturing of these clothes can also be made by the same enterprise that design and sell them, usually on-line. In those cases they should be included in scope.

Classification of Environmental Activities (CEA)

I. Environmental protection

Environmental protection activities are those activities whose primary purpose is the prevention, reduction and elimination of pollution as well as any other degradation of the environment. This includes measures taken in order to restore the environment after it has been degraded due to the pressures from human activities. To be included under environmental protection, actions and activities must satisfy the primary-purpose criterion, i.e., that environmental protection is their primary objective. Actions and activities that have a favourable impact on the environment but which serve other goals do not come under environmental protection. Hence, excluded from the field of environmental protection are activities that, while beneficial to the environment, primarily satisfy technical needs or the internal requirements for hygiene or security of an enterprise or other institution.

Activities like the saving of energy or raw materials are generally excluded from environmental protection and included instead under resource management (see below). However, such activities are considered environmental protection activities to the extent that they mainly aim at environmental protection.

1 Protection of ambient air and climate

Protection of ambient air and climate comprises measures and activities aimed at the reduction of emissions into the ambient air or ambient concentrations of air pollutants as well as measures and activities aimed at the control of emissions of greenhouse gases and gases that adversely affect the stratospheric ozone layer.

Excluded are measures undertaken for cost-saving reasons (e.g., energy saving).

2 Wastewater management

Wastewater management comprises activities and measures aimed at the prevention of pollution of surface water through the reduction of the release of wastewater into inland surface water and seawater. It includes the collection and treatment of wastewater, including monitoring and regulation activities. Septic tanks are also included.

Excluded are actions and activities aimed at the protection of groundwater from pollutant infiltration and the cleaning up of water bodies after pollution (see CEPA 4).

Wastewater is defined as water that is of no further immediate value for the purpose for which it was used or in the pursuit of which it was produced, because of quality, quantity or time of its occurrence.

3 Waste management

Waste management refers to activities and measures aimed at the prevention of the generation of waste and the reduction of its harmful effect on the environment. Includes the collection and treatment of waste, including monitoring and regulation activities. It also includes recycling and composting, the collection and treatment of low-level radioactive waste, street cleaning and the collection of public litter.

Waste are materials that are not prime products (that is, products made for the market) for which the generator has no further use for own purposes of production, transformation or consumption, and which he wants to dispose of. Wastes may be generated during the extraction of raw materials, during the processing of raw materials to intermediate and final products, during the consumption of final products, and during any other human activity.

Residuals recycled or reused at the place of generation are excluded. Also excluded are waste materials that are directly discharged into ambient water or air.

Hazardous waste is waste that owing to its toxic, infectious, radioactive, flammable or other character defined by the legislator, poses a substantial actual or potential hazard to human health or living organisms. For the purposes of this definition, “hazardous waste” comprises for each country all those materials and products that are considered to be hazardous in accordance with that country’s practices. Low-level radioactive waste is included, whereas other radioactive waste is excluded (see CEPA 7).

Low-level radioactive waste is waste that, because of its low radionuclide content, does not require shielding during normal handling and transportation.

Treatment and disposal of waste

Treatment of waste refers to any process designed to change the physical, chemical or biological character or composition of any waste in order to neutralize it, render it non-hazardous, safer for transport, amenable for recovery or storage, or to reduce it in volume. A particular waste may undergo more than one treatment process. Composting and recycling activities for the purpose of environmental protection are included. Often *composting* is a waste treatment method and the resulting compost provided free of charge or at a very low price. The manufacture of compost classified in division 24 of the International Standard Industrial Classification of All Economic Activities (ISIC)/Statistical Classification of Economic Activities in the European Community (NACE) (Manufacture of fertilizers and nitrogen compounds) is excluded.

Division 37 of ISIC/NACE defines *recycling* as the processing of waste, scraps whether or not used, into a form feasible to be transformed in new raw materials. Typical is that, in terms of commodities, both input and output consist of waste and scrap, the input being sorted or unsorted but always unfit for further direct use in an industrial process whereas the output is made fit for further processing and is to be considered then as an intermediate good. A process is required, either mechanical or chemical. The main purpose of activities classified in division 37 of ISIC/NACE is the manufacture of secondary raw materials but there may be important secondary waste management activities.

Compost and secondary raw materials (as well as products made of secondary raw materials) are not considered environmental protection products. Their use is excluded.

Disposal of waste is the final deposition of waste on the ground or underground in controlled or uncontrolled fashion, in accordance with the sanitary, environmental or security requirements.

4 Protection and remediation of soil, groundwater and surface water

Protection and remediation of soil, groundwater and surface water refers to measures and activities aimed at the prevention of pollutant infiltration, cleaning up of soils and water bodies and the protection of soil from erosion and other physical degradation as well as from salinization. Monitoring and control of soil and groundwater pollution are included.

Excluded are wastewater management activities (see CEPA 2), as well as activities aimed at the protection of biodiversity and landscape (see CEPA 6).

5 Noise and vibration abatement (excluding workplace protection)

Noise and vibration abatement refers to measures and activities aimed at the control, reduction and abatement of industrial and transport noise and vibration. Activities for the abatement of neighbourhood noise (soundproofing of dancing halls, etc.) as well as activities for the abatement of noise in places frequented by the public (swimming pools, etc.), in schools, etc., are included.

Excluded is the abatement of noise and vibration for purposes of protection at the workplace.

6 Protection of biodiversity and landscapes

Protection of biodiversity and landscape refers to measures and activities aimed at the protection and rehabilitation of fauna and flora species, ecosystems and habitats as well as the protection and rehabilitation of natural and semi-natural landscapes. Separating “biodiversity” from “landscape” protection may not always be practical. For example, maintaining or establishing certain landscape types, biotopes and ecozones and related issues (hedgerows, lines of trees to re-establish “natural corridors”) have a clear link to biodiversity preservation.

Excluded is the protection and rehabilitation of historic monuments or predominantly built-up landscapes and the control of weed for agricultural purposes, as well as the protection of forests against forest fire when this responds predominantly to economic concerns. The establishment and maintenance of green spaces along roads and recreational structures (e.g., separating golf courses and other sports facilities) are also excluded.

Actions and expenditure related to urban parks and gardens would not normally be included but may in some cases be related to biodiversity: in such cases, the activities and expenditure should be included.

7 Protection against radiation (excluding external safety)

Protection against radiation refers to activities and measures aimed at the reduction or elimination of the negative consequences of radiation emitted from any source. Included is the handling, transportation and treatment of high-level radioactive waste, i.e., waste that, because of its high radionuclide content, requires shielding during normal handling and transportation.

Excluded are activities and measures related to the prevention of technological hazards (e.g., external safety of nuclear power plants), as well as protection measures taken at workplaces. Also excluded are activities related to collection and treatment of low-level radioactive waste (see CEPA 3).

Definition of radioactive waste

Any material that contains or is contaminated with radionuclides at concentrations or radioactivity levels greater than the “exempt quantities” established by the competent authorities, and for which no use is foreseen. Radioactive wastes are produced at nuclear power plants and at associated nuclear fuel cycle facilities as well as through other uses of radioactive material, for example, the use of radionuclides in hospitals and research establishments. Other important wastes are those from mining and milling of uranium and from the reprocessing of spent fuel.

8 Research and development for environmental protection

Research and development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this knowledge to devise new applications (see the Frascati Manual (OECD, 2002) in the field of environmental protection. The class regroups all R&D activities and expenditure oriented towards environmental protection: identification and analysis of sources of pollution and mechanisms of dispersion of pollutants in the environment, as well as their effects on human beings, the species and the biosphere. This heading covers R&D for the prevention and elimination of all forms of pollution, as well as R&D oriented towards equipment and instruments of pollution measurement and analysis. When separable, all R&D activities, even when referring to a specific class, have to be classified under this position. Environmental R&D is further classified in accordance with the 1993 Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (NABS) (Eurostat, 1994).

Excluded are R&D activities related to the management of natural resources.

9 Other environmental protection activities

Other environmental protection activities refers to all environmental protection activities that take the form of general environmental administration and management activities or training or teaching activities specifically oriented towards environmental protection that encompass public information, when they are not classified elsewhere in CEPA. It also includes activities leading to indivisible expenditure, as well as activities not elsewhere classified.

II. Resource management (RM) (interim)

Resource management includes all actions and activities that are aimed at preserving and maintaining the stock of natural resources and hence safeguarding against depletion. This includes actions and activities aimed at reducing the withdrawals of natural resources (recovery, reuse, recycling, substitution of natural resources) as well as restoring natural resource stocks (increases/recharges of natural resource stocks).

To be included under resource management, actions and activities or parts thereof must satisfy the primary-purpose criterion, i.e., that resource management is their primary objective. Those activities whose primary purpose is environmental protection are therefore excluded.

10 Management of mineral and energy resources

Includes the activities and actions aiming at minimizing the intake of mineral and energy resources through in-process modifications, the recovery, reuse, recycling, savings and use of substitute mineral resources, the production of energy from renewable sources and any other kind of measure. Activities and actions concerning measurement, control, laboratories and the like are also included, as well as education, training and information and administration and regulation activities.

11 Management of timber resources

Includes the activities and actions aiming at minimizing the intake of natural timber resources through in-process modifications as well as recovery, reuse, recycling, savings and the use of substitutes of forest products. Replenishment activities like reforestation and afforestation are included when they concern natural forests. Activities and actions concerning measurement, control, laboratories and the like are also included, as well as education, training and information and administration and regulation activities. Exploitation and exploration activities of natural timber resources are excluded.

12 Management of aquatic resources

Includes the activities and actions aiming at minimizing the intake of wild fish and other aquatic resources through in-process modifications as well as the use of alternative resources and any other kind of measure. Replenishment activities like repopulation of wild fish stocks are included when they aim at maintaining/increasing the consistency of stocks (not their biodiversity → CEA 6). Activities and actions concerning measurement, control, laboratories and the like are also included, as well as education, training and information and administration and regulation activities. The class includes all the activities and actions having the purpose of managing, maintaining and increasing the stock of aquatic resources. The protection of biodiversity of aquatic resources is excluded (→ CEA 6).

13 Management of other biological resources (excluding timber and aquatic resources)

Includes the activities and actions aiming at minimizing the intake of biological resources other than timber and aquatic resources through in-process modifications as well as the use of alternative resources and any other kind of measure. Replenishment activities like repopulation of wild flora and fauna stocks are included when aimed at maintaining/increasing the consistency of stocks (not the biodiversity → CEA 6). Activities and

actions concerning measurement, control, laboratories and the like are also included, as well as education, training and information and administration and regulation activities. Other biological resources are stocks and reserves of non-cultivated animals and plants (excluding timber and aquatic resources). The class includes all the activities and actions with the purpose of managing, maintaining and increasing the stock of the resources. Activities aimed at the protection of biodiversity of wild flora and fauna are excluded (→ CEA 6).

14 Management of water resources

Includes the activities and actions aimed at minimizing the intake of water resources through in-process modifications as well as reuse, recycling, savings and the use of substitutes of freshwater resources. Activities aiming at the replenishment of water stocks are included. Activities and actions concerning measurement, control, laboratories and the like are also included, as well as education, training and information and administration and regulation activities. Exploitation, exploration and distribution activities are excluded.

15 Research and development activities for resource management

Creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this knowledge to devise new applications in the field of natural resource management and savings.

Excluded are R&D activities related to environmental protection → CEA 8.

16 Other resource management activities