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Some concepts based on the manual on the Environmental Goods and Services Sector

Comments based on clarification notes for the SEEA revision



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Clarification notes to the SEEA-rev editor to SEEA-2003 §5.86 - §5.94

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Environmental Goods and Services Sector (EGSS)

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The paper is based on the paper presented to the London Group LG/14/6 and the discussions in the 14th London Group Meeting in Canberra, Australia.

In SEEA 2003 the "Environment industry" is briefly described in chapter 5 based on the OECD/Eurostat 1999 definition. The SEEA 2003 neither develops nor explains the statistical aspects of the "environment industry" leaving the reader to go to the original source for more information.

1. Introduction

The recently finalized Eurostat EGSS handbook provides methods to develop new data collection systems on EGSS at the national level. It contains definitions, examples and recommendations to ensure that data are compiled and maintained on a consistent basis. The standard tables essentially aim at identifying some important variables (e.g., employment, turnover, value added and exports) by different actors and activities of the EGSS.

The final version of the handbook has been sent to editing at Eurostat and is expected to be published by August 2009. This will be made available to the editor as soon as it is published.

The handbook on EGSS explains the scope and the reasoning behind the terms of the standard tables. It also provides extra information necessary to allow a consistent collection and interpretation of the data to be reported by countries.

To a large degree the handbook follows the principles of the OECD/Eurostat 1999 Manual because it is intended to represent the reference handbook used by national statistics offices to carry out studies on EGSS. At the same time it is intended to be a further development of the OECD/Eurostat 1999 Manual.

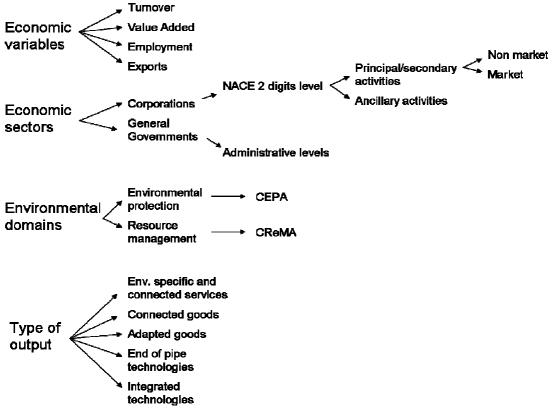
The handbook provides an analysis of the concepts related to the EGSS, supplemented by a definition and a classification of the sector, practical hands-on and methodological guidance for data collection.

It also recommends methods and approaches for analysis. A great deal of effort has been put into increasing coherency and providing users of the handbook with practical recommendations. Full implementation of these recommendations should help to ensure that data are compiled and maintained on a consistent basis. This is much too detailed for the SEEA-rev and the Eurostat EGSS handbook should simply be referred to in the SEEA-rev text for further details.

It is not possible to offer a standard compilation method that can be applied to the circumstances of all countries without adaptation. There are two main reasons this cannot be done: the EGSS does not follow standard industries classifications of products and services (HS/PRODCOM etc) or industries (ISIC/NACE) and there are various approaches used by countries to identify the populations to be included. Thus, the handbook outlines the various options that may be available for the collection of data on the EGSS but this should only be mentioned in SEEA-rev.

The following figure provides an easy to understand overview of the different sub-systems and classifications used in EGSS. The editor may find it useful to include such an overview to help explain the systematic approach used for developing information on EGSS since it is a cross-cutting type of activity that requires a variety of different ways of collecting data and piecing them together into a whole picture.

Figure 1: Different levels of details for presenting the data on the EGSS



The following table provides an overview of the Eurostat EGSS Handbook and can be a useful resource for the editor to find information.

Table 1: The Structure of the Handbook on EGSS

Wher	e?	What ⁴	?
Chapter	Sub-chapter	Information	In particular
1. Introduction	Purpose and scope	Driving force, purpose, scope and organisation of the handbook	
	Definition	Definition from Environmental industry OECD/Eurostat manual	
2. The EGSS	Delimitation	Delimitation of the sector for statistical purposes	What is included and excluded in the environmental sector? What kind of environmental technologies, goods and services? What kind of producers and activities?
	Classification of EGSS	Classification by environmental domains	A classification of environmental protection activities (CEPA 2000) and one for Resource Management activities (CReMA 2008)

Wher	e?	What?					
Chapter	Sub-chapter	Information	In particular				
			Which are the main sources of information?				
3. The population	Identification of the population	How to select the population and build a list of EGSS producers	How to use activities and products classifications (NACE, CPA, HS, CN, etc.)?				
	Classification in environmental domains	How to proceed to classify activities by environmental domains	How to use in practice the CEPA 2000 CReMA 2008 classifications?				
4. A framework for data	Existing	How to gather statistics on EGSS	How to use existing statistics and surveys?				
collection	approaches, data sources and indicators	for: Turnover/Value Added, Employment, Exports?	Which are the main General Government and Corporations				
5. Standard Tables	5. Standard Tables Organisation, data requested and printing options General descriptions of print the standard Tables		Recommendations on the use of the standard tables				
6. Presentation and interpretation of results	Analysis by economic variable or sector, by environmental domain, type of output, analysis of time series or comparison among countries	How to present and analyse data gathered	Recommendations on the presentation of data, in particular on adapted goods and integrated technologies				

The concepts that need to be included in the SEEA-rev are covered especially in Chapter 2 and include the definition of EGSS; the delimitation of the sector specifying system boundaries; and the classification of the sector into environmental domains according to CEPA and CReMA (Note: CReMA is a subset of CRUMA).

Topics in chapter 3 and 4 of the Eurostat handbook should also be briefly included in SEEA-rev. From chapter 3 some description regarding the identification of the population (which includes lists of technologies, goods and services) and the classification of these technologies, goods and services into the different CEPA or CReMA categories is important. From Chapter 4 the different economic variables that should be collected or estimated for filling in the standard tables are described and should be included in SEEA-rev.

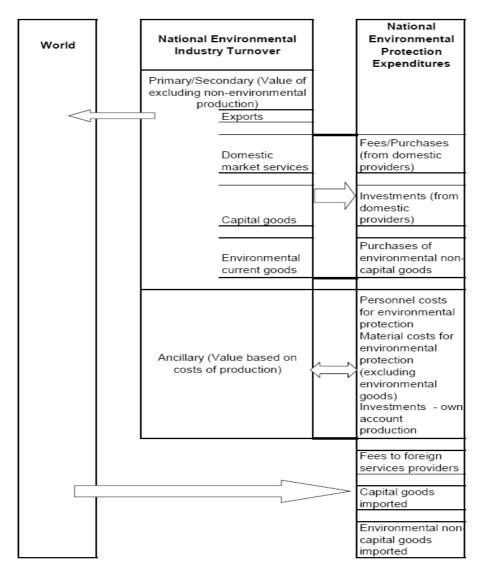
The final draft version of these three chapters is being provided in a separate Annex to this paper.

Relation of EGSS with Environmental Protection Expenditure (EPE)

In theory, the "Environmental goods and services sector" and "Environmental protection expenditure" are two sides of one coin, one being the supply and the other the demand side of environmental technology and services. Figure 2 describes the two statistical areas.

Figure 2: Similarities of EGSS and EPE

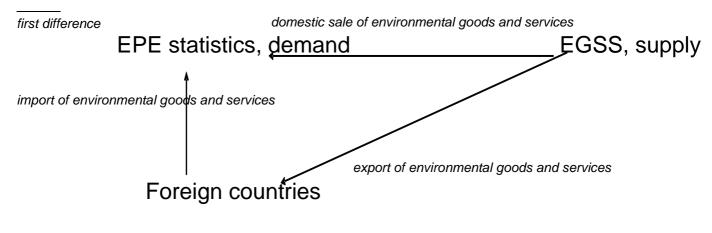
Figure 1: Similarities of EGSS and EPE



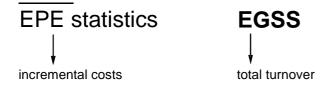
Source: Eurostat EGSS Handbook, Preface

There exists however two fundamental differences between the two statistics that are illustrated in the following figure:

Figure 3. Overview of the boundaries between the two different systems



second difference



Firstly, there are differences on how the statistics handle imports/exports. EPE statistics include goods and services purchased either from national or international suppliers and cannot distinguish between the two. In other words, the EPE statistics take into account the imports of environmental related goods and services. The EGSS statistic only tries to measure the production of goods and services produced by the national economy of a country. Also the related employment, value added and the exports are measured in the EGSS statistic.

Secondly, the EPE statistic only measures the extra cost of environmental goods and services while the EGSS capture the full turnover. The definition of the EPE statistic states that only the incremental costs should be taken into account while the definition of the EGSS states that total turnover should be captured. These two different approaches try to measure two different developments. The EPE statistic tries to measure the extra costs related to more strict environmental regulation and care for the environment. In this statistic, a correction is made for input savings. One can think of potential energy savings related to air emission reduction. The EGSS statistic tries to measure the market for environmental related goods and services which support both the environment and the economy. In other words, the EGSS statistic tries to measure the growth in market for environmental related products which suits both the economy and the environment.

Table 2. Bridge table between EGSS and EPE

Bridge table between EGSS and EPE	
EGSS statistic	100
exports by EGSS imports of environmental goods and services by national economy effect of total turnover versus incremental costs approach	40 - (1) 20 + (2) 20 - (3)
EPE statistic	60

2. Concepts for EGSS statistics

Definition of EGSS

The **Environmental Goods and Services Sector** consists of an heterogeneous set of producers of technologies¹, goods and services that:

- measure, control, restore, prevent, treat, minimise, research and sensitize to environmental damages to air, water and soil as well as problems related to waste, noise, biodiversity and landscapes. This includes "cleaner" technologies, goods and services that prevent or minimise pollution.
- measure, control, restore, prevent, minimise, research and sensitize to resources depletion. This results mainly in resource-efficient technologies, goods and services that minimise the use of natural resources².

Delimitation of the sector

In order to define whether a technology, good or a service is part of the EGSS, the environmental purpose must be the "main purpose". Environmental purpose means that the technology, good or service has been produced for:

- preventing or minimising pollution, degradation or natural resources depletion;
- reducing, eliminating, treating and managing pollution, degradation and natural resources depletion or restoring environmental damages to air, water, waste, noise, biodiversity and landscapes;
- carrying out other activities such as measurement and monitoring, control, research and development, education, training, information and communication related to Environmental Protection and/or Resource Management.

This is identified mainly on the basis of the technical nature of the activity or the producer's intention, i.e. regardless of the intention of the users. The selection criterion based on the producer's intention should however be applied for handling particular/boundary cases (cases that are not already solved according to the technical nature of the activity). The user's purpose is never to be used in the EGSS context.

Excluded from the EGSS are activities that, while beneficial to the environment, primarily satisfy technical, human and economic needs or requirements for health and safety. Activities related to natural hazards and natural risk management, aiming mainly to prevent or reduce the impact of natural disasters on human health are not included in the EGSS. Also, technologies, goods and services produced to extract, mobilise and exploit non-renewable³ resources are not included in the

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¹ Broadly speaking technology refers to the body of know-how about the means and methods of producing goods and services. This includes methods of organisation as well as physical technique. The OECD gives the following definition: "technology refers to the state of knowledge concerning ways of converting resources into outputs. Technological innovations comprise new products and processes and significant technological changes of products and processes. An innovation has been implemented if it has been introduced on the market (product innovation)". OECD Productivity Manual: A Guide to the Measurement of Industry-Level and Aggregate Productivity Growth, OECD, Paris, March 2001, Annex 1 – Glossary.

² Natural resources are physical inputs, both renewable and non-renewable that can potentially be withdrawn from the natural environment. Natural resources are those elements of the environment that provide use benefits through the provision of materials used in economic activities (e.g. fossil energy, raw materials or water); or that may provide such benefits one day, and that are subject to quantitative depletion through human use. UN, Eurostat, OECD, IMF, WB, 2003, "System of integrated Environmental and Economic Accounting: SEEA", http://unstats.un.org/unsd/envAccounting/seea2003.pdf.

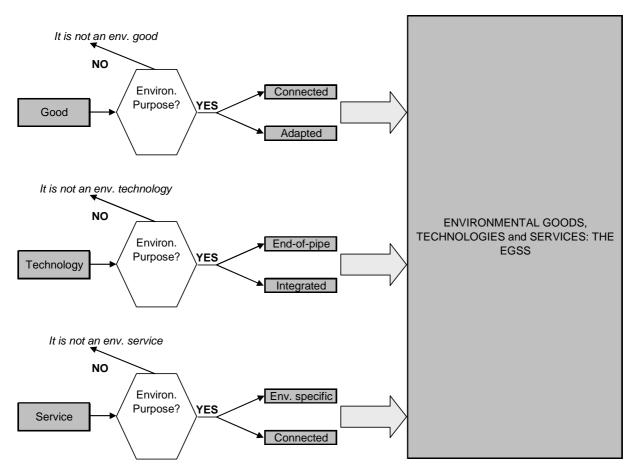
³ A non-renewable resource is a natural resource that exists in a fixed amount that cannot be re-made, re-grown or regenerated as fast as it is consumed and used up (adapted from SEEA 2003). Some non-renewable resources

EGSS. These are technologies, goods and services that use resource stocks whereas the EGSS is concerned with preventing or reducing resources depletion only.

Classification of technologies, goods and services for EGSS

The technologies, goods and services produced in the EGSS are classified according to their function and characteristics as described in Figure 4:

Figure 4. Environmental technologies, goods and services within the scope of the **EGSS**



Environmental "specific" services⁴ consists of the output of Environmental Protection or Resource Management "characteristic" activities. Characteristic activities are, according to SNA, those "typical for the field under study". In the case of the EGSS, according to the SERIEE, characteristic activities are activities whose purpose is an environmental purpose⁵.

Connected products may be services or goods (durable or non-durable goods)⁶. According to the SNA, connected products are "clearly covered by the concept of the field under study, without being

can be renewable but take an extremely long time to renew. Fossil fuels, for example, take millions of years to form and so are not considered 'renewable'.

The concept of "Specific services" is defined in SNA93 §§ 21.61-21.62; SERIEE §§ 2010-2023.

⁵ See SERIEE § 2009-2014.

⁶ The concept of "Connected products" can be found in SNA93 §§ 21.61-21.62; SERIEE §§ 2024-2034.

typical, either by nature or because they are classified in broader categories of products". In the case of the EGSS, a connected product directly serves and has no use except for Environmental Protection or Resource Management.

Adapted goods⁷ are goods which are less pollutant or more resource efficient than equivalent normal goods which furnish similar utility⁸. Their primary use is not an environmental protection or resource management one.

Environmental technologies are technical processes, installations and equipments (goods) and methods or knowledge (services) whose technical nature or purpose is environmental. Environmental technologies can be classified in:

- end-of-pipe technologies which are mainly technical installations and equipments produced for measurement, control, treatment and restoration/correction of pollution, environmental degradation and resources depletion. These installations and equipments operate independently of or are identifiable parts added to the production and end-life consumption cycles. For example, they treat pollution that has been generated or resources that have already been withdrown or measure the level of pollution or resources use (monitoring)⁹.
- integrated technologies are technical processes, methods or knowledge used in production processes less pollutant and resource intensive than the equivalent average technology used by national producers. Their use is less environmentally harmful than relevant alternatives.

The EGSS is composed by two types of producers: General Government and corporations (including non-profit institutions).

Environmental technologies, goods and services can be classified in two categories: the Environmental Protection and the Resources Management¹⁰.

Environmental Protection includes technologies, goods and services of both a preventive or remedial nature such as for the reduction, prevention or treatment of waste and wastewater, the prevention, elimination or reduction of air emissions, the treatment and disposal of contaminated soil and groundwater, the prevention or reduction of noise and vibration levels, the preservation of ecological entities and landscapes, the monitoring of the quality of the environmental media as well as the research and development (R&D), the general administration and training and teaching activities oriented towards Environmental Protection.

Resource Management includes technologies, goods and services to manage and/or conserve natural resources. Technologies and products related to the reuse and recycling, the increase/recharge of stocks, the restoration of depleted resources or regulation, measurement and control are also included in this category.

The Classification of Resource Management Activities (CReMA) described hereafter is the result of discussions at a European level and is seen as a step ahead with respect to the OECD/Eurostat 1999 manual.

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⁷ The concept of adapted goods can be found in SERIEE §§ 2024-2034.

⁸ Adapted goods are more costly and an estimation of the environmental share or extra cost is undertaken in the EPEA accounts. In the EGSS statistics, the requirement of being more costly than equivalent normal goods should not be taken into account and the total amount of turnover, value added, employment and exports is to be taken and not only an environmental share.

⁹ Adapted from the definitions of SBS Regulation variables (21 11 0)

¹⁰ The structure of the European System for the Collection of Economic Data on the Environment (SERIEE) can help in identifying the environmental activities. SERIEE comprises two satellite accounts. The first is the Environmental Protection Expenditure Account (EPEA), which aims at the description of measures and related expenditures carried out to protect the environment against pollution and degradation phenomena (qualitative perspective). The second is Natural Resource Use and Management Expenditure Account (RUMEA), devoted to the description of measures and related expenditures carried out to manage and save the stock of natural resources against depletion phenomena (quantitative perspective).

- 10: Management of waters
- 11: Management of forest resources
 - 11 A: Management of forest areas
 - 11 B: Minimisation of the intake of forest resources
- 12: Management of wild flora and fauna
- 13: Management of energy resources
 - 13 A: Production of energy from renewable sources
 - 13 B: Heat/Energy saving and management
 - 13 C: Minimisation of the intake of fossil resources as raw material for other use than energy production
- 14: Management of minerals
- 15: Research and development
- 16: Other natural Resource Management activities

3. Standard tables on EGSS statistics

The standard tables in their current version represent the whole picture of the environmental goods and services sector. Chapter 5 of the Eurostat handbook gives detailed guidance for filling in these tables. The editor may find it helpful to review this chapter however it is very detailed and only some simplified general comments should be included in SEEA-rev.

In the tables, economic activities are classified by NACE (ISIC) codes and the environmental activities are further broken down according to the CEPA and CReMA classification (Note: CReMA is a subset of CRUMA - see paper LG/14/20 and the subsequent outcome paper about the new Classification of Environmental Activities (CEA) which combines CEPA and CRUMA.).

The latest version of the Eurostat standard tables consists of 11 data-sheets (supplied as a separate Annex to this paper). One data-sheet is provided by variable and by group of producers (7 tables to fill out); one data sheet summarizes the different groups of producers for each variable (4 tables filled out automatically), that is:

- 4 data sheets for the industry group and 3 for the General Government of producers (exports of General Government is not included).
- 4 data sheets for the total of each variable.

The figures below present the structure of the current standard tables.

Figure 5: Index of the standard tables



	Datasheet	Description	
Introduction	<u>Intro</u>	Introduction about the Eurostat data collection on the environmental goods and services sector	for information
Explanatory notes	<u>Notes</u>	Notes on how to fill in the standard tables	for information
Methodology	<u>Methodology</u>	National authorities are kindly asked to provide information on the methodology used for gathering the data reported in the standard tables	to be filled in
Examples (Corporations)	Corporations - examples	This data sheet provide some examples of activities, godds and services to be included in the EGSS and their classification by environmental domain	for information

Data			
Variable	Title	Description	Туре
Turnover	Corporations - Turnover	Data sheet for turnover of the industries	to be filled in
Turnover	Government - Tumover	Data sheet for turnover of the government	to be filled in
Value Added	Corporations - Value Added	Data sheet for value added of the industries	to be filled in
value Added	Government - Value Added	Data sheet for value added of the government	to be filled in
Employment	Corporations - Employment	Data sheet for employment of the industries	to be filled in
Linployment	Government - Employment	Data sheet for employment of the government	to be filled in
Exports	Corporations - Exports	Data sheet for exports of the industries	to be filled in
	TOTAL - Turnover	Total tumover by sector	for information
TOTAL	TOTAL - Value added	Total value added by sector	for information
	TOTAL - Employment	Total employment by sector	for information
	TOTAL - Exports	Total exports by sector	for information

The data sheets contain the environmental domains in columns and NACE categories in rows. The table which should be presented in the SEEA-rev would have this type of structure – as it shown especially in the "TOTAL" tables – see Figure 3 below. The tables that are recommended for inclusion in SEEA-rev include: Total – turnover, Total – value added, Total – employment and Total – exports.

Figure 6: Overview of Standard Table (Example: Total – Turnover)

EGSS		A. Environmental Protection											
Turnove	r <u>INDEX</u>	CEPA 1	CEPA 1.1.2 and 1.2.2	CEPA 2	CEPA 3	CEPA 4	CEPA 5	CEPA 6	CEPA 7	CEPA 8	CEPA 8.1.2	CEPA 9	
	TOTAL	Protection of ambient air and climate	of which for the protection of climate and ozone layer	Wastewater management	Waste management	Protection and remediation of soil, groundwater and surface water	Noise and vibration abatement	Protection of biodiversity and landscapes	Protection against radiation	Research and development (R&D)	R&D for the protection of climate and ozone layer	Other	Total A
Corpor	ations												
	env. specific and connected services												
	connected goods												
	adapted goods												
	end-of-pipe technologies												
	integrated technologies												
	TOTAL												
	of which ancillary activities of which non-market												
	or which non-market activities												
Genera	I Government									L			
	env. specific and												
	connected services connected goods												
	adapted goods												
	end-of-pipe technologies												
	integrated technologies												
	TOTAL												
	of which ancillary activities												
Corpor	ations & General G	overnme	<u>nt</u>										
	env. specific and												
	connected services connected goods												
	adapted goods	1											
	end-of-pipe technologies												
	integrated technologies												
	TOTAL												
	of which ancillary												
	activities												
	of which non-market activities												

EGSS			B. Resources Management												
Turnover			CReMA 11 CReMA 11 CReMA 13 CReMA 13 CReMA 13 CReMA 13						CReMA 13			CReMA			
Unit:	INDEX	CReMA 10	CReMA 11	Α	В	CReMA 12	CReMA 13	Α	В	С	CReMA 14	CReMA 15	15.5.1	CReMA 16	
	TOTAL		Management of forest resources	Management of non-cultivated forest areas	Minimisation of the intake of forest resources	Management of wild flora and fauna	Management of fossil energy resources	Production of energy from renewable sources	Heat/Energy saving and management	Minimisation of the intake of fossil resources as raw material	Management of minerals	Research and development (R&D)	R&D for the production of energy from renewable sources	Other	Total B
Corpora	tions														
	env. specific and connected services														
	connected goods														
	adapted goods														
	end-of-pipe technologies														
	integrated technologies														
	TOTAL														
	of which ancillary activities														
	of which non-market														
	activities														
General	Government lenv. specific and														
	connected services														
	connected goods														
	adapted goods														
	end-of-pipe technologies														
	integrated technologies														
	TOTAL														
	of which ancillary														
Carna :	activities														
Corpora	tions & General G	overnme	nt			1	1		1		1				
	connected services														
	connected goods														
	adapted goods														
	end-of-pipe technologies		Ì							Ì		i			
	integrated technologies														
	TOTAL														
	of which ancillary														
	activities							l							
	of which non-market activities														

Each data sheet includes elements in rows and in columns:

- the rows present the producers breakdown. For the Corporations the NACE ver. 2 two digits breakdown is used. Nevertheless it is possible to fill in the Standard Tables at a more aggregated level of detail (e.g. aggregating two or more two digits NACE classes or using NACE sections). For the General Government, the breakdown is the level of Government given by the European System of Accounts 1995 (ESA 1995). In addition for both Corporations and General Government, the rows of the Standard Tables data sheets contain an extra selective breakdown in order to indicate the part of ancillary activities and to provide data by type of production outputs (i.e. environmental specific and connected services, connected goods, adapted goods, end of pipe technologies and integrated technologies). Only for Corporations, the Standard Tables data sheets contain an additional row for recording the part of non-market activities.
- the columns present the environmental domains, according to the CEPA and the CReMA classifications.

Therefore, the columns are exactly the same in the corporations and the General Government's data sheets but the rows differ.

There might be difficulties to fill in the standard tables in such detail, namely to divide data on both NACE and CEPA/CReMA at the same time. If this is the case, it is recommended that more aggregated categories (either for economic activities or for only specific environmental domains) be used as a starting point. When data quality and methodology (in the specific country) develops and improves, data could be reported in greater detail.

Figures 7 and 8 provide a more detailed view of the column headings as a helpful aid to the editor.

Figure 7: Overview of natural environmental protection CEPA classes (Standard Table columns)

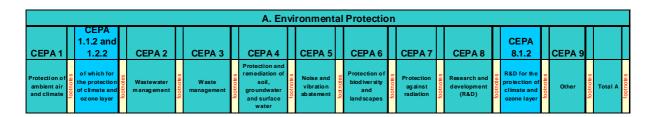


Figure 8: Overview of natural resources management CReMA classes (Standard Table columns)

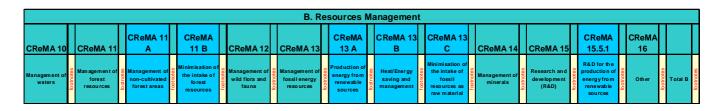


Figure 9 provides a more detailed view of the row descriptions as a helpful aid to the editor.

Figure 9: Overview of type of activity and of type of output breakdowns (ST rows) for Corporations and General Government

Corporations	
	General Government
of which ancillary activities	General Government
of which non-market activities	of which ancillary activities
env. specific and connected services	env. specific and connected services
connected goods	connected goods
adapted goods	adapted goods
end-of-pipe technologies	end-of-pipe technologies
integrated technologies	integrated technologies

4. Conclusion

The definitions and delineation of EGSS are now fairly well defined in the Eurostat EGSS handbook. There are some challenges in terms of data collection and as always some issues regarding boundary cases but these are not of major importance and some recommendations on how to deal with them are provided in the handbook.

With regards to the terminology of "sector" or "industry" it was decided to use the term "sector" although this has a specific meaning in the context of the national accounts it is less problematic than using the term "industry" which is understood by many more users.

Households were not included specifically in any of the tables for practical reasons. However, with regards to the contribution of self employed persons in agriculture which are considered part of the activity of households, the organic farming goods is to be included and classified as adapted goods (See Annex 5, Chapter 3: Identification of integrated technologies and adapted goods, section on Sustainable agriculture and organic farming).

It may also be of increasing importance when household activities include the production of electricity and/or heat from renewable energy sources (for example, wind, solar, hydro). Measuring the ancillary production (own use) of renewable energy is important because one would like to monitor the shift

from intermediate consumption of energy to more ancillary (own use) production of energy. Many experts expect such a shift in the future. In the supply and use tables of the National accounts, the production of organic agriculture by self employed persons is included in the production numbers of agriculture. In the sector accounts of the national accounts, this production of self employed persons is categorized under the header households, not under non-financial.

Annexes (separate documents):

- 1. Chapters 2-4 of Eurostat's EGSS Handbook
- 2. Standard Tables (Excel)