

Integrated Framework for monetary environmental accounts

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Abstract

The research agenda of the SEEA CF, the UN standard on environmental accounts, includes an area aiming at developing an integrated framework for monetary environmental accounts. At the 2017 London Group meeting, Eurostat (European Commission), leader on this topic, presented a proposal for a framework, calling, in the following year, EU member states to experimental compilation of the proposed tables. Istat (Italian National Statistical Institute) completed a pilot exercise in 2020, compiling the tables covered by Eurostat layout: Supply Table, Use Table, Production account and Expenditure account.

This paper recalls the main accounting features of the integrated monetary framework and presents the results of the Italian pilot compilation.

Based on the same equations underlying national accounts, the integrated framework aims at assuring consistent estimates on supply and demand of environmental products and it can be compiled starting from existing environmental accounts, EGSS mainly providing estimates on supply of environmental goods and services, and EPEA providing, at present, estimates on expenditures for environmental protection purposes.

In the Italian exercise, putting EGSS and EPEA into the integrated framework layout allowed to highlight and quantify differences in scope, coverage and definitions between the two accounts. But the most interesting findings concern the improvements derived from the combined use of the two accounts: the production of balanced estimates allowed to check and adjust inconsistencies among data, fill in gaps, optimize calculation processes. Furthermore it allowed to enlarge the supply of statistical information on economy and the environment for Italy, beyond the present scope of EGSS and EPEA.

The exercise carried out by Istat is an example of how statistical information can be enhanced to better comply with the requirements of the European Green Deal and, more generally, with the demand arising from the effort towards mainstreaming environmental sustainability in all EU policies.

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1. Introduction and outline

The research agenda of the System of Environmental-Economic Accounting –Central Framework (SEEA-CF)¹ recognizes the need to determine whether the different aspects of monetary environmental accounts can be further integrated into a single accounting framework (Integrated Framework - IF)².

Eurostat (European Commission), leader on this SEEA CF research agenda topic, presented a proposal for an IF for monetary environmental accounts at the 2017 London Group meeting³.

The proposal is based on a common set of concepts and definitions on environmental activities, producers and products and a set of accounting tables that can be compiled on the basis of EGSS and EPEA: Supply Table, Use Table, Environmental production account and Environmental expenditure account. Paragraph 2 of this paper summarizes the main features of the Eurostat's IF proposal⁴, currently work in progress and to be finalized by the SEEA CF technical committee.

In this context, in 2020, Istat completed a pilot project aiming at testing an IF for monetary environmental accounts. The Eurostat's layout is the reference framework for the Italian pilot compilation⁵. Paragraph 3 describes the main steps carried out to fill in the IF and presents the results and main achievements of the pilot exercise with reference to the Supply and Use Tables, while the compilation of the Environmental production account and Environmental expenditure account is not dealt with in this paper.

Finally, paragraph 4 draws some conclusions on the feasibility of compiling an integrated framework for countries that regularly produce monetary environmental accounts as well as on the implications in terms of policy use.

2. Eurostat's layout for an integrated monetary framework

Monetary environmental accounts a.k.a. environmental activity accounts present monetary transactions carried out for the purposes of environmental protection and resource management.

The SEEA CF provides the accounting frameworks for representing four main kinds of monetary transactions. The first account concerns expenditures of general government, corporations, non-profit institutions and households for the prevention and reduction of pollution (Environmental Protection Expenditure Account – EPEA). The second one reports flows on the goods and services produced by the economy for environmental protection and for preserving resources from depletion (Environmental Goods and Services Sector account – EGSS). The third one, relates to expenditures for resource management purposes following the same basic structure as outlined for the EPEA (Resource Management Expenditure

¹ The SEEA-CF is the UN standard on environmental accounts.

² See Schenau (2016).

³ See Eurostat (2017).

⁴ See Eurostat (2017).

⁵ See Battellini, Tudini (2020).

Account – ReMEA). Finally, the fourth one, accounts for flows of environmental taxes and subsidies (Environmental subsidies and other transfers – ESST).

Within SEEA, each of the four monetary accounts has been designed on a specific purpose. The Integrated framework developed by Eurostat aims at providing a comprehensive picture of the actions and activities by economic operators for environmental purposes.

To this aim, the layout of the IF proposed by Eurostat includes a set of Supply and Use Tables, and two flows accounts: Production and Expenditure.

This set of tables allows to show balanced estimates on:

- Supply, i.e. which economic activity produces the environmental products (resources) available and for which environmental purpose based on the Classifications of Environmental Protection Activities (CEPA) and Resource Management Activities (CReMA)⁶ ;
- Uses, i.e. who uses environmental products made available, for what kind of use (intermediate, final, investments, exports), and for which environmental purpose;
- Production, i.e. the amount of value added generated by the production of environmental products, the amount of environmental output used as input for the production of environmental output (intermediate consumption of environmental products), the amount of output available for resident users;
- Expenditure, i.e. how much the economy spends for an environmental purpose including the investments in non environmental products necessary for environmental purposes.

The remainder of this paragraph provides detailed explanations on the Supply and Use Tables whereas, as stated in the introduction, the Environmental production account and Environmental expenditure account are not dealt in detail in this paper.

Supply and Use Tables represent the macroeconomic equilibrium underlying national accounts, i.e. all the available resources produced on the economic territory of a country (detailed by economic activity) or imported from abroad (Supply Table) are used by the economy (Use Table): as intermediate inputs in the production process, as final consumption, as investments, as inventories or exported. In the national accounts the representation is made according to a breakdown by groups of products according to the Classification of Products by Activity (CPA) classification. In the integrated framework the focus is limited to environmental goods and services and the breakdown is based on environmental classifications, CEPA and CReMA.

The Supply Table of the Integrated Framework covers the following variables (see Figure 1 for a simplified Supply Table):

- i. Output at basic prices, by 6 International Standard Industry Classification (ISIC) categories
- ii. Imports
- iii. Taxes and subsidies on products
- iv. Trade and transport margins

⁶ For details see

https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=CL_CEPA&StrLanguageCode=EN&IntPckKey=&StrLayoutCode=HIERARCHIC. See also Annex 1 for a list of CEPA and CReMA classes.

- v. Total supply at purchaser's prices (sum of the previous components)

Each variable is broken down by CEPA/CReMA and, within individual CEPA and CReMA, between goods and services. The breakdown of products into goods and services allows to compare EPEA and EGSS estimates with respect to homogeneous categories⁷.

Figure 1 – Simplified Supply Table for environmental monetary accounts

	Output by ISIC industry				Imports	Taxes less subsidies on products	Trade and transport margins	Total supply
CEPA goods								
CEPA services								
CREMA goods								
CREMA services								

Output includes market output, non-market output, ancillary activities and output for own-final use.

The USE Table of the Integrated Framework covers the following variables (see Figure 2 for a simplified Use Table):

- i. Intermediate consumption, by 6 ISIC categories
- ii. Final Consumption, By General Government (GG) and Households
- iii. Gross fixed capital formation
- iv. Exports
- v. Total use at purchaser's prices (sum of the previous components)

Each variable is broken down by CEPA/CReMA and, for individual CEPAs and CReMAs, between goods and services.

Figure 2 – Simplified Use Table for environmental monetary accounts

	Intermediate consumption by ISC industry				Final consumption		Gross fixed capital formation			Exports	Total use
					General Gov.	Households	General Gov.	Specialized secondary producers	Ancillary producers		
CEPA goods											
CEPA services											
CREMA goods											
CREMA services											

How can existing environmental monetary modules feed the integrated framework? Is the information covered by the SEEA monetary accounts sufficient to develop the Tables proposed by Eurostat for the IF?

As already stated, EGSS has been specifically developed in order to present data on output and value added of environmental goods and services, representing a major source of information for the Supply table and the Production account.

⁷ The final Tables of the pilot Italian exercise apply a breakdown of products into cleaner and specific.

On the other hand EPEA has been designed mainly to calculate the National Expenditure on Environmental Protection (NEEP), which is typically a demand-side aggregate/indicator, thus covering the scope of both the Use Table and the Expenditure account.

In principle EGSS and EPEA could be used jointly to fulfill the Tables of the IF, by using EGSS data for the Supply Table and the Production account and EPEA for the Use Table and the Expenditure account. The first step to assess to what extent EGSS and EPEA can be used in practice to compile the IF Tables is the comparison of the scope of the two accounts in terms of coverage of products, activities, producers, kind of output. The comparison highlights that EPEA's and EGSS's scope, as defined by the Regulation on European Environmental Accounts (EEA)⁸, is not fully homogeneous (Figure 3).

Figure 3 Differences in scope between EGSS and EPEA

SCOPE	EPEA	EGSS
Activities	Characteristic activities	Characteristic and non characteristic activities
Products	Services	Goods and services
Environmental	Environmental Protection (EP)	Environmental Protection (EP) & Resource Management (RM)
Output	Market, non market and ancillary	Market
Producers	Market, non market and ancillary	Market

Source: Adapted from Table AN9-1: main features of EGSS and EPEA – EGSS Handbook, 2016 edition

The lack of a consistent scope for EPEA and EGSS implies that the compilation of a comprehensive integrated framework (e.g encompassing both goods and services, all kinds of output and producers) cannot be simply derived from the combination of the two accounts.

Comparing the actual coverage of the two modules, is a first step to assess which parts of the integrated framework can be fully compiled using the accounts as such, which parts need adjustments (i.e. existing estimates to be modified) and which parts need to be estimated because they missing in EPEA and EGSS. The subsequent steps are described below with reference to the Italian pilot application.

3. Italian pilot Integrated Framework

Istat, the Italian national statistical office, as the other EU NSOs, regularly produces both EGSS and EPEA in compliance with the Regulation on Economic Environmental Accounts. The compilation of the IF Tables in the Italian pilot project was based on Italian EPEA and EGSS accounts with reference year 2016.

⁸ Regulation (EU) No 691/2011 of the European Parliament and of the Council, amended by Regulation (EU) No 538/2014 of the European Parliament and of the Council (OJ L 158, 27.5.2014, p. 113)

EGSS compulsory variables under the EU Regulation cover: output, exports, gross value added and employment corresponding to market activities, cross-classified by economic activities (NACE Rev. 2 A*21) and CEPA/CREMA classes.

EPEA compulsory variables under the EU Regulation cover, for environmental protection services (EPS) only: output⁹, intermediate consumption of EPS by corporations' specialist producers, imports and exports, valued added tax (VAT) and other taxes less subsidies on products, gross fixed capital formation and acquisitions less disposals of non-financial non-produced assets for the production of environmental protection services, final consumption of environmental protection services, transfers (received/paid). Data are broken down by institutional sector and the coverage in terms of CEPA categories varies according to the variable.

3.1. Supply and Use Tables of the IF – main compilation steps

The regularly produced EGSS and EPEA allow to compile only part of the variables and products of the IF Supply Table (Figure 4).

Figure 4 – Coverage of Supply aggregates by Italian EA

	Output				Imports	Taxes less subsidies on products	Trade and transport margins
	Market	Non market	Own-account	Ancillary			
CEPA goods							
CEPA services							
CREMA goods							
CREMA services							

= EGSS-based
 = EPEA-based
 = based on EPEA and EGSS
 = not available

Market output of environmental protection services, is the only variable where a potential overlap exists between the two accounts that both report it. For this reason a specific comparison of EGSS and EPEA market output estimates was carried out (Table 1).

⁹ Output includes: market output, non-market output and output of ancillary activities.

Table 1 - Comparison between market output estimates – EGSS and EPEA, Italy year 2016, billion euros.

		MARKET OUTPUT	
		EGSS	EPEA
CEPA1	<i>goods</i>	1.432	
	<i>services</i>	535	
CEPA2	<i>goods</i>	2.239	
	<i>services</i>	4.806	4.784
CEPA3	<i>goods</i>	460	
	<i>services</i>	23.736	21.680
CEPA4	<i>goods</i>	1.712	
	<i>services</i>	2.340	1.526
CEPA5	<i>goods</i>	240	
	<i>services</i>	5	
CEPA6	<i>goods</i>	25	
	<i>services</i>	17	0
CEPA7	<i>goods</i>	1	
	<i>services</i>	193	
CEPA8	<i>goods</i>	0	
	<i>services</i>	32	0
CEPA9	<i>goods</i>	0	
	<i>services</i>	239	0
TOTAL CEPAs	<i>goods</i>	6.109	0
	<i>services</i>	31.902	27.990

The analysis of the data reported in the table allowed to highlight the following results with respect to services:

- 1) for CEPA 2, 3 and 4, both EGSS and EPEA report data on output of services produced by market producers, but EGSS estimates are higher. This is due to the larger coverage of services by EGSS. In addition to data on typical services of each CEPA¹⁰, EGSS reports also estimates related to the following services: ‘Architectural and engineering services for water, wastewater, waste management projects’, ‘Environmental consulting’, ‘Supporting services to organic agriculture’, ‘Maintenance, repair and installation services of environmental products’;
- 2) For CEPA 1, 5, 6, 7, 8, 9: EPEA market output estimates are not available because these CEPA classes are not compulsory ones under the Eu Regulation.

EGSS, with a higher coverage than EPEA as far as market output is concerned, was selected as the primary source of market output for the preliminary compilation of the Supply Table.

As in the case of the Supply table, prior to the actual compilation of the USE Table with EGSS and EPEA data for Italy, a preliminary evaluation was undertaken in order to:

- identify overlapping between EPEA and EGSS;
- assess the suitability of the available data for the IF table.

The only possible overlapping in the case of demand side variables concerns EXPORTS, which are mandatory variables in both cases. Since under the EPEA framework, exports only concern

¹⁰ Sewerage services: e.g. collecting, transporting and treating wastewater; operation, maintenance and cleaning of sewer systems for CEPA2; Collection, treatment and disposal services for non-hazardous and hazardous waste and Public litter and collection of garbage from the street for CEPA3; Other remediation and specialized pollution and control services for CEPA4.

services, whereas in EGSS they cover both goods and services, EGSS provides a larger coverage of products, even though EGSS reports only for exports of products domestically produced.

As far as Intermediate Consumption and Gross Fixed Capital Formation are concerned, data reported under EPEA fulfill a different purpose with respect to the requirement of the integrated framework.

In the latter (IF) the demand aggregates (in particular intermediate consumption and gross fixed capital formation) refer to goods and services for environmental protection thus counterbalancing the same products on the supply side.

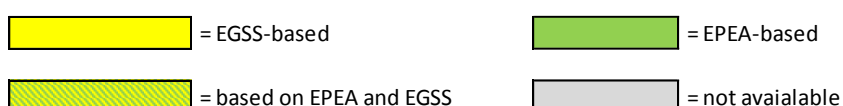
By contrast, within mandatory EPEA data:

- intermediate consumption of environmental protection products excludes goods and, with respect to services, is limited only to some of them reported only for producers of environmental services;
- gross fixed capital formation includes both environmental and, in some cases, non environmental protection goods and, in the case of non environmental producers (ancillary producers) is reported only for the manufacturing sector (specifically NACE 6-36).

Hence the coverage of the IF Use Table by EGSS and EPEA data resulted very limited (Figure 5).

Figure 5 - Coverage of demand aggregates by Italian EA

	Intermediate consumption	Final consumption		Gross fixed capital formation			Exports
		General Gov.	Households	General Gov.	Specialized & secondary producers	Ancillary producers	
CEPA goods							
CEPA services							
CREMA goods							
CREMA services							



The very first finding highlighted by the exercise is the lack of estimates for resource management activities and products on the demand side. While EGSS covers resource management output, resource management is out of scope in EPEA and no estimation of ReMEA accounts is carried out in Italy. For this reason, in the Italian pilot project, IF tables were only compiled for the environmental protection (EP) domain and, specifically for CEPAs 1-4¹¹.

For the selected CEPAs, the use of EPEA and EGSS data directly allowed to compile part of the IF Tables, mainly by using EGSS for the supply side and EPEA for the demand side as shown in

¹¹ CEPAs 1-4 relate specifically to: 1. Protection of ambient air and climate, 2. Wastewater management, 3. Waste management, 4. Protection and remediation of soil, groundwater and surface water. For more detail see Annex1.

Figures 4 and 5 above¹². However, as described in the previous paragraph, since the accounts have differences in scope and variables, the compilation of an integrated framework could not be simply derived from the combination of the two accounts.

With respect to CEPA categories, on the supply side, the existing data sources offer a partial coverage for variables, such as imports, taxes minus subsidies on products, trade and transport margins. They are not covered by EGSS. As regards EPEA, they are covered only for EP services.¹³

On the demand side, in many cases EPEA data fulfill a different purpose than the IF.

Due to the partial coverage of supply and demand aggregates by EPEA and EGSS, a number of additional steps were needed to estimate variables not available within EPEA/EGSS, namely:

- identification of additional sources and methods, *for example* coefficients derived from national accounts (e.g. imports, exports, taxes less subsidies, margins)
- balancing of supply and use equation (e.g. for uses of environmental goods)
- final reduction of discrepancies.

The following paragraph presents the main results of the exercise.

3.2. Supply and Use Tables of the IF – main results

The steps carried out in addition to the direct EPEA and EGSS based compilation, allowed to compile Supply and Use Tables of the integrated framework for Italy for CEPAs 1-4 (Tables 2 and 3). Annex 2 provides the list of individual products included in EGSS estimates for CEPAs 1-4. For each product, the possible uses on the demand side (intermediate consumption, households' final consumption, General Government (GG) final consumption, Gross fixed capital formation (GFCF) are identified¹⁴.

¹² However, non-market production is based on EPEA.

¹³ Only a subset of products are currently covered by imports and trade and transport margins in EPEA: for CEPA 2, 3, 4, namely Sewerage for CEPA 2, Waste collection, treatment and disposal for CEPA3, Remediation activities for CEPA 4. No estimates of 'trade and transport margins' are available from EPEA.

¹⁴ The products covered by the Italian pilot exercise are a subset of the products to be included in EGSS as for the Indicative Compendium (IC). The Annex lists IC products not covered by the Italian pilot exercise as well.

Table 2 – Supply Table for Environmental Protection for Italy, year 2016, billion of euros

	Output at basic prices						Total output basic prices	Imports	Taxes less subsidies on products	Trade and transport margins	Total supply purchasers' prices
	ISIC A	ISIC B	ISIC C	ISIC D-E	ISIC F	ISIC G-U					
CEPA 1	0	0	1.930	0	0	639	2.569	465	38	385	3.457
<i>Specific products</i>	0	0	1.904	0	0	639	2.543	416	38	377	3.374
<i>Cleaner products</i>	0	0	26	0	0	0	26	49	0	8	83
CEPA 2	0	0	2.075	5.306	0	773	8.154	327	255	296	9.032
<i>Specific products</i>	0	0	2.075	5.306	0	773	8.154	327	255	296	9.032
<i>Cleaner products</i>	0	0	0	0	0	0	0	0	0	0	0
CEPA 3	0	7	3.285	14.638	0	10.392	28.322	320	1.698	316	30.656
<i>Specific products</i>	0	7	3.285	14.638	0	10.392	28.322	320	1.698	316	30.656
<i>Cleaner products</i>	0	0	0	0	0	0	0	0	0	0	0
CEPA 4	1.096	0	178	1.584	7	74	2.939	462	83	637	4.121
<i>Specific products</i>	89	0	178	1.584	7	74	1.932	30	59	18	2.039
<i>Cleaner products</i>	1.007	0	0	0	0	0	1.007	432	24	619	2.082
Other CEPAs	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
<i>Specific products</i>	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
<i>Cleaner products</i>	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
TOTAL EP	1.096	7	7.468	21.528	7	11.878	41.984	1.574	2.074	1.634	47.266

Table 3– Use Table for Environmental Protection for Italy, year 2016, billion of euros

	Intermediate consumption						Total intermediate consumption	Final consumption		Gross fixed capital formation	Exports	Total use at purchasers' prices
	ISIC A	ISIC B	ISIC C	ISIC D-E	ISIC F	ISIC G-U		General Government	Households			
CEPA 1	14	1	637	41	323	413	1.429	441	63	581	943	3.457
<i>Specific products</i>	14	1	637	41	323	413	1.429	441	50	524	930	3.374
<i>Cleaner products</i>	0	0	0	0	0	0	0	0	13	57	13	83
CEPA 2	261	33	1.125	1.065	404	1.292	4.180	404	2.409	1.008	1.031	9.032
<i>Specific products</i>	261	33	1.125	1.065	404	1.292	4.180	404	2.409	1.008	1.031	9.032
<i>Cleaner products</i>	0	0	0	0	0	0	0	0	0	0	0	0
CEPA 3	117	75	3.041	3.183	2.489	12.877	21.782	955	6.964	618	337	30.656
<i>Specific products</i>	117	75	3.041	3.183	2.489	12.877	21.782	955	6.964	618	337	30.656
<i>Cleaner products</i>	0	0	0	0	0	0	0	0	0	0	0	0
CEPA 4	91	52	979	595	138	664	2.519	12	1.238	133	219	4.121
<i>Specific products</i>	46	52	521	595	138	553	1.905	12	0	120	2	2.039
<i>Cleaner products</i>	45	0	458	0	0	111	614	0	1.238	13	217	2.082
Other CEPAs	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
<i>Specific products</i>	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
<i>Cleaner products</i>	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
TOTAL EP	483	161	5.782	4.884	3.354	15.246	29.910	1.812	10.674	2.340	2.530	47.266

Among the improvements achieved through the estimated Supply and Use Tables, 3 are the main ones.

The first one relates to the enhanced analytical robustness of balanced estimates as compared to stand alone numbers. In the case of Italy environmental monetary accounts estimates are derived from balanced national accounts data and this ensures coherence between supply and demand. Nonetheless, no specific balancing is applied to monetary environmental accounts, while balancing was one of the necessary steps undertaken for the IF. This allowed to further improve the consistency of Environmental Accounts. Furthermore, the Supply and Use framework, provides an enhanced analytical potential with respect to the partial perspective adopted by the traditional (not integrated) accounting frameworks.

The second achievement relates to the optimization of the calculation process. While the ordinary compilation process for EPEA and EGSS at Istat is tailored on the reporting requirements of the two data collection questionnaires, the IF highlighted that a compilation process can be designed in a way that allows to fully exploit the use of basic data both for EPEA and EGSS purposes. This can also provide an opportunity to extend the coverage of reported variables to voluntary ones.

Thirdly, in quantitative terms, the exercise brought about an increase in the coverage of the estimates. As regards output of environmental protection for CEPAs 1-4, the estimated 42

billion of total output at basic prices (Table 2), is significantly higher than the corresponding estimate for EGSS (37 billion euros¹⁵) and EPEA (around 28 billion euros¹⁶) for the same CEPAs available prior to the pilot exercise (Table 1).

The difference between the IF output estimate and the EGSS one (almost 5 billion euros) is mainly explained by the increased coverage of products¹⁷ as well as by the expansion of the scope beyond market output to encompass non market output, ancillary output and output for own final use (for organic agriculture).

The difference between the IF output estimate and the EPEA one (almost 15 billion euros) is mainly explained by the increased coverage of services¹⁸ and the inclusion of goods¹⁹.

Furthermore, the estimated 47 billion of total supply at purchaser's prices was obtained by estimating imports, taxes less subsidies on products, trade and transport margins' for all the environmental products included, thus significantly enlarging the coverage of EPEA for the same variables.

4. Main conclusions

The pilot implementation carried out for Italy allowed to check for the first time, the consistency of environmental accounts monetary aggregates within a Supply and Use accounting framework as well as within a complete production and expenditure account.

Due to the lack of estimates for resource management activities and products on the demand side, CEPA categories only could be covered in the pilot project. With respect to CEPA categories, on the supply side, the existing data sources offer a partial coverage for variables, such as imports, taxes minus subsidies on products, trade and transport margins. They are not covered by EGSS and, although EPEA covers them, its scope on the supply side only encompasses services, thus excluding EP goods whose output is included in EGSS from the coverage of imports, taxes minus subsidies on products, trade and transport margins.

On the demand side, EPEA obligatory variables under the EU Economic Environmental Accounts Regulation are often not in line with the purposes of the integrated framework.

Main additional problems in using EPEA as a data source relate to difference in scope between EPEA and the Use Table.

Due to the differences listed above, data sources additional to EPEA and EGSS are needed to estimate part of the demand aggregate responding to IF requirements.

The work carried out to estimate missing items and fill in gaps identified in the preliminary compilation process shows that it is possible to significantly enlarge the coverage in terms of products both of EPEA and of EGSS reporting.

The exercise carried out for Italy is an example of how, by combining existing environmental accounts, new sources and national accounts balancing techniques, the available information on transactions for environmental purposes can be greatly enhanced. This effort goes in the

¹⁵ See Table 1.

¹⁶ See Table 1.

¹⁷ IF estimates cover 'Electric and more resource efficient transport equipment' not previously available.

¹⁸ IF estimates cover 'Architectural and engineering services for water, wastewater, waste management projects', 'Environmental consulting', 'Supporting services to organic agriculture', 'Maintenance, repair and installation services of environmental products', also covered by the Italian EGSS and not by the Italian EPEA.

¹⁹ Not covered in the EPEA output.

direction of introducing innovations in official statistics to meet the increasing EU policy information requirements, such as those related to the European Green Deal (EGD) and the integration of Sustainability related criteria into the European Semester. Specifically, the EGD spurred various Actions, currently under definition at Eurostat in cooperation with Member States, to create new data; two of them address environmental accounts directly:

1. the foreseen Commission delegated Regulation on environmental accounts that will improve quality and relevance of European environmental accounts mainly by introducing shorter transmission deadlines and new mandatory variables and changes in the reporting tables;
2. the proposed Amendment of Regulation (EU) 691/2011 on European environmental accounts .

Both processes are likely to have a significant impact on monetary environmental accounts.

The first one introduces a number of relevant changes for EPEA, including expanding the scope of mandatory reporting to cover all intermediate consumption of environmental protection (EP) services and introducing a more granular breakdown by CEPA (CEPA 1-6 by CEPA class, and grouped together for CEPA classes 7-9). As for EGSS, estimates will be required for total activities rather than market activities only.

The experience gained through the IF pilot implementation, particularly with regard to balancing of supply and use equation can facilitate compliance with the new foreseen requirements of the Commission delegated Regulation.

Under the second process, the plan is to expand the scope of EPEA to cover also output and expenditure relating to production of energy from renewable sources and materials recovery as well as expenditure on key cleaner and resource efficient products.

To this aim, the scope of the Italian pilot exercise needs to be enlarged to encompass the new areas, thereby making important steps towards a comprehensive climate, energy and environmental transition related statistical information.

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ANNEX - List of classes of EPEA and CReMA

Classification of Environmental Protection Activities and expenditures (CEPA):

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,
6. Protection of biodiversity and landscape,
7. Protection against radiation,
8. Research and development,
9. Other environmental protection activities.

Classification of Resource Management Activities (CReMA):

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

ANNEX - List of IC products covered by the Supply and Use Tables of the Integrated Framework.

CEPA 1

	Goods / Services	Possible use (*)	Cleaner or Specific Product
IC Products covered by the Italian pilot exercise			
Electric and more resource efficient transport equipment	Goods	FC/GFCF	Cleaner
Exhaust pipes and their parts (also particles filters)	Goods	InCo	Specific
Instruments, machinery and apparatus for analysis of pollutants	Goods	GFCF	Specific
Instruments, machinery and apparatus for filtering or purifying gases and liquid	Goods	GFCF	Specific
Maintenance, repair and installation services of environmental products	Services	InCo	Specific
Remediation and clean-up services for air	Services	InCo/FC	Specific
Other remediation and specialized pollution and control services	Services	InCo/FC	Specific
Technical inspection services of road transport vehicles regarding air emissions	Services	InCo/FC	Specific
Environmental consulting services	Services	InCo	Specific
Administration for environmental protection and resource management purposes	Services	InCo/FC	Specific
Training services in environmental protection and resource management	Services	InCo/FC	Specific
IC Products not covered by the Italian pilot exercise	Goods / Services	Possible use (*)	Cleaner or Specific Product
Environmental services furnished by membership organizations	Services	InCo/FC	Specific

CEPA 2

	Goods / Services	Possible use (*)	Cleaner or Specific Product
IC Products covered by the Italian pilot exercise			
Instruments, machinery and apparatus for analysis of pollutants	Goods	GFCF	Specific
Instruments, machinery and apparatus for filtering or purifying gases and liquid	Goods	GFCF	Specific
Perforated buckets and similar articles used to filter water at the entrance to drains	Goods	InCo	Specific
Pumps for use in wastewater treatment	Goods	InCo	Specific
Vehicles for wastewater treatment, vehicles for sewer cleaning, trucks for waste collection	Goods	GFCF	Specific
Activated carbon for water filtering purposes	Goods	InCo	Specific
Maintenance, repair and installation services of environmental products	Services	InCo	Specific
Sewerage services: e.g. collecting, transporting and treating wastewater; operation, maintenance and cleaning of sewer systems	Services	InCo/FC	Specific
Other remediation and specialized pollution and control services	Services	InCo/FC	Specific
Architectural services for water, wastewater and waste management projects	Services	InCo	Specific
Engineering services for water and wastewater management projects	Services	InCo	Specific
Environmental consulting services	Services	InCo	Specific
Administration for environmental protection and resource management purposes	Services	InCo/FC	Specific
Training services in environmental protection and resource management	Services	InCo/FC	Specific
IC Products not covered by the Italian pilot exercise	Goods / Services	Possible use (*)	Cleaner or

			Specific Product
Septic tanks	Goods	FC	Specific
Tubes and pipes for wastewater treatment plants as well as for water management	Goods	GFCF	Specific
Wastewater treatment plants and sewage systems	Goods	GFCF	Specific
Environmental services furnished by membership organizations	Services	InCo/FC	Specific

CEPA 3

			Cleaner or Specific Product
IC Products covered by the Italian pilot exercise	Goods / Services	Possible use (*)	
Waste collection services of waste resulting from the extraction of raw materials	Services	InCo	Specific
Instruments, machinery and apparatus for analysis of pollutants	Goods	GFCF	Specific
Instruments, machinery and apparatus for filtering or purifying gases and liquid	Goods	GFCF	Specific
Vehicles for wastewater treatment, vehicles for sewer cleaning, trucks for waste collection	Goods	InCo/FC	Specific
Bins, boxes, containers and other receptacles for storing and transporting waste	Goods	InCo	Specific
Boards, blocks and similar articles of vegetable fibre, straw or wood waste, agglomerated with mineral binders	Goods	GFCF	Specific
Incinerators and machinery for waste treatment (e.g. used at landfilling sites)	Goods	GFCF	Specific
Lead containers for radioactive waste	Goods	InCo	Specific
Maintenance, repair and installation services of environmental products	Services	InCo	Specific
Collection, treatment, disposal serv. for non-hazardous and hazardous waste	Services	InCo/FC	Specific
Materials recovery services	Services	InCo/FC	Specific
Secondary raw materials	Goods	InCo/FC	Specific
Other remediation and specialized pollution and control services	Services	InCo/FC	Specific
Architectural serv. for water, wastewater and waste management projects	Services	InCo	Specific
Engineering services for waste management projects	Services	InCo	Specific
Environmental consulting services	Services	InCo	Specific
Public litter and collection of garbage from the street	Services	InCo/FC	Specific
Administration for EP and RM purposes	Services	InCo/FC	Specific
Training services in environmental protection and resource management	Services	InCo/FC	Specific
			Cleaner or Specific Product
IC Products not covered by the Italian pilot exercise	Goods / Services	Possible use (*)	
Sacks and bags for replacing plastic bags	Goods	GFCF	Specific
Waste treatment plants	Goods	GFCF	Specific
Environmental services furnished by membership organizations	Services	InCo/FC	Specific

CEPA 4

			Cleaner or Specific Product
IC Products covered by the Italian pilot exercise	Goods / Services	Possible use (*)	
Organic agricultural (plant and livestock) products	Goods	InCo/FC	Cleaner
Supporting services to organic agriculture	Services	InCo	Specific
Rehabilitation of mining sites services	Services	InCo	Specific
Drainage water capturing services to prevent groundwater contamination	Services	InCo	Specific
Maintenance, repair and installation services of environmental products	Services	InCo	Specific
Remediation and clean-up services for soil and groundwater	Services	InCo/FC	Specific
Remediation and clean-up services for surface water	Services	InCo/FC	Specific

Other remediation and specialized pollution and control services	Services	InCo/FC	Specific
Environmental consulting services	Services	InCo	Specific
Administration for EP and RM purposes	Services	InCo/FC	Specific
Training services in environmental protection and resource management	Services	InCo/FC	Specific
IC Products covered by the Italian pilot exercise	Goods / Services	Possible use (*)	Cleaner or Specific Product
Environmental services furnished by membership organizations	Services	InCo/FC	Specific

(*) InCo= intermediate consumption; CF=Final Consumption; GFCF= Gross Fixed Capital Formation