Classification of Environmental Activities and expenditures

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Summary

- **Background**
- **Presentation of the Classification of Resource Use and Management Activities and expenditures (draft CRUMA 2009) adopted by the London Group**
  - Delimitation of RUM sector
  - Criteria and principles followed for setting up CRUMA 2009
  - Scope and structure of CRUMA 2009
  - Classification items
  - EP versus RUM sectors – boundary cases
  - Correspondences to other accounting frameworks and COFOG
- **Concluding remarks**

International classifications on environmental activities

- **Environmental activities (and related expenditures) include two main categories:**
  - **Environmental Protection (EP)** activities, aiming at protecting the environment against pollution, losses in quality and any kind of physical degradation (qualitative perspective)
  - **Resource Use and Management (RUM)** activities, aiming at managing natural resources and avoiding/reducing their depletion (quantitative perspective)
- **EP activities:** The Expert Group on International Economic and Social Classifications accepted **CEPA** as **a member of the Family of International Economic and Social Classifications** at its meeting in 2001 and recommended that the same classification be approved by the UN Statistical Commission as an international standard
- **CEPA adopted as an international standard at the meeting of the Statistical Commission held in March 2002**

A standard classification needed for RUM activities

- No internationally agreed classification established so far for RUM activities and expenditures
- The UNCEEA (United Nations Committee of Experts on Environmental-Economic Accounting) and the London Group considered the development of the classification of RUM activities and expenditures as an important issue to be addressed during the on-going SEEA revision (System of integrated Environmental and Economic Accounting)
- RUM activities and expenditures will be dealt with in the SEEA handbook which is planned to be elevated to an international statistical standard by 2012

Draft classification for RUM activities and expenditures

- Building on a classification set up by Istat in 2006, and based on achievements by the Eurostat Reflection Group on RUMEA and by the Eurostat Task Force on EGSS, the draft CRUMA 2009 (draft Classification of Resource Use and Management Activities and expenditures 2009) has been agreed upon by the London Group at its 14th meeting (April 2009)
- UNSD, Eurostat, FAO, IMF, bigger and smaller as well as more advanced and developing countries represented in the LG at its 14th meeting
- The LG recommended to have a unique classification system dealing with environmental activities and expenditures included in the Family of International Economic and Social Classifications; the system is made up of both CEPA 2000 and draft CRUMA 2009, the latter being on the pair with CEPA; the suggested name is: Classification of Environmental Activities and expenditures – CEA

RUM sector in the wider context of env. activities and exp.

Environmental activities and actions (and expenditures) can be defined in general as all the measures aiming at preserving and maintaining the functions of environmental assets

Environmental problems faced	Main environmental functions concerned	Kind of environmental activities and expenditures	Classifi-cation	Expenditure aggregates and accounts
• Pollution • losses in quality • any kind of physical degradation	• Sink functions • Service functions	Protection of the quality of the natural environment (**EP**)	**CEPA 2000**	• how much does it cost to protect the environment against pollution and degradation? • who pays for it?
• Depletion	• Resource functions	Resource Management (**RM**), i.e. savings/ recycling/recovery	**Draft CRUMA 2009**	• how much does it cost to save the stock of natural resources? • who pays for it?
	• Resource functions	Resource Use (**RU**), i.e. exploitation/ exploration		• how much does it cost to provide the economy with the natural resources needed? • who pays for it?

Criteria and principles followed for setting up CRUMA 2009

- like CEPA, CRUMA classifies "characteristic" activities, regardless of the institutional and ISIC sectors within which these are carried out; those economic activities are included that are carried out for RUM purposes (***economic activities for RUM purposes = "characteristic" activities***)
- like in CEPA, RUM categories, while representing economic activities, are general enough as to allow the use of the classification as a functional classification, i.e. for classifying not only activities but also products, producers, actual outlays and any kind of transactions (***functional multi-purpose classification***)
- like CEPA, the classification is to be used according to the "main purpose" principle, to be identified by taking into account the technical nature as well as the policy purpose of an activity ***("main purpose" classification principle, emphasis on the technical nature of the activity***); activities which have a favourable environmental impact but which serve mainly goals other than environmental are out of the scope of CRUMA and CEPA
- no overlapping between CRUMA and CEPA; whereas the application of the "main purpose" criterion turns out to be not enough, operational classification rules would have to be applied for avoiding overlapping; those of CEPA should not be changed, in order to avoid breaks in the existing time series (***no overlapping with CEPA***)
- CRUMA's structure and organization is similar to CEPA's one; consistency between the two classifications is thus maximized and it is possible to apply the classification of RUM activities on the basis of the practical experience acquired until now by using CEPA (***same structure and organization of CEPA***)

Defining the scope and the structure of CRUMA starting from the CEPA approach

the CEPA2000 classification matrix: [type of activity] by [environmental domain]

	Environmental domain: type of environmental media or pollution-nuisance-degradation						
Type of activity	Air pollution (and related climatic risks)	Surface water pollution	Waste	Soil and ground water pollution, erosion and other physical degradation of soil	Noise and vibration	Degradation of biodiversity and landscape	Radiation
Pollution/degradation prevention activities							
Pollution/degradation reduction activities							
- reduction of emissions and discharges							
- reduction of pollution levels and degradation of environmental media							
Measurement and control activities							
Research and development activities							
Teaching and training activities							
Administrative activities							

The CRUMA classification matrix: [type of activity] by [natural resource]

Type of activity		Natural resources				
		Water resources	Natural forest resources	Wild flora and fauna	Fossil energy	Minerals
Reduction of the intake of natural resources through preventive in-process modifications	RM					
Use of alternative resources	RM					
Reduction of losses, leaks and scraps	RM					
Reduction of the intake of natural resources indirectly through the reduction of the consumption of natural resource-related products (energy savings, water savings, etc.)	RM					
Reuse, recycling	RM					
Increase/recharge of natural resource stocks	RM					
Direct management of natural resource stocks (mobilization/exploitation, exploration, extraction, treatment, distribution, etc.)	RU					
Measurement and control activities	RM					
Research and development activities	RM					
Teaching and training activities	RM					
Administrative activities	RM					

Classification items

Resulting classification: CRUMA list 1/2

10 Use and management of water resources
10.1 Reduction of the intake
10.2 Reduction of water losses and leaks, water reuse and savings
10.3 Replenishment of water stocks
10.4 Direct management of water stocks
10.5 Measurement, control, laboratories and the like
10.6 Other activities

11 Use and management of natural forest resources
11.1 Reduction of the intake
11.2 Reduction of the consumption of forest (wood and non wood)-related products
11.3 Reforestation and afforestation
11.4 Forest fires
11.5 Direct management of forest areas (as a resource and not as a habitat)
11.6 Measurement, control, laboratories and the like
11.7 Other activities

12 Use and management of wild flora and fauna
12.1 Reduction of the intake
12.2 Replenishment of wild flora and fauna stocks
12.3 Direct management of wild flora and fauna stocks
12.4 Measurement, control, laboratories and the like
12.5 Other activities

13 Use and management of fossil energy
13.1 Reduction of the intake
13.2 Reduction of heat and energy losses, and energy savings
13.3 Direct management of the stocks of non-renewable energy sources
13.4 Measurement, control, laboratories and the like
13.5 Other activities

Rationale underlying the 1-digit category labels:

"use and management of" + [the natural resource that is used and/or protected against depletion phenomena, e.g. "water resources", "fossil energy", ...].

Resulting classification: CRUMA list 2/2

14 Use and management of minerals
14.1 Reduction of the intake
14.2 Reduction of minerals use through the reduction of scraps and the production and consumption of recycled materials and products
14.3 Direct management of mineral stocks
14.4 Measurement, control, laboratories and the like
14.5 Other activities

15 Research and development activities for natural resource use and management
15.1 Water resources
15.2 Natural forest resources
15.3 Wild flora and fauna
15.4 Fossil energy
15.5 Minerals
15.6 Other R&D activities for natural resource use and management

16. Other natural resource use and management activities
16.1 General administration of natural resources
16.1.1 General administration, regulation and the like
16.1.2 Environmental management
16.2 Education, training and information
16.3 Activities leading to indivisible expenditure
16.4 Activities not elsewhere classified

CEPA and CRUMA overview

CEPA 2000	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 R&D for environmental protection 9 Other environmental protection activities for environmental protection 9.1 General environmental administration and management 9.2 Education, training and information 9.3 Activities leading to indivisible expenditure 9.4 Activities not elsewhere classified
draft CRUMA 2009	10 Use and management of water resources 11 Use and management of natural forest resources 12 Use and management of wild flora and fauna 13 Use and management of fossil energy 14 Use and management of minerals 15 R&D for natural resource use and management 16 Other natural resource use and management activities 16.1 General administration of natural resources 16.2 Education, training and information 16.3 Activities leading to indivisible expenditure 16.4 Activities not elsewhere classified

EP vs RUM sectors: boundary cases

- **Production of energy from renewable resources and energy saving:**
  - the main purpose being the reduction of the intake of fossil energy resources and not of air pollution, ➔ CRUMA 13 (not CEPA 1)
- **Recycling:**
  - collection, transport and treatment of waste ➔ CEPA 3
  - production of new raw materials and "recycled" goods ➔ CRUMA according to the resource (11.2 recycled paper; 12.1 recycled natural textile fibers; 13.1 recycled plastic; 14.2 recycled glass)
- **Waste incineration:**
  - If the main purpose is energy production ➔ CRUMA 13.1
  - If the main purpose is waste disposal ➔ CEPA 3.3
- **Cases for which the main purpose often needs to be identified by considering the specific features of the territory where the activities are carried out**
  - replenishment of water stocks ➔ CRUMA 10.3, but: whereas the main purpose is protecting the soil against erosion ➔ CEPA 4.3; whereas it is improving water quality or fighting salinity ➔ CEPA 4.4
  - activities to protect forests against fires ➔ CRUMA 11.4 and forest areas management activities ➔ CRUMA 11.5, but: whereas the forest areas concerned are mainly relevant from the point of view of landscape and biodiversity (e.g. protected areas) and not for their "resource functions" ➔ CEPA 6
  - replenishment of wild flora and fauna stocks ➔ CRUMA 12.2, but: whereas the main purpose is protection of biodiversity (not restoration or maintenance of the resource stock per se) ➔ CEPA 6.1
- **Transversal activities, i.e. R&D, general admin., education training and information:**
  - hierarchy of solutions: 1) break down between EP and RUM; 2) main purpose 3) allocation to CEPA

Correspondences to other accounting frameworks: CRUMA is consistent with the following systems

General accounting frameworks	Accounting frameworks focused on specific natural resources
• **SEEA** • **SERIEE** and all derived handbooks and compilation guides • Data Collection Handbook on **Environmental Goods and Services Sector - EGSS** (approved in 2009 by the Eurostat working group on env. exp. statistics)	• Water resources ❑ System of Environmental-Economic Accounting for Water (SEEAW) ❑ Eurostat Water accounts – standard tables
	• Natural forest resources ❑ FAO global Forest Resources Assessment (FRA) ❑ The European Framework for Integrated Environmental and Economic Accounting for Forests – IEEAF and the derived Eurostat standard tables
	• Wild flora and fauna ❑ FAO-UN, Integrated Environmental and Economic Accounting for Fisheries (SEEAF)
	• Fossil energy ❑ Eurostat Subsoil asset accounts for oil and gas – standard tables

Correspondences to COFOG

CEPA 2000 (EPEA)		COFOG *(exact correspondence between the whole CEPA and the whole div. 05)*	
1	protection of ambient air and climate	5.3	Pollution abatement
2	wastewater management	5.2	Waste water management
3	waste management	5.1	Waste management
4	protection and remediation of soil, groundwater and surface water	5.3	Pollution abatement
5	noise and vibration abatement	5.3	Pollution abatement
6	protection of biodiversity and landscapes	5.4	Protection of biodiversity and landscape
7	protection against radiation	5.3	Pollution abatement
8	R&D for environmental protection	5.5	R&D Environmental protection
9	other environmental protection activities	5.6	Environmental protection n.e.c.

CRUMA (RUMEA)		COFOG *(no exact correspondence: CRUMA is an "of which" of div. 04 and 06)*	
10	**use and management of water resources**	**4.2.1** **6.3.1**	**Agriculture (irrigation and drainage systems)** **Water supply**
11	**use and management of natural forest resources**	**4.2.2**	**Forestry**
12	**use and management of wild flora and fauna**	**4.2.3**	**Fishing and hunting**
13	**use and management of fossil energy**	**4.3**	**Fuel and energy**
14	**use and management of minerals**	**4.4.1**	**Mining of mineral resources other than mineral fuels**
15	**R&D for natural resource use and management**	**4.8.2** **4.8.3** **4.8.4** **6.5**	**R&D Agriculture, forestry, fishing and hunting** **R&D Fuel and energy** **R&D Mining, manufacturing and construction** **R&D Housing and community amenities**
16	**other natural resource use and management activities**		**no specifc correspondance** **the code "4.7.4 - Multi-purpose development projects" can be used for multi purpose activities concerning several RUM activities falling within division 04**

Applications example : policy fields

Regrouping activities for particular policy needs: climate change-related activities

Climate change-related activities are classified both within CEPA and CRUMA

Environmental activities		Relevance for climate change
Environmental protection activities (CEPA2000)	**1 Protection of ambient air and climate**	
	1.1 Prevention of pollution through in-process modifications	
	1.1.1 for the protection of ambient air	
	1.1.2 for the protection of climate and ozone layer	X
	1.2 Treatment of exhaust gases and ventilation air	
	1.2.1 for the protection of ambient air	
	1.2.2 for the protection of climate and ozone layer	X
	1.3 Measurement, control, laboratories and the like	
	of which: for the protection of climate and ozone layer (i.e. activities mainly or exclusively aiming at monitoring climate change)	(x)
	1.4 Other activities	
	of which: for the protection of climate and ozone layer (i.e. administrative activities or education, training and information activities mainly or exclusively related to climate change)	(x)
	...	
	8 Research and development	
	8.1 Protection of ambient air and climate	
	8.1.1 Protection of ambient air	
	8.1.2 Protection of atmosphere and climate	X
	...	
Resource use and management activities (CRUMA)	...	
	13 Use and management of fossil energy	
	13.1 Reduction of the intake	
	of which: production of renewable energy	X
	...	
	13.4 Measurement, control, laboratories and the like	
	of which: production of renewable energy (i.e. activities mainly or exclusively aiming at monitoring renewable sources for the purpose of energy production)	(x)
	13.5 Other activities	
	of which: production of renewable energy (i.e. administrative activities or education, training and information activities mainly or exclusively related to production of renewable energy)	(x)
	...	
	15 Research and development activities for natural resource use and management	
	...	
	15.4 Fossil energy	
	of which: for production of renewable energy	X
	...	

Towards a unique standard classification on env. activ. and exp.

- **Draft CRUMA 2009 has the following main characteristics:**
  - It is a functional multi-purpose classification to be used for characteristic activities, as well as products, producers, actual outlays and any kind of transactions
  - Complementary to CEPA: there is no overlapping with CEPA
  - Structured similarly to CEPA, by cross-cutting kinds of activity and natural resources
  - Broken down (classes, i.e. 1-digit categories) according to the classification of natural resources of the SEEA
  - Based on the “main purpose” criterion; as for CEPA, this is to be applied mainly by considering the technical nature of the activity
  - Explanatory notes provide details on the content of each category and clarify boundary cases between CEPA and CRUMA
- **All these characteristics make it possible to establish a unique and consistent classification system for environmental activities and expenditures made up of CEPA 2000 plus CRUMA 2009 (suggested name: Classification of Environmental Activities and expenditures – CEA). CEPA is already included in the Family of International Economic and Social Classifications and adopted by the UN Statistical Commission as an international standard**

Consistency with other frameworks and classifications

- CRUMA is consistent with the existing frameworks for economic and environmental accounting of natural resources (e.g. SEEAW – System of Environmental-Economic Accounting for Water, SEEAF – Integrated Environmental and Economic Accounting for Fisheries, IEEAF – Integrated Environmental and Economic Accounting for Forests, etc.) as well as the frameworks for statistics and accounts on environmental activities and expenditures (e.g. SERIEE, Data Collection Handbook on Environmental Goods and Services Sector – EGSS);
- As far as General Government is concerned, CRUMA is consistent with COFOG, i.e. correspondences between CRUMA and COFOG are well established. Correspondences with ISIC (and other classifications connected to ISIC) can be derived by the relationship between ISIC Rev. 3.1 and COFOG (http://unstats.un.org/unsd/cr/registry/regdnld.asp?Lg=1&prn=yes)

Questions to the Expert Group

- Do you agree with including draft CRUMA 2009 in the Family of International Economic and Social Classifications?
- Do you agree with combining CEPA and CRUMA into a single Classification of Environmental Activities and expenditures (CEA)?

Thank you for your attention

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