

Water and Environment Support

in the ENI Southern Neighbourhood region



Session 3.2 National expenditure and financing accounts & derived indicators for policy assessment

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Statistics



Government accounts for water-related collective consumption services



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- For analytical purposes (table of financing compilation), economic accounts for governmental expenditures on water-related services helps.
- These are classified according to the UN Classification of the Functions of Government (COFOG).

Wastewater management (COFOG 05.2) covers;

- sewage system operation and wastewater treatment, included management & construction of collectors, pipelines, conduits and pumps to evacuate any wastewater & rainwater from the points of generation to either a sewage treatment plant or a point where it is discharge;
- Wastewater treatment included any mechanical, biological or advanced process to render wastewater fit to meet applicable environmental standards or other quality norms.

Soil and groundwater protection (part of COFOG 05.3) includes:

- construction, maintenance and operation of monitoring systems and stations;
- measures to remove pollution from waterbodies;
- construction, maintenance and operation of installations for the decontamination of polluted soil and for the storage of pollutant products



Government accounts for water-related collective consumption services



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Environmental protection not elsewhere classified and related to water (part of COFOG 05.6) covers ;

- administration, management, regulation, supervision, operation and support of certain activities, such as the formulation, administration, coordination and monitoring of overall policies, plans, programs and budgets for the promotion of environmental protection;
- preparation and enforcement of legislation and standards for the provision of environmental protection services;
- production and dissemination of general information, technical documentation and statistics on environmental protection.

Water supply: COFOG 06.3 covers

- administration of water supply affairs; the assessment of future needs and determination of availability in terms of such assessment; and the supervision and regulation of all facets of potable water supply, including water purity, price and quantity controls;
- construction or operation of non-enterprise types of water supply systems;
- production and dissemination of general information, technical documentation & statistics on water supply affairs and services;
- grants, loans or subsidies to support the operation, construction, maintenance or upgrading of water supply systems.



Government accounts for water-related collective consumption services (V.5)



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collective consumption services are assumed to be produced and used by the Government.

value is equal to the costs of their production; sum of intermediate consumption, compensation of employees, consumption of fixed capital and other taxes less subsidies on production.

accounts could be further disaggregated for central, state and local governments.

	Government (by Classification of the Functions of the Government category)			
	05.2 Wastewater management	05.3 (part) Soil and groundwater protection	05.6 Environmental protection not elsewhere classified	06.3 Water supply
1. Costs of production (= 1.a + 1.b) <i>(millions of currency units)</i>	3.79	0.56	1.55	0.22
1. a. Total intermediate consumption	2.82	0.42	0.86	0.04
1.b. Total value added (gross)	0.97	0.14	0.69	0.17
1.b.1. Compensation of employees	0.42	0.13	0.69	0.11
1.b.2. Consumption of fixed capital	0.55	0.00	0.01	0.07

The categories COFOG 05.2 and 06.3 should not be confused with activities of “sewerage” and “water collection, treatment and supply”, classified under ISIC divisions 37 and 36 which are considered individual services in SEEAWater.

COFOG categories refer to collective services of the Government.





Taxes, fees and water rights

Specific government policy instruments aiming to regulate the use of environmental services: decisions and actions that affect the behaviour of consumers & producers by impacting the prices to be paid.

- **Payment for water supply and sanitation services**
- **Water rights**
- **Permits to use water resources as a sink**



Payment for water supply & sanitation services



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costs associated with providing the services of supplying water and collecting & treating wastewater (industries classified as ISIC 36 and ISIC 37) may be recovered in different ways;

- through the sale of the services
- through subsidies and transfers from government to the utilities

Payments for services (somehow called tariffs, fees or taxes) may not cover the total cost of the services provided.



Water rights



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Issuance of water rights for exploiting water resources in a particular water body, governments recognizes water resources as economic assets.

Rights are granted through water licences (for a fee or free of charge) which entitle the licence holder to use the water resources as an **input into the economy** or as a **sink to absorb pollutants**.

Terms of agreements regarding the water licences may vary considerably, within and between countries, with respect to their duration, payment schedule, transferability and other arrangements



Permits to use water resources as a sink



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Governments are increasingly using emission permits as a means of controlling water pollution. If the permits are tradable, they constitute assets and should be valued at the market price for which they can be sold.

Payments for discharging pollutants into the water resources may be recorded differently :

- Payment by a polluting entity without a permit to discharge pollutants into the water is treated as a penalty intended to inhibit discharge and should be recorded as a fine (a current transfer).
- If the permits are issued with the intent to restrict discharges of pollutants, payments are recorded as rent or sale of the asset, depending on the range of criteria, if the water resources are recognized as economic assets. Otherwise, the payments are recorded as other taxes (on production).
- If the payments for the discharge of pollutants into the water resources are linked to remedial action, this should be recorded as payment for a service.



National expenditure & Financing accounts



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presents national expenditure and financing accounts for water-related activities classified by purpose which are based on Environmental Protection Expenditure Accounts from EUROSTAT

Environmental protection activities , products, actual outlays (expenditure) and other transactions related to water are classified according to EUROSTAT CEPA (Classification of Environmental Protection Activities & Expenditure)

Environmental protection activities are those for which the **primary purpose** is the protection of the environment, i.e. the prevention, reduction and elimination of pollution, as well as any other degradation of the environment.

Environmental protection products comprises:

- **environmental protection services** produced by environmental protection activities
- **adapted products** defined with criteria:
 - ✓ less polluting when consumed and/or disposed of than equivalent normal products
 - ✓ more costly than equivalent normal products
- **connected products** used by resident units **directly and exclusively** serves an environmental protection objective, but are not environmental protection services produced by an environmental protection activity



National expenditure & Financing accounts



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Expenditures for environmental protection include outlays & transactions related to:

- a. Inputs for environmental protection activities: energy, raw materials and other intermediate inputs, wages and salaries, taxes linked to production & consumption of fixed capital;
- b. Capital formation and the purchase of land (investment) for environmental protection activities;
- c. Outlays of users for the purchase of environmental protection products;
- d. Transfers for environmental protection, such as subsidies, investment grants, international aid, donations and taxes earmarked for environmental protection.

Wastewater management (CEPA 2) comprises:

- collection, treatment and disposal of wastewater, activities aimed at controlling the quality of surface and marine water, and administration activities in the wastewater domain;
- use of specific products relevant to wastewater management such as septic tanks;
- specific transfers.

Protection and remediation of soil, groundwater and surface water (CEPA 4) refers to:

- prevention of pollutant infiltration;
- cleaning up of soils and bodies of water and protection of soil from erosion and other forms of physical degradation (salinization);
- monitoring and control of soil and groundwater pollution.



National expenditure & Financing accounts



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Natural resources Management covers activities and measures :

- monitoring, control and surveillance;
- data collection and statistics;
- costs of the natural resource management authorities at various levels,
- temporary costs for facilitating structural adjustments of the sectors concerned.

Natural resource exploitation includes abstraction, harvesting and extraction of natural assets, including exploration and development.

These accounts typically correspond to the standard economic accounts for various natural resource-related industries, such as fisheries, forestry, mining and water supply.

Water management and exploitation includes

- collection, storage, treatment and supply of water (ISIC 36)
- administration of waterways and water bodies, supervision, research, elaboration of plans, legislation and water policy (ISIC 84);
- specific transfers



National expenditure accounts



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Aimed at recording the expenditure of **resident units** and those **financed by resident units**
in order to obtain a total that corresponds to the country effort to use its own resources.

Compilation for environmental protection activities related to water:

- wastewater management
- protection & remediation of soil
- groundwater & surface water
- water management & exploitation

The standard tables for the national expenditure and financing accounts are compiled for “wastewater management” and “water management and exploitation”.

tables on protection and remediation of soil, groundwater and surface water require additional disaggregation of the data included in the standard tables (thus included as part of the supplementary tables)



National expenditure accounts for wastewater management (V.6)



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Use of environmental protection services by resident units:

- sum of intermediate and final consumption and capital formation
- Intermediate consumption includes the use of environmental protection services for own use and for services purchased by “other producers”

Gross capital formation corresponds to the investments made by environmental protection producers for environmental protection services

- includes gross fixed capital formation and net acquisition of land
- corresponds to the gross capital formation related to wastewater management activities (investments made by the producers of wastewater services for collecting, treating and discharging wastewater)

adapted products include phosphate-free washing products and highly biodegradable products. **Connected products** include septic tanks, biological activators of septic tanks and services for collecting septic tank sludge

Specific transfers received for environmental protection by residents or non-resident units :

- contribute to financing of characteristic activities and uses of specific products
- or constitute a compensation for income or losses related to environmental protection.
- includes current and capital transfers for environmental protection: subsidies to specialized producers of sewerage and treatment services, and of transfers to the rest of the world in order to finance programs of collective sewerage and treatment in other countries (international public or private aid for development)



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	Users/beneficiaries					
	Producers		Final consumers		Rest of the world	Total
	Specialized producers (ISIC 37)	Other producers	Households	Government		
1. Use of wastewater services (CPC 941 and CPC 91123)		4.090	4.85	3.79		12.730
1.a. Final consumption			4.85	3.79		8.640
1.b. Intermediate consumption		4.090				4.090
1.c. Capital formation	n/r	n/a				n/a
2. Gross capital formation	9.18	0.510				9.690
3. Use of connected and adapted products						
4. Specific transfers		0.001	0.00			0.001
5. Total domestic uses (= 1 + 2 + 3 + 4)	9.18	4.600	4.85	3.79	0.00	22.420
6. Financed by the rest of the world	1.00					1.000
7. National expenditures (= 5 - 6)	8.18	4.600	4.85	3.79	0.00	21.420

Columns are the following categories of beneficiary: “producers”, “final consumers” and “rest of the world”.

Producers are disaggregated upon main activity into “specialized producers” and “other producers”.

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Financing Accounts



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Users of water-related products do not always bear the entire costs of production; users may receive transfers from other units (generally the Government).

These transfers include subsidies for production of water-related products, investment grants and other transfers that are financed either from government expenditure or from specific taxes.

financing accounts of national expenditures helps to identify the **financing sector** (the sector providing the financing) and the **beneficiaries** (the units benefiting from the financing) & the amount being financed



Financing accounts for Wastewater management (V.7)



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Users do not always bear the entire costs of water as they receive transfers from other units (government);

- subsidies for production of water-related products
- investment grants and other transfers (financed either from government expenditure or from specific taxes)

expenditures recorded in column “specialized producers” correspond to their gross capital formation & net acquisition of land

entries describe how capital formation is financed partly by specialized producers themselves (row 3.a) & partly by Government through investment grants (row 1) which are funded from earmarked taxes in general households (row 4) and other producers (row 3.b)

If subsidies & investment grants are funded through revenues from earmarked taxes, it is assumed that the unit paying taxes is the financing unit

expenditure in the column “rest of the world” corresponds to transfers paid for international cooperation for environmental protection which can be financed either by the Government or by households, through non-profit institutions serving households

Financing sectors:	Users/beneficiaries					
	Producers		Final consumers		Rest of the world	Total
	Specialized producers (ISIC 37)	Other producers	Households	Government		
1. General Government	1.64	0.00	2.43	3.79		7.86
2. Non-profit institutions serving households						
3. Corporations	6.55	4.40				10.95
3.a. Specialized producers	6.55					6.55
3.b. Other producers	0.00	4.40				4.40
4. Households		0.20	2.43			2.63
5. National expenditure	8.19	4.60	4.86	3.79	0.00	21.44
6. Rest of the world	1.00					1.00
7. Domestic uses	9.19	4.60	4.86	3.79	0.00	22.44

Rows show the different financing units classified according to the institutional sectors (SNA) : General Government (can be disaggregated under central and local government), NPISHs, Corporations & Households

Columns are the categories of beneficiary: “producers”, “final consumers” and “rest of the world”.



Economic water profiles



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It is important to compare the environmental performance of industries among each other and overtime.

This is achieved through use environmental-economic profiles which compare direct economic benefits (share of value added) and environmental burden/costs (share of water use).

Goals:

- *benchmarking industrial performance in order to promote water use efficiency and water conservation.*
- *guide the country on which industrial activities to expand with considerations about the natural resource availability, sustainability and the secondary contributions of the activity.*





Indicators: Water productivity

indicator combining two elements economic contribution and environmental burden into a single indicator.

furnishing the potential gains and losses from a reallocation of water.

interpreted as a rough approximation of the socio-economic benefits generated by allocating water to a particular industry.

calculated by dividing the value added for a particular industry by the volume of water consumed by that industry;

- giving the value added (€, \$, £,...) per m³ of water consumed.



Water productivity



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Water productivity is the most widely used indicator from the water accounts for cross-sector comparisons. It furnishes a first approximation of the potential gains and losses from a reallocation of water.

Water productivity is also interpreted as a rough approximation of the socio-economic benefits generated by allocating water to a particular industry.

Water accounts of Australia reveal that water productivity in agriculture (A\$ 0.58 of value added per cubic meter of water) is orders of magnitude less than that in services (other industries, A\$ 487.65 of value added).

	Water consumption (megalitres)	Percentage distribution of water consumption	Percentage of industry gross value added	Value added in Australian dollars per megalitre of water consumption
Agriculture, total	16 660 381	66.9	1.8	0.58
Livestock	5 568 474	22.4	0.3	0.27
Dairy farming	2 834 418	11.4	0.3	0.53
Vegetables	555 711	2.2	0.3	3.27
Fruit	802 632	3.2	0.3	1.98
Grapes	729 137	2.9	0.3	1.86
Sugar cane	1 310 671	5.3	0.1	0.22
Cotton	2 908 178	11.7	0.2	0.42
Rice	1 951 160	7.8	0.1	0.18
Forestry and fishing	26 924	0.1	0.3	57.42
Mining	400 622	1.6	6.3	84.81
Manufacturing	866 061	3.5	13.6	84.70
Electricity and gas supply	1 687 778	6.8	2.1	6.59
Water supply	1 793 953	7.2	0.8	2.35
Other industries	832 100	3.3	75.2	487.65
Households	2 181 447	8.8	n/a	n/a
Environment	459 393	1.8	n/a	n/a
Total	24 908 659	100.0	100.0	

Example of Australia (2001)



Water Productivity

only run-off water and groundwater are considered :

- water of agricultural production carried out in rain-fed conditions is excluded.
- water abstracted for hydro-power generation (except evaporation) is excluded.



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Activity	2015	2016	2017	2018
Agriculture	33,708	52,279	66,044	72,005
Agriculture (Irrigated crop)	1,462	3,143	4,172	4,666
Agriculture (Rainfed crop)				
Agriculture (Livestock)	95,285	72,476	116,624	94,597
Agriculture Support Services				
Agriculture (Forestry)				
Agriculture (Fishing)	8,619	9,328	10,337	11,376
Industry	80,866	60,559	60,564	48,048
Crude oil and Mining	98,338	129,702	97,238	24,684
Manufacturing (Food and Beverages)	268,919	222,476	249,258	347,515
Manufacturing (Other)	431,823	353,196	352,082	375,632
Electricity	6,139	5,159	6,308	6,591
Water Supply; Sewerage and Waste	44,283	25,730	23,542	23,774
Construction	357,830	439,673	418,385	60,204
Services	470,164	400,195	432,391	536,332
Accommodation	1,464,897	1,277,975	1,512,999	1,145,802
Public Administration	108,393	92,957	86,032	95,539
Education	6,071,204	4,722,640	6,850,388	8,418,956
Health	1,754,558	1,311,978	1,392,863	1,176,892
Other	4,197,470	3,938,195	4,100,900	5,166,702
Activities of Households	5,770	5,062	5,483	6,512
Total, Ushs	86,901	101,000	112,448	109,292
Total, US\$	26.8	29.5	33.4	29.3

Example for Uganda





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Thank you for your attention!

