Proposed core tables for water

Introduction

The United Nations Statistical Commission at its 44th session in March 2013 adopted the implementation strategy for the System of Environmental-Economic Accounting (SEEA) Central Framework and, among others, urged the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA) to develop a core set of tables and accounts. One of the areas of the SEEA where there is high demand from countries to compile environmental economic accounts based on policy priorities is water. Water is a key element in growing food, generating energy, producing many industrial products as well as in ensuring the integrity of ecosystems and the goods and services they provide, and as such many countries already collect water information on a sustained basis.

Core tables for the SEEA provide both monetary and physical information in a combined presentation. They also include information on water flows and assets. As such the core tables give a succinct, policy relevant presentation of information for a particular resource. The proposed core table for water builds upon the SEEA Central Framework, SEEA Water and the International Recommendations for Water Statistics. This paper is organized as follows. Part 1 presents the core tables. Part 2 discusses some of the indicators that use information included in the core table. The annex list the data items required to populate the core table and

Part I-Proposed Core Tables for Water

The proposed first core table for water is shown below. It combines information on flows in both monetary and physical terms as well as information from the national accounts and labor statistics to present an overview of the water situation in a country. The data items and their definitions are listed in the annex.

Core table 1

	Industries (by ISIC categories)							Rest of the world	Taxes less subsidies on products, trade and transport margins	Actual final consumption		Capital Formation	Total
	ISIC 01-03	ISIC 05-33, 41-43	ISIC 35	ISIC 36	ISIC 37	ISIC 38,39, 45-99	Total industry			Households	Government		
1. Supply of water products (Currency units)													
Natural water	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1		M.1.1.1-[N.1.1.1+N.1.2.1]				L.1.1+M.1.1.1-[N.1.1.1+N.1.2.1]
Sewerage services	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2		M.1.1.2-[N.1.1.2+N.1.2.2]				L.1.2+M.1.1.2-[N.1.1.2+N.1.2.2]
2. Total supply of products													
3. Intermediate consumption and final use (Currency units)													
Natural water	L.4	L.4	L.4	L.4	L.4	L.4	L.4						
Sewerage services	L.5	L.5	L.5	L.5	L.5	L.5	L.5						
Other products													
4. Gross value added (Currency units)													
5. Employment													
6. Supply of water (Millions m3)	F+H	F+H	F+H	F+H	F+H	F+H	F+H	G.2+G.4					F+H+G2+G4
Supply of water to other economic units	F	F	F	F	F	F	F	G.2+G.4					F+G2+G4
Total returns	H	H	H	H	H	H	H						H
Losses	I	I	I	I	I	I	I						I
7. Use of water (Millions m3)	E+G	E+G	E+G	E+G	E+G	E+G	E+G	F.2+F.4					E+G+F.2+F.4
Total Abstraction	E	E	E	E	E	E	E						E
of which: Abstraction for own use	E.a	E.a	E.a	E.a	E.a	E.a	E.a						E.a
Use of water received from other economic units	G	G	G	G	G	G	G	F.2+F.4					G+F.2+F.4
8. Gross fixed capital formation (Currency units)													
For water supply	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1						P.1.1
For water sanitation	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2						P.1.2
9. Closing Stocks of fixed assets for water supply (Currency units)	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1						O.1.1
10. Closing Stocks of fixed assets for water sanitation (Currency units)	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2						O.1.2
11. Water consumption (Millions m3)													

The building blocks for the first core table can be found in the physical and monetary supply and use tables for water, the national accounts and labor statistics. These tables[1] provide more details that the core table and should be populated to the extent possible as part of the process of

[1] SEEA Central Framework table 3.6

compiling the core table. The first core table can be conceptualized as 3 smaller tables which when combined given a broad overview of the water situation in a country. These 3 tables are shown in turn below. Countries could focus on one of these particular tables depending on their policy priorities and data availability. Furthermore each of these smaller tables contains sufficient information in and of themselves to derive a number of useful aggregates and indicators as is discussed in Part 2. Should countries be interested in a more detailed presentation of information, the data can be further disaggregated; in particular data could be presented at the ISIC group level (3 digits) for certain ISIC divisions as needed and/or additional data item could be added to the rows of the tables to provide a finer level of details. For example, if the generation of electric power through hydropower plants is important, data on water use by hydropower plants corresponding to ISIC 351 can be presented as an "of which" column within ISIC 35. Similarly, the supply of water in physical terms could be expanded with additional data items showing, for example, sources of abstracted water.

Table 1.1 Physical supply and use table for water

	Industries (by ISIC categories)							Rest of the world	Taxes less subsidies on products, trade and transport margins	Actual final consumption		Capital Formation	Total
	ISIC 01-03	ISIC 05-33, 41-43	ISIC 35	ISIC 36	ISIC 37	ISIC 38,39, 45-99	Total industry			Households	Government		
6. Supply of water (Millions m3)	F+H	F+H	F+H	F+H	F+H	F+H	F+H	G.2+G.4					F+H+G2+G4
Supply of water to other economic units	F	F	F	F	F	F	F	G.2+G.4					F+G2+G4
Total returns	H	H	H	H	H	H	H						H
Losses	I	I	I	I	I	I	I						I
7. Use of water (Millions m3)	E+G	E+G	E+G	E+G	E+G	E+G	E+G	F.2+F.4					E+G+F.2+F.4
Total Abstraction	E	E	E	E	E	E	E						E
of which: Abstraction for own use	E.a	E.a	E.a	E.a	E.a	E.a	E.a						E.a
Use of water received from other economic units	G	G	G	G	G	G	G	F.2+F.4					G+F.2+F.4

Table 1.2 Supply and use table for water products

	Industries (by ISIC categories)							Rest of the world	Taxes less subsidies on products, trade and transport margins	Actual final consumption		Capital Formation	Total
	ISIC 01-03	ISIC 05-33, 41-43	ISIC 35	ISIC 36	ISIC 37	ISIC 38,39, 45-99	Total industry			Households	Government		
1. Supply of water products (Currency units)													
Natural water	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1	L.1.1		M.1.1.1-[N.1.1.1+N.1.2.1]				L.1.1+M.1.1.1-[N.1.1.1+N.1.2.1]
Sewerage services	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2	L.1.2		M.1.1.2-[N.1.1.2+N.1.2.2]				L.1.2+M.1.1.2-[N.1.1.2+N.1.2.2]
3. Intermediate consumption and final use (Currency units)													
Natural water	L.4	L.4	L.4	L.4	L.4	L.4	L.4						
Sewerage services	L.5	L.5	L.5	L.5	L.5	L.5	L.5						
Other products													
4. Gross value added (Currency units)													

Table 1.3 Monetary information on water related assets

	Industries (by ISIC categories)							Rest of the world	Taxes less subsidies on products, trade and transport margins	Actual final consumption		Capital Formation	Total
	ISIC 01-03	ISIC 05-33, 41-43	ISIC 35	ISIC 36	ISIC 37	ISIC 38,39, 45-99	Total industry			Households	Government		
8. Gross fixed capital formation (Currency units)													
For water supply	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1	P.1.1						P.1.1
For water sanitation	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2	P.1.2						P.1.2
9. Closing Stocks of fixed assets for water supply (Currency units)	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1	O.1.1						O.1.1
10. Closing Stocks of fixed assets for water sanitation (Currency units)	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2	O.1.2						O.1.2

The second core table contains information on physical flows of water. It is part of the physical asset account for water and focuses on changes to stocks of water over an accounting period by type of water resource

Core table 2

	Type of water resource						Total
	Surface water				Groundwater	Soil water	
	Artificial	Lakes	Rivers	Glaciers, snow and ice			
Additions to stock							
Returns	H.1.1.1	H.1.1.2	H.1.1.3	H.1.1.4	H.1.2		H
Precipitation	B.1	B.1	B.1	B.1			B.1
Inflows from other territories	B.2	B.2	B.2	B.2	B.2		B.2
Inflows from other inland water resources							D
Discoveries of water in aquifers							
Reductions in stock							
Abstraction	E.1.1.1	E.1.1.2	E.1.1.3	E.1.1.5	E.1.2	E.1.3	E.1
for hydro power generation							E.a.a
for cooling water							E.a.e
Evaporation & actual evapotranspiration	C.1	C.1	C.1	C.1			C.1
Outflows to other territores			C.2.1	C.2.1	C.2.1		C.2.1
Outflows to the sea			C.2.2	C.2.2	C.2.2		C.2.2
Outflows to other inland water resources							D

Part II-Indicators

The information in the core table for water is necessary for the derivation of many key indicators for the water sector. A partial list is included below.

Total renewable water resources (TRWR) -- Total resources that are offered by the average annual inflow and runoff that feed each hydrosystem (catchment area or aquifer) and 'available' = B.1 - C.1 + C.2 where C.2=C.2.1+C.2.2

Intensity of use of water resources -- Percentage of TRWR that is used (sum of total withdrawals / abstraction) = E.1 (offstream)/(B.1 - C.1 + C.2)

Total abstractions by industry = E.1 dissagregted by industry as shown in core table 1 and table 1.1

Water productivity indicators (defined as value added by economic activity per cubic metres of water used) can be derived directly from the first core table. In particular:

Change in water productivity in agriculture -- Crude proxy: value of agricultural production divided by the volume of water abstracted for agriculture (does not take into account the use of rainfall). = Gross Value Added (agriculture) / E.1 (agriculture)

A similar approach can be taken for other industries. In particular water productivity = Gross Value Added (industry) / [E.1(industry) + G(industry)]. Furthermore water intensity indicators can also be derived using the same information; they are simply the reciprocal of water productivity indicators.

Importance of investment in water measures the overall gross capital formation for water supply and water sanitation = P.1.1+P.1.2. Dividing this quantity by economy wide gross capital formation and tracking it from year to year gives an indication of the relative importance of investment in water supply and water sanitation assets.

Annex-Data items and definitions

The annex provides some of the data items and corresponding definitions required for compiling the core tables for water.[2]

1. Supply of water products (currency units)

L.1.1 -- Natural water -- The value of charges for water and water supply service charges supplied by economic units engaged in water supply activities, either as a principal or a secondary activity, per year.

L.1.2 -- Sewerage services -- The value of sales of sewerage services provided by economic units engaged in sewerage service activities, per year. This includes all charges for the supply of sewerage services.

3. Intermediate consumption and final use (currency units)

L.4 -- Natural water -- The value of water received by users (economic units) supplied by other economic units, per year. This includes the cost of the water plus associated delivery charges.

L.5 -- Sewerage services -- The value of sewerage services received by establishments and households that have been supplied by other economic units, typically from the sewerage industry, per year. For example, the cost of water supply may be the price (e.g., $ per m3) of water multiplied by the volume (m3) used, plus any associated service charges for water supply.

6. Supply of water (Million m3)

F -- Supply of water to other economic units -- The volume of water that is provided by one economic unit to another economic unit through mains, artificial open channels, sewers, drains, trucks or other means, per year. This excludes the losses of water in distribution which and the supply of bottled water.

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[2] Data items and definitions come from the International Recommendations for Water Statistics.

H -- Total returns -- The volume of water that flows from economic units directly to inland water resources, to the sea or to land, within the territory of reference, per year. This includes urban storm water, losses due to leakage and burst pipes, irrigation water that infiltrates into groundwater or ends up in surface water, and the discharges of cooling water and water used for hydroelectricity generation. It excludes evaporation.

7. Use of water

E -- Total abstraction -- The volume of water that is removed or collected by economic units directly from the environment within the territory of reference, per year.

E.a -- Abstraction for own use -- The volume of water abstracted and used by the same economic units within the territory of reference, per year.

G -- Use of water received from other economic units -- The volume of water that has been delivered from one economic unit to another economic unit through mains, artificial open channels, sewers, drains, trucks or other means, per year. Water received from other economic units excludes water abstracted directly from the environment and bottled water.

8. Gross fixed capital formation (Currency units)

P.1.1 -- For water supply -- The value of expenditure on the water supply infrastructure used by economic units for water collection, treatment or supply, per year. This is called gross capital formation in SNA. It includes expenditure on the acquisition of pumps, pipes, dams, buildings, vehicles, drilling rigs and land.

P.1.2 -- For water sanitation -- The value of expenditure on fixed assets used to collect, treat and dispose of wastewater, including urban run-off, per year. This includes expenditure used to buy wastewater treatment plants, sewers, pumps, septic tanks, sewerage meters, buildings, drains to collect and transport urban water run-off and land.

9. Closing Stocks of fixed assets for water supply (Currency units) – O.1.1--The value of infrastructure used to abstract, manage, store, treat, distribute, pump and apply water, owned by resident units, at a point in time. This includes artificial reservoirs, pipes, pumps, water tanks, sprinkler systems, water meters, buildings and land, owned and used for these activities. It includes water infrastructure owned by the water supply industry, agriculture, electricity generation, other industries and households.

10. Closing Stocks of fixed assets for water sanitation (Currency units) – O.1.2-- The value of infrastructure used to collect, treat, store, distribute and discharge wastewater, owned by resident units, at a point in time. This includes wastewater treatment plants, sewers, pumps, septic tanks, sewerage meters, buildings and the land, owned and used for these activities. It includes infrastructure owned by the sewerage industry, as well as agriculture, other industries and households, used for the collection of sewage and disposal of water. Included is the value of urban run-off infrastructure, e.g., drains, culverts, pumps, pipes, infiltration facilities, buildings and land, owned and used for the collection, treatment and discharge of urban run-off.

Precipitation – B.1--The volume of water that flows from the atmosphere to inland water resources via rain, snow, sleet, hail, dew, mist, etc., per year.

Inflows from other territories – B.2.1-- The volume of surface water and groundwater that moves into a territory of reference from other territories, or along its border, that is protected by formal agreements with upstream territories, per year.

Inflows from other inland water resources – D -- The volume of water that moves between inland water resources of a territory, per year.

Evaporation & actual evapotranspiration -- C.1 -- The volume of water from land and water surfaces that enters the atmosphere by vaporization of water into a gas and through evaporation and transpiration from plants, per year.

Outflows to other territories – C.2.1-- The volume of surface water and groundwater that flows from within a territory to another territory or territories, per year. This includes water flowing out of artificial reservoirs, lakes, rivers or aquifers that lie along the territory's border.

Outflows to the sea – C.2.2-- The volume of surface water and groundwater that moves from a territory's inland water resources into sea(s) and ocean(s), per year.

Outflows to other inland water resources -- D -- The volume of water that moves between inland water resources of a territory, per year.