ESA/STAT/AC.217
UNCEEA/5/27

DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

Fifth Meeting of the UN Committee of Experts on Environmental-Economic Accounting
New York, 23-25 June 2010
North Lawn Building, Conference Room E

DRAFT "GLOSSY" PUBLICATION ON THE SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING FOR WATER

Paper prepared by Australian Bureau of Statistics

(for discussion)

Draft "Glossy" publication on the System of Environmental-Economic Accounting for Water

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Background

1. The idea of for a "glossy" publication grew out of discussion held between the UNSD and the World Water Assessment Programme (WWAP) that began at the 5th World Water Forum in March 2009. This idea was further developed and discussed at the UNCEEA meeting in June 2009 and subsequent discussions determined that a publication of 15-20 pages, including country experiences and examples of use should be prepared. The primary audience for the publication would senior managers and decision-makers, with a knowledge of either statistics or water policy.

2. This draft has been prepared by Australian Bureau of Statistics but it draws heavily on previously existing material prepared by the UNSD and countries, namely Austria, China, Mexico and the Netherlands. This material includes the Global Assessment of Water Statistics and Water Accounts, The International Recommendations for Water Statistics, material prepared for workshops and searchable archive of environmental accounts publications.

3. It is proposed that the small group (3-5 people) lead by Australia, with support form UNSD, be formed to finalised the publication and to iaison with the WWAP (who have offered to publish the document as part of a discussion series). Austria (Michael Nagy) and Mexico (Ricardo Matinez-Lugunes) have volunteered to be a part of this group. A final draft of the publication would be submitted to the UNCEEA Bureau for sign-off, along with a proposed publication date (to be determined in consultation with WWAP).

Questions for discussion

1. Is the structure, content and style of the publication suitable?
2. Should a separate section on policy use and indicators be added or should this be included in the country examples?
3. Should there be a one page executive summary at the beginning of the document?
4. What should be the process for finalising the publication?

Draft "glossy" publication on SEEA – Water

Structure

1. Introduction
2. Main feature of the SEEA-Water
3.
4. Examples of implementation in countries
    - Australia
    - China
    - Mexico
    - Netherlands
5. The way forward
6. Bibliography and resources

Annex – list of countries undertaking water accounting

1. Introduction

The *System of Environmental-Economic Accounting for Water* (SEEA-Water: UN 2007) is a conceptual framework for organising data related to water. It describes key hydrological and economic concepts and defines a set of standard tables for presenting hydrological and economic information, which show the interaction between water and the economy as well as water resources in the environment. The SEEA-Water provides a direct link from hydrological data to the System of National Accounts (SNA), the framework used in macro-economic statistics throughout the world for more than 50 years and from which the accounting identity Gross Domestic Product (GDP) is derived.

The SEEA-Water was developed between 2004 and 2007 by the United Nations (UN) Statistics Division with the assistance of countries and other international organisations. It consolidates the experiences and practices of countries and international organisations in the field of water accounts. The UN Statistical Commission adopted the SEEA-Water as an interim international statistical standard at its 38th Session in March 2007[1]. The SEEA-Water is an elaboration of the handbook *Integrated Environmental and Economic Accounting 2003* (United Nations et al. 2003), commonly referred to as SEEA-2003, which describes the interaction between the economy and the environment and covers the whole spectrum of natural resources and the environment. The SEEA-Water was adopted as an interim standard pending the elevation of the overarching framework for environmental accounting, the SEEA, to an international statistical standard, which is expected in 2012.

[1] See section 37/108 of the Report of the 38th Session of the UN Statistical Commission E/CN.3/2007/30. On-line 19 May 2010: http://unstats.un.org/unsd/statcom/sc2007.htm

The adoption in 2007 of the SEEA-Water by the statistical community addressed the need for more and better integrated information on water resources and water management. At the time of adoption it was recognised that the SEEA-Water provided a much-needed conceptual framework for organizing hydrological and economic information in support of integrated water resource management (IWRM)[2]. Following adoption of the SEEA-Water the number of countries producing or developing water accounts has increased from 22 countries in 2007 to 48 in 2009. Importantly the potential usefulness of the SEEA-Water has been recognised in other fora and in particular this was recognised in the conclusions of the "Data for All" sessions of the 5th World Water Forum (Istanbul, March 2009)[3] and an OECD workshop on improving water information (Zaragoza, May 2010)[4].

The SEEA-Water is part of a family of UN statistical standards. A key document, developed explicitly to support for the SEEA-Water as well as for harmonising international data collection activity related to water is the *International Recommendations for Water Statistics* (IRWS). The IRWS was adopted by the UN Statistical Commission in February 2010[5] and it provides more detailed guidance on the basic statistical data (covering hydrological, economic and social data) needed to populate the SEEA-Water standard tables. In addition, the IRWS explicitly defines a range of additional data that are useful for integrated water resource management (IWRM) and are currently collected by a range of countries and international organisations.

2. Main features of the SEEA-Water

A conceptual overview of the scope of SEEA-Water is presented in Figure 1. This figure is a simplified presentation of the physical flows of water within the inland water resources system (or the environment) and the economy represented in the figure as two separate boxes. Many of the flows, and in particular those within the economy, have matching monetary flows. A territory of reference may be a country, river basin or other type of spatial boundary (see Section 2.4 below).

The inland water resource system of a territory is composed of all water resources in the territory (surface water, groundwater and soil water) and the natural flows between them. The economy of a territory

2 See paragraph 22 of the Report of the Committee of Experts on Environmental-Economic Accounting. 38th Session of the Statistical Commission, E/CN.3/2007/9. On-line 19 May 2010: http://unstats.un.org/unsd/statcom/sc2007.htm

3 5th World Water Forum, Istanbul Turkey 20-21 March 2009, Topic 6.4 Data for all. On-line 19 May 2010: http://unstats.un.org/unsd/envaccounting/workshops/wwf2009/lod.htm

4 OECD Workshop on Improving the information base to better guide water resource management decision making, Zaragoza, Spain, 4-7 May, 2010. On-line 28 may 2010: http://www.oecd.org/document/43/0,3343,en_2649_37425_43685739_1_1_1_1,00.html

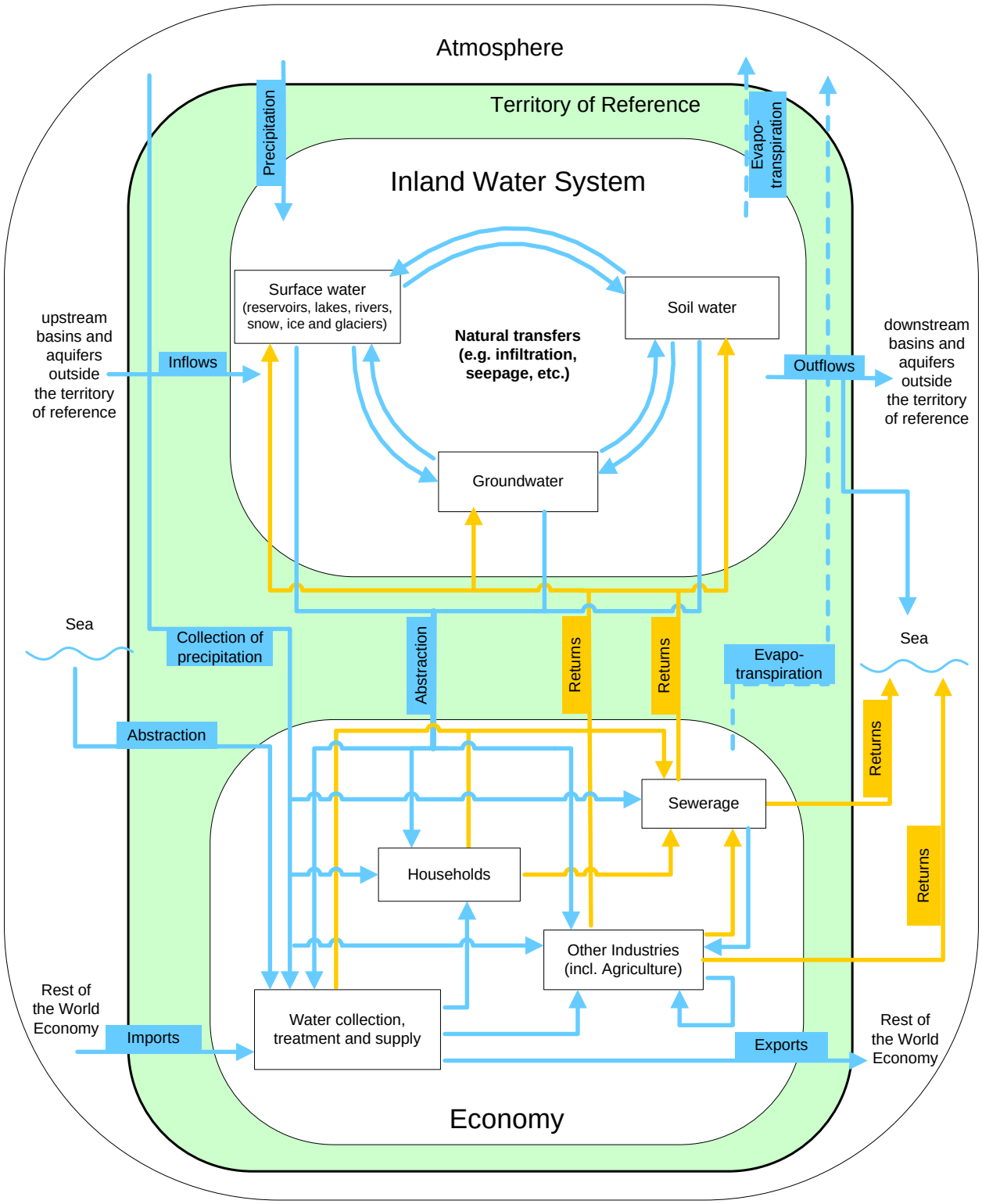
5 See decision 41/108, paragraph (i) of the Report of the 41st UN Statistical Commission E/2010/24 and E/CN.3/2010/34. On-line 24 May 2010: http://unstats.un.org/unsd/statcom/doc10/Report-E.pdf

consists of resident water users who: extract water for production and consumption purposes; put in place the infrastructure to store, treat, distribute and discharge water; and discharge water back to the environment.

The SEEA-Water covers all of the stocks and flows associated with water. Stocks can be within the environment or within the economy, while flows of water can be within the environment, within the economy and between the environment and economy. The framework also covers the discharge of pollutants by the economy to the environment as well as addressing water quality. The stocks of water within the economy are generally small, limited to rainwater tanks and similar stores of water.

The SEEA-Water defines a series of accounting identities in order to allow consistent comparisons between areas and over time. This is necessary because some terms, and in particular water use and water consumption, are used to mean different things in different systems. By identifying these as a sum of particular data items, countries and international organisations are able to understand how their particular definitions relate to those in the SEEA-Water and over time these should harmonise with the SEEA-Water.

Figure 1: Main flows within the inland water system and the economy.



Source: SEEA - Water.

2.1 Stocks (Assets)

Stocks are the quantity of a particular product or natural resource at a point in time. Stocks are identified in both economic and environment statistics, although the terminology varies depending on the context, and they can be measured in physical and monetary terms. Physical stocks of water may also have different levels of water quality. Assets are usually associated with stocks that have economic values and in the SNA stocks are recorded in balance sheets in monetary terms for non-financial assets (produced and non-produced), financial assets and liabilities. In the SEEA-Water stocks are recorded in the asset accounts in physical terms (the volume of water).

2.2 Flows

Flows are the quantity that is added or subtracted from a stock during a specific period of time as well as flows from stocks to the end users of water. For example, water flows from a reservoir through a pipe to a house or business. Flows are identified in both economic and environment statistics. Economic flows reflect the creation, transformation, exchange, transfer or extinction of economic value; they involve changes in the volume, composition, or value of an economic unit's assets and liabilities.

In water statistics flows are measured as a quantity (volume, mass, or value) per unit of time: for example, m^3 per year, tonnes per year or dollars per year. The flows are usually related to particular stocks of water and flows result in a change in quantity of the stocks. The flows described in water statistics are:

- Flows within the environment (between inland water resources and the atmosphere, between the sea and inland water resources as well as the flows between the different inland water resources such as surface water, groundwater and soil water)
- Flows from the environment to the economy (abstraction)
- Flows within the economy (exchanges of water between economic units)
- Flows from the economy to the environment (returns and waterborne emissions)
- Flows with other territories (inflows and outflows with neighboring territories)

2.3 Terminology

The definition of water use and water consumption varies between information systems. In the SEEA-Water the definition of water use includes the use of water for hydro-electric power generation and the use of water for cooling in industrial processes. These types of water use are separately identified in the standard tables as while the use may be large, the water is not consumed and is usually available to other

users. That is, the water may be supplied to other users in the economy or returned to the environment, with little if any change to the physical characteristics of the water (apart from being displaced in time and space and with the addition of heat in the case of cooling water).

SEEA-Water defines consumption in terms of an accounting identity, being total use minus total supply (supply to both other economic units a to the environment, also known as returns). This provides an indication of the amount of water that is lost by the economy during use in the sense that it has entered the economy but has not returned either to water resources or to the sea. This happens because during use part of the water is incorporated into products, evaporated, transpired by plants, etc. Water consumption can be computed for each economic unit, for industries and for the whole economy. The concept of water consumption used in the SEEA-Water is consistent with the water management concept. However, it differs, from the concept of consumption used in the SNA which instead is more akin with the SEEA-Water definition of water use.[6]

2.4 River basins and other spatial boundaries

Water information for water management is required at many geographic levels, from the river basin, to the national and multi-national levels. The choice of the spatial reference for the compilation of water accounts ultimately depends on the data needed by users (for example decision-makers, analysts and researchers) and the resources available to data producers. The SEEA-Water recommends the river basin as the spatial unit for which the accounts should ideally be compiled.

In general, four types of spatial boundaries are used in water statistics:

- Physical boundaries
    - River basins and other surface water boundaries, such as sub-basins, drainage basins, water catchments, etc.
    - Aquifers and other sub-surface boundaries including, aquifer beds, complex aquifer-aquitard systems, groundwater provinces, groundwater regions, etc.
- Administrative regions (local, state/provincial and national governments)
- Service areas
- Accounting catchments

[6] Paragraph 3.44 of the SEEAW.

River basins or aquifers are fundamental to the hydrological cycle. These physical boundaries can span large areas, national administrative boundaries and countries. Aquifers and river basins vary in size depending and large river basins may contain smaller sub-basins (or catchments). Water can flow naturally between river basins or can be imported and exported by economic units located in different river basins, but within the one country.

It is recognised internationally that a river basin is the most appropriate spatial reference for Integrated Water Resource Management (for example Agenda 21, United Nations 1992, and the European Water Framework Directive 2000). This is because the people and economic activities within a river basin will have an impact on the quantity and quality of water in the basin, and conversely the water available in a basin will affect the people and economic activities that rely on this water.

An administrative region is a geographic area usually corresponding to a level of government (for example local, state/provincial or national). Administrative regions are usually responsible for planning and economic policies within their jurisdiction and as such different regions are likely to have different laws, regulations, institutional arrangements, and management practices relating to water.

Water suppliers or sewerage service providers, which may be government or non-government, will often have service areas that are related to the physical infrastructure, which they own or operate to supply water or sewerage services.

Accounting catchments are defined in the SEEA-Water because it is practical to define regions for the compilation of water accounts for which both economic and physical data are more easily available. As such these regions are statistical constructs or hybrids of administrative regions and river basins. Accounting catchments are used to provide the best possible match of economic, environmental and social data, which use a variety of spatial references.

In practice, an accounting catchment is an administrative region, composed of all or parts of several river basins or a river basin composed of all or parts of several administrative regions[7]. Usually whole administrative regions are added together to form the nearest approximation of a river basin or *vice versa*[8]. In defining accounting catchments it is necessary to compare river basins and administrative boundaries to determine the best possible match based on practical considerations of data availability and data collection. Over time the use of accounting catchments should lead to improvements in data collection and availability.

[7] After SEEAW paragraph 2.90
[8] See Edens et al. 2007. Regional water accounts and the transformation of spatial data: http://unstats.un.org/unsd/envaccounting/londongroup/meeting11/LG11_SSWA_2a.pdf

Each administrative region, river basin, service area or accounting catchment used for water statistics should have a unique identification code and name. If more than one spatial reference is used, then there should be more than one identification coding system, and the codes used should be distinct. When the relevant boundaries are available electronically, geographic information systems (GIS) can help clarify boundary issues related to water statistics.

2.5 Temporal (time) references

When compiling water accounts it is important that the reference periods for the different data items are aligned and the calendar year is a commonly used reference period. However, water and economic data may not be available for calendar years. For example, for national accounts, most countries use a financial year, while for water statistics countries may use a hydrological year. Financial and hydrological years may be the same as or different from calendar years.

As such, it is generally recommended that water accounts are developed for the time period used in the national accounts, which in the SNA is recommended to be the calendar year. This allows direct temporal comparability between economic and environmental aspects of water statistics.

Yearly water statistics will often hide seasonal variability in data which, in many cases are important to understand for water management purposes. Some water statistics, like precipitation and other meteorological and hydrological data, are compiled more frequently (for example daily, weekly or monthly) to address these needs.

3. Implementation of the SEEA-Water

In order to assess the use and implementation of the SEEA-Water (and other issues related to the compilation of water statistics) around the world, the UN Statistics Division undertook a *Global Assessment of Water Statistics and Accounts* in 2008. The results were reported in full to the UN Statistical Commission in 2009[9].

At the time of the Global Assessment, water accounting was being implemented, or planned to be implemented in 44 countries (see Table 1). Of these 33 were currently compiling water accounts, while 11 countries indicated that they will begin to compile water accounts in the next two years. Two countries have compiled accounts in the past but do not plan to continue with compilation. Since the Global

[9] Report on the Global Assessment of Water Statistics and Water Accounts. Background document to the 40th Session on the UN Statistical Commission. On-line 19 May 2010: http://unstats.un.org/unsd/statcom/doc09/BG-WaterAccounts.pdf

Assessment an additional four countries have begun compiling environmental accounts bringing the total number of countries currently compiling or planning to compile accounts to 48. Annex 1 provides a list of these countries as well as the geographic and economic stage of development to which they are classified by the UN.

The number of countries producing water accounts and implementing the SEEA-W increased significantly between 2006 and 2008. The results of Phase I of the Global Assessment of Environment Statistics and Environmental-Economic Accounting[10] in 2006 indicated that 22 countries were compiling water accounts and a further eight had plans to develop them. Two years later, in 2008, 33 countries were compiling water accounts and a further 11 had plans to implement them in the next two years.

The existence of water accounting programmes varies both by economic and geographical grouping. Water accounting programmes exist in 15 countries with developed economies, 17 countries with developing economies and 1 country with economies in transition. The geographical distribution ranges from a maximum 14 countries in Europe and Northern America to three in Western Asia.

Table 1: Water accounting programmes by economic and geographic regions

	Number of countries	*Number of countries currently compiling*	*Percentage of countries currently compiling*	*Number of countries planning to start compiling in the next 2 years*	*Number of countries compiled in the past and will not continue*	*Total*	*Percentage of countries compiling, planning to compile, or compiled water accounts*
	(1)	*(2)*	*(3)=(2)/(1)*	*(4)*	*(5)*	*(6) = (2)+(4)+(5)*	*(7)=(6)/(1)*
Total countries responding to question	59	33	56%	11	2	46	78%
Economic regions							
Developed regions	28	16	57%	5	2	23	82%
Developing regions	31	17	55%	6	0	23	74%
Economic grouping:							
Developed economies	23	15	65%	4	1	20	87%
Transition economies	7	1	14%	2	1	4	57%
Developing economies	29	17	59%	5	0	22	76%
Geographical grouping:							
Africa	6	4	67%	2	0	6	100%
Central, Eastern, Southern South-Eastern Asia and Oceania	8	5	63%	1	0	5	63%
Europe and Northern America	26	14	54%	4	2	21	81%
Latin America and the	9	7	78%	0	0	7	78%
Western Asia	10	3	30%	4	0	7	70%

[10] Global Assessment of Environmental Statistics and Environmental Economic Accounting (2007): http://unstats.un.org/unsd/statcom/doc07/Analysis_SC.pdf

4. Examples of implementation in country

Below we present five examples of how SEEA-Water is being implemented in countries – Australia, China, Mexico and the Netherlands.

4.1 Australia

Water accounting in Australia is currently practiced by the Australian Bureau of Statistics (ABS) and by the Bureau of Meteorology (BoM). The ABS has so far produced three editions of the Water Account, Australia (ABS 2000, 2004, 2006), with the 4th edition expected in December 2010. At present the ABS accounts are produced four yearly, but the plan is for them to be produced annually from 2011. The data presented in the ABS is for the country as a whole as well as for each of the eight states and territories. The ABS has also prepared water accounts for the Murray-Darling Basin. The BoM has so far produced a pilot national account for seven regions of Australia (BoM 2010), with additional regions expected to be added over time.

The water accounts produced by the ABS and BoM are conceptually aligned with the SEEA-Water but are presented in form different to the standard tables of the SEEA-Water. The ABS water accounts are like the physical and monetary supply and use tables, while those of the BoM are like the asset account. Data from the ABS water account has been placed in the SEEA-W standard physical supple and use table (see Table 2), while the data from the BoM pilot account has been placed in the asset account (see Table 3). These tables are not the official work of either the ABS or BoM but are the authors interpretation of the data from these organizations and how they fit into the SEEA-Water framework.

Table 2 ABS Physical Supply and Use Table in SEEA-Water format

Use table 2004-05		Industries (by ISIC categories)							Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38,39, 45-99	Total			
From the environment	**1 - Total abstraction** (=1.a+1.b = 1.i+1.ii)	6977	775	60172	11160	0	467	79551	232		79783
	1.a Abstraction for own use	6977	775	60172		0	467	68391	232		68623
	1.b Abstraction for distribution				11160			11160			11160
	1.i From water resources:							0			0
	1.i.1 Surface water				10712			0			0
	1.i.2 Groundwater				448			0			0
	1.i.3 Soil water[1]							0			0
	1.ii From other sources							0			0
	1.ii.1 Collection of precipitation							0			0
	1.ii.2 Abstraction from the sea (desalination)				<1			0			0
Within the economy	**2. Use of water received from other economic units**	5609	474	121	39	2234	122	8599	1876		10475
3. **Total use of water** (=1+2)		12586	1249	60293	11199	2234	589	88150	2108	0	90258

Supply table 2004-05		Industries (by ISIC categories)							Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38,39, 45-99	Total			
Within the economy	**4. Supply of water to other economic units**		25	162	5942	425		6554			6554
	of which:										0
	4.a Reused water		2	7		425		434			434
	4.b Wastewater to sewerage	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		2234
To the environment	**5. Total returns** (= 5.a+5.b)	0	721	59924	47	1809	0	62501	0		62501
	5.a To water resources	0	721	59924	47	1809	0	62501	0		62501
	5.a.1 Surface water			59924		553					0
	5.a.2 Groundwater					23					0
	5.a.3 Soil water										0
	5.b To other sources (for example sea water)					1231					0
6. Total supply of water (= 4+5)		0	746	60086	5989	2234	0	69055	0	0	69055
7. Consumption (3-6)		12586	503	207	5210	0	589	19095	2108	0	21203

[1] soil water not included in ABS water accounts to date

n.a = not available

Table 3 BoM Face Statement for Namoi-Peel Catchment in SEEA-Water Asset Account format

Namoi-Peel							Megalitres
	EA.131 Surface water						
	EA.1311 Artificial reservoirs	EA.1312 Lakes	EA.1313 Rivers	EA.1314 Snow, Ice and Glaciers	EA.132 Groundwater	EA.133 Soil water	Total
1. Opening Stocks - 2007	125,936		3,114		7,530,612	6,984,154	14,643,816
Increases in stocks	669,710	0	0	0	76,860	28,378,940	29,125,510
2. Returns							0
3. Precipitation	668,017					28,378,940	29,046,957
4. Inflows							0
4.a. from upstream territories					15,282		15,282
4.b. from other resources in the territory	1,693				61,578		63,271
Decreases in stocks	521,882	0	83,549	0	74,253	25,010,546	25,690,230
5. Abstraction	60,594				60,656		121,250
6. Evaporation/Actual evapotranspiration	440,380					24,969,876	25,410,256
7. Outflows							0
7.a. to downstream territories					13,597		13,597
7.b. to the sea							0
7.c. to other resources in the territory	20,908		83,549			40,670	145,127
8. Other changes in volume	-32,560		82,192		0	-3,359,812	-3,310,180
9. Closing Stocks - 2008	241,204		1,757		7,533,219	6,992,736	14,768,916

Note: Grey cells indicate non relevant or zero entries by definition in the SEEA-Water

4.2 China

[To be in added in consultation with China]

4.3 Mexico

The National Water Commission of Mexico (CONAGUA) has developed the National Water Information System (SINA), which is defined in the National Water Law as a basic tool for water policy design and evaluation. The SINA is based on the information related to water that is produced by the different areas of CONAGUA and other government agencies in Mexico. A partnership between the different data producers is essential for the SINA, and in particular the partnership between CONAGUA and the national statistics office of Mexico (INEGI). The SEEA-Water and the IRWS have provided the framework for organising the information in SINA.

Preliminary physical use and supply tables have been prepared for Mexico for 2006 (Table 5). The tables are based on the SEEA-Water standard tables, but the industry breakdown has been simplified and soil water is omitted in this preliminary version. The tables were prepared jointly by CONAGUA and INEGI. The tables show all the flows of water within the economy and this information can now be combined with information on economic output, production and use to generate SEEA-Water hybrid tables, which in turn can be used to derive economic indicators such as water productivity.

The data used to produce the physical supply and use tables came from a range of sources and the tables are being prepared for the years 2001 through 2008 to try to identify trends over this time. The construction of the tables helped to identify specific data gaps and data deficiencies and this was then used to design a data collection strategy to improve the quality of future accounts. A similar approach to identifying data gaps and data deficiencies is being used in the preparation of the other SEEA-Water standard tables (for example the asset account and hybrid account).

In addition to national physical supply and use tables, tables are also being prepared for specific regions of the country, such as the Lake Chapala region, a highly water stressed area of the country. The production of sub-national accounts is particularly important for Mexico given the widely varying climate (that is very dry in the north and very wet in the south) and the location of various activities (some parts of Mexico, such as the area around Mexico City, are more industrialised than others).

Table 5 Preliminary Mexico SEEA-Water physical supply and use tables

Physical use table

		ISIC Classification							
		1-3	3, 38-99	35		36	37		
		Agriculture, livestock and aquaculture	Industry and services	Thermoelectricity	Hydroelectricity	Public water supply	Sewerage	Households	Total
from the environment	**1. Total abstractions**	**59 400**	**2 971**	**4 209**	**140 295**	**10 665**	**2 589**	**38**	**220 168**
	1.a Abstractions for own use	59 400	2 971	4 209	140 295			38	206 914
	1.b Abstraction for distribution					10 665			10 665
	1.i From water resources	**59 400**	**2 971**	**4 209**	**140 295**	**10 665**		**38**	**217 579**
	1.i.1 Surface water	39 720	1 606	3 751	140 295	3 877		14	189 262
	1.i.2 Groundwater	19 680	1 366	458		6 788		25	28 317
	1.i.i. From other sources						**2 589**		**2 589**
	1.i.i.1 Stormwater						2 589		2 589
Within the economy	**2. Use of water received from other economic units**	**4 124**	**1 488**	**62**	**0**	**0**	**3 902**	**4 290**	**13 866**
	3. Total water use (=1+2)	**63 524**	**4 459**	**4 272**	**140 295**	**10 665**	**6 491**	**4 328**	**234 034**

Physical supply table

		Clasificación ISIC							
		1-3	3, 38-99	35		36	37		
		Agriculture, livestock and aquaculture	Industry and services	Thermoelectricity	Hydroelectricity	Public water supply	Sewerage	Households	Total
Within the economy	**4. Supply of water to other economic untis, of which:**	**0**	**1 797**	**0**	**0**	**5 228**	**3 379**	**3 463**	**13 866**
	4.a Reused water		1 357				3 379		4 737
	4.b Wastewater to sewerage		439					3 463	3 902
To the environment	**5. Total returns**	**36 317**	**2 139**	**4 058**	**140 295**	**5 438**	**3 112**	**187**	**191 546**
	Losses	21 559				5 438			26 996
	Treated wastewater		874				2 346		3 220
	Untreated wastewater	14 758	1 266	4 058			765		20 847
	6. Total supply of water (=4+5)	**36 317**	**3 936**	**4 058**	**140 295**	**10 665**	**6 491**	**3 650**	**205 412**
	7. Consumption (=3-6)	**27 207**	**523**	**214**	**0**	**0**	**0**	**678**	**28 622**

4.4 Netherlands

[To be added in consultation with CBS]

5. The way forward

The Global Assessment identified the factors impeding the compilation of water accounts. The two most common impeding factors were data availability (74%) and data quality (55%). The availability and quality of the data used to populate the accounting tables is a fundamental concern. While countries will often some of the data needed for the accounts, no country has access to all of the data needed to produce the full suite of accounts. As such the countries producing accounts rely on a range of estimation methods to populate particular cells in the tables produced. In some cases data may exist but the agency or agencies producing the accounts may not be able to access the data for legal, administrative or technical reasons.

There were differences between developed and developing regions. For example, the countries from developing regions also identified the lack of compilation guidance material (50%) as an impeding factor, while data availability (81%) and data quality (63%) were more significant concerns in developing regions than in developed regions.

One of the main challenges in the production of water accounts is the large number of agencies and the diverse range of professional disciplines (for example physical water scientists, economists, engineers, statisticians, and so on) that are involved in their production. This makes the legal and institutional frameworks, coordination and cooperation among different agencies a key for the success and sustainability of the water data collection and water accounting programmes in countries.

The growth in the number of countries producing water accounts may be attributed to the pressing need for integrated environmental and economic information as well as the adoption on the SEEA-Water as an interim international statistical standard by the UN Statistical Commission in 2007[11].

Continued growth in the implementation of SEEA-Water can be expected when international agencies, and especially UN agencies, OECD and Eurostat, begin to use the SEEAW for the collection, compilation

[11] Report of the 38th Session of the UN Statistical Commission (2007): http://unstats.un.org/unsd/statcom/doc07/Report-English.pdf

and dissemination of water statistics. In addition, with the completion of the IRWS[12], countries will have access to more of the information needed to compile the accounts.

A critical factor for successful compilation and use of water accounts in countries will be ability of national statistical offices and water agencies of countries to work together in order to produce an integrated data system for water covering both the economic and environmental aspects of water.

Further growth in the use of water accounts can be expected as the compilers of accounts gain more experience with the theoretical framework and practical aspects of producing the accounts and as water managers and policy developers become familiar with the structure of the accounts and how they can be used in analyses at the regional and country levels.

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Annex I: Countries compiling or planning to compile Water Accounts

Responding countries	Economy regions	Economy grouping	Geographical grouping	Countries with or planning water accounts (see footnotes)
Andorra	Developed Region	Developed economy	Europe and Northern America	Yes
Armenia	Developing Region	Transition economy	Western Asia	Planning
Australia	Developed Region	Developed economy	Central, Eastern, Southern South-Eastern Asia and Oceania	Yes
Austria	Developed Region	Developed economy	Europe and Northern America	Yes
Bahamas	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Bahrain			Western Asia	Yes[1]
Botswana	Developing Region	Developing economy	Africa	Yes
Brazil	Developing Region	Developing economy	Latin America and the Caribbean	Yes[1]
Canada	Developed Region	Developed economy	Europe and Northern America	Yes
China	Developing Region	Developing economy	Central, Eastern, Southern South-Eastern Asia and Oceania	Yes
Colombia	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Denmark	Developed Region	Developed economy	Europe and Northern America	Yes
Dominican Republic	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Egypt	Developing Region	Developing economy	Africa	Yes
Estonia	Developed Region	Developed economy	Europe and Northern America	Planning
France	Developed Region	Developed economy	Europe and Northern America	Yes
Germany	Developed Region	Developed economy	Europe and Northern America	Yes
Greece	Developed Region	Developed economy	Europe and Northern America	Planning
Guatemala	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Hungary	Developed Region	Developed economy	Europe and Northern America	Yes
Iraq	Developing Region	Developing economy	Western Asia	Yes
Israel	Developing Region	Developing economy	Western Asia	Yes
Italy	Developed Region	Developed economy	Europe and Northern America	Yes
Jordan	Developing Region	Developing economy	Western Asia	Yes
Lebanon	Developing Region	Developing economy	Western Asia	Planning
Mauritius	Developing Region	Developing economy	Africa	Planning

Responding countries	Economy regions	Economy grouping	Geographical grouping	Countries with or planning water accounts (see footnotes)
Mexico	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Namibia	Developing Region	Developing economy	Africa	Yes
Netherlands	Developed Region	Developed economy	Europe and Northern America	Yes
New Zealand	Developed Region	Developed economy	Central, Eastern, Southern South-Eastern Asia and Oceania	Yes
Norway	Developed Region	Developed economy	Europe and Northern America	Planning
Occupied Palestinian Territory	Developing Region	Developing economy	Western Asia	Planning
Oman			Western Asia	Yes[1]
Panama			Latin America and the Caribbean	Yes[1]
Peru	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Philippines	Developing Region	Developing economy	Central, Eastern, Southern South-Eastern Asia and Oceania	Yes
Portugal	Developed Region	Developed economy	Europe and Northern America	Yes
Romania	Developed Region	Transition economy	Europe and Northern America	Planning
Singapore	Developing Region	Developing economy	Central, Eastern, Southern South-Eastern Asia and Oceania	Yes
South Africa	Developing Region	Developing economy	Africa	Yes
Spain	Developed Region	Developed economy	Europe and Northern America	Yes
Sweden	Developed Region	Developed economy	Europe and Northern America	Yes
Switzerland	Developed Region	Developed economy	Europe and Northern America	Yes
Trinidad and Tobago	Developing Region	Developing economy	Latin America and the Caribbean	Yes
Tunisia	Developing Region	Developing economy	Africa	Planning
Turkey	Developing Region	Developing economy	Western Asia	Planning
Ukraine	Developed Region	Transition economy	Europe and Northern America	Yes
United Kingdom	Developed Region	Developed economy	Europe and Northern America	Planning

Yes[1] = Country has started post the conduction of the Global Assessment of Water Statistics and Water Accounts in 2008

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