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IMPLEMENTATION OF THE SYSTEM OF ENVIRONMENTAL ECONOMIC ACCOUNTING FOR WATER

Paper prepared by UNSD

(for discussion)

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Progress report prepared by UNSD

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A. Introduction

1. At its 38th Session in March 2007, the UN Statistical Commission (UNSC) adopted the *System of Environmental-Economic Accounting for Water* (SEEAW) as an interim international statistical standard and recommended its implementation in countries.[1]

2. In response to the request by the Statistical Commission, UNSD prepared an implementation strategy based on extensive consultation with countries and discussions at several international meetings.[2] A summary of the implementation strategy was presented in the Report of the Committee of Experts on Environmental-Economic Accounting to the UNSC at its 39th Session in February 2008.[3]

3. To obtain an in-depth understanding of country practices and issues with implementation and how they may be addressed, the UNSD undertook a Global Assessment of Water Statistics and Water Accounts. The full report is available on the web[4] and the main findings are summarised in Section B.

4. The SEEAW implementation strategy identified four areas of activity:

- Development of International Recommendations for Water Statistics (IRWS), accompanied by guidelines on data collection and compilation material (the status of which is reported in Section C)
- Development of training and promotion material
- Development of a technical cooperation programme consisting of regional activities as well as pilot projects in selected countries in various regions

[1] Statistical Commission Report on the thirty-eighth session (27 February to 2 March 2007) Economic and Social Council Official Records 2007 Supplement N. 4 (E/2007/24 E/CN.3/2007/30).
[2] Meetings that discussed the SEEAW implementation strategy included the Second Meeting of the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA) (Minutes of Second Meeting of the UNCEEA, 5-6 July 2007), the 11th meeting of the London Group on Environmental Accounting (Pretoria, 26-30 March 2007) and six training workshops or training programmes on water accounting held during 2007.
[3] E/CN.3/2008/25.
[4] Report on the Global Assessment of Water Statistics and Water accounts: http://unstats.un.org/unsd/statcom/doc09/BG-WaterAccounts.pdf

- Harmonisation of international data collection activities with the SEEAW concepts and definitions.

5. The purposes of this paper are to: report on the progress with SEEAW implementation around the world; identify the main factors impeding adoption, and; suggest a way forward. While significant progress has been made in the adoption and implementation of the SEEAW, it is clear that there are many challenges facing countries and international organisations in the collection and compilation of basic water data and that greater coordination of activity is required at the country and international levels.

B. Global Assessment of Water Statistics and Water Accounts

6. The Global Assessment of Water Statistics and Water Accounts was conducted in 2008, and the results were reported in February 2009 to the 40th Session of the United Nations Statistical Commission (UNSC). The paragraphs that follow briefly summarise some of the key findings of the report, which is also provided as a background document for the meeting.

7. The assessment had four objectives: (a) to obtain an in-depth understanding of country practices in the compilation of water statistics and accounts; (b) to assess the use of the System of Environmental-Economic Accounting for Water (SEEAW), (c) to support the preparation of the International Recommendations for Water Statistics (IRWS) and; (d) to assist with the development of targeted technical cooperation activities in these areas. The assessment successfully collected information from 61 countries relating to all four objectives. It also confirmed that water issues are important or very important for a large percentage of the responding countries.

8. Water statistics and water accounts are collected or compiled by the national statistical offices (NSOs) and a range of other government agencies. The results and conclusions of the assessment are mainly related to the NSOs as they constituted the majority of respondents (47 of the 64 responses[5]).

9. An increasing number of countries are producing water accounts and implementing the SEEAW. The results of Phase I of the Global Assessment of Environment Statistics[6] and Environmental-Economic Accounting conducted in 2006 indicated that 22 countries were compiling water accounts and a further 8 had plans to develop them. At that time (2006) the SEEAW existed only in draft form. Two years later (2008), when the assessment for water was conducted 33 countries were compiling water accounts and a further 11 had plans to implement them in the next two years (see annex). Furthermore, 17 were using the SEEAW as the reference material for their compilation. It is interesting to note that almost as many countries use the SEEAW for water statistics (15 countries) as do for water accounts.

10. In addition, of the countries that now have water accounts, 20 intend to either improve the quality of the accounts already compiled or to start producing different types

[5] Note that there were three countries where two agencies responded, so while there are 64 responses, they represent 61 countries.
[6] Global Assessment of Environmental Statistics and Environmental Economic Accounting (2007): http://unstats.un.org/unsd/statcom/doc07/Analysis_SC.pdf

of accounts. These are clear indications that the water accounts are relevant for countries and the SEEAW provides useful material for countries that want to strengthen or start the implementation.

11. In terms of geographic coverage, compared to other regions, few countries from Africa, Asia and Oceania produce or plan to produce water accounts, even thought it appears that many could benefit from them. In particular, for addressing policy issues such as water scarcity, efficiency, allocation and pricing.

12. Legal frameworks or other instruments related to water management and statistics exist in all the 61 responding countries and the majority of countries report cooperation with other agencies in the production of water statistics (88%) and accounts (68%). Despite this, the lack of cooperation or lack of data sharing were identified as an issue in 32% of countries for water accounts and 56% of countries for water statistics. Data are often dispersed in various agencies which collect information for their own purposes to derive sector-specific indicators (e.g. agricultural agencies collect information on irrigation water, water ministries collect information to construct water balances, etc.). This practice often leads to significant gaps and duplication of data collection activity.

Conclusions from global assessment

13. The rapid growth in the number of countries producing water accounts may be attributed to the adoption on the SEEAW as an interim international standard by the United Nations Statistical Commission in 2007[7] and its encouragement to implement it in countries. The subsequent implementation plan carried out by UNSD, under the auspices of the UNCEEA[8] involving regional training workshops, in-country technical assistance and cooperation with existing regional programmes on water statistics and accounting, has had a positive impact on the implementation and strengthening of the water statistics and accounts programmes in countries.

14. Perhaps the greatest challenge in the production of water accounts is the large number of agencies and the diverse range of professional disciplines (e.g. physical water scientists, economists, statisticians) that are needed for their production. This makes the legal and institutional arrangements, coordination and cooperation among different agencies a key for the success and sustainability of water accounting programmes in countries.

15. It is also apparent from the global assessment and through the UNSD experience with the implementation of SEEAW and the development of the IRWS, that strong leadership is needed to implement the accounts and in most cases (53%) this has come from an NSO. Even in the countries where the NSOs are not the lead agency in water accounts they are important players for a number of reasons:

- They are often the source of the national accounts data which is essential to the production of many of the SEEAW standard accounting tables, and especially the

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

[8] Report of the UN Committee of Experts on Environmental-Economic Accounting (2008): http://unstats.un.org/unsd/statcom/doc08/2008-25-EnvEcoAccounting-E.pdf

tables from which the economic indicators are derived (e.g. those of water productivity - industry valued added per cubic metre of water use).

- They usually collect data on water abstraction, treatment and distribution through household and business surveys.
- They can bring together the various stakeholders and help to ensure the commitment to the development and implementation of a multipurpose integrated information system (i.e. the SEEAW) in countries, to meet the wide variety of users needs. Making better use of existing resources would help to address problems with data availability and data quality, which were the main impeding factors for the compilation of water statistics and accounts in countries. The NSOs can lead the development of a data collection strategy to improve and further develop the water statistics and accounts programme in countries.
- They assist in the process of harmonizing definitions and classifications related to water and ensure their harmonization with those used in economic statistics.

16. Continued growth in the implementation of SEEAW can be expected as countries and international agencies become more familiar of the SEEAW. This will require a continuation of the technical assistance programme as well as promotion. As more international agencies, and especially UN agencies (including the World Water Assessment Programme and FAO), OECD and Eurostat, begin to use the SEEAW for the collection, compilation and dissemination of water statistics, then the benefits of the system should be easier to demonstrate with real data . However, even when the SEEAW is used by countries and regional or international agencies, the fundamental issue of data availability will remain in many countries.

C. Progress of work on implementation

International Recommendations for Water Statistics

17. The content and process for the development of the IRWS was discussed in June 2008 at the 3rd Meeting of UNCEEA[9]. The IRWS is organized into two parts, with Part I, forming the international recommendations and Part II providing guidance on the collection and compilation of the water statistics. The structure of the IRWS is:

Part I

- Chapter I – Introduction
- Chapter II – Main concepts and frameworks
- Chapter III – Statistical units and classifications
- Chapter IV – Data items

Part 2

- Chapter V – Data collection strategy

[9] International Recommendations for Water Statistics: Process leading to the publication UNCEEA/3/19: http://unstats.un.org/unsd/envaccounting/ceea/meetings/UNCEEA_3_19.pdf

- Chapter VI – Data sources and methods
- Chapter VII – Metadata and data quality
- Chapter VIII – Data dissemination
- Chapter IX – Indicators

18. As part of this process of development a reference group provided comments on an initial draft of Part I of the IRWS during July and August 2008. A revised draft of Part I plus most of Part II (Chapters VII and VIII were not available) were the subject of an Expert Group Meeting held in New York, 5-7 November 2008. A template for comments was provided to focus discussion on the substantive issues.

19. The review and conclusions of the Expert Group Meeting[10] plus follow-up discussions identified three key issues for resolution, namely:

- Terminology and definitions surrounding wastewater
- Inclusion of stocks of soil water in the recommended list of data items
- Recording of the water in artificial reservoirs as part of the environment (not the economy)

20. With the assistance of others, UNSD prepared brief papers on the first two issues and circulated them for discussion as well as a paper on the issue concerning artificial reservoirs that was presented to the London Group in April 2009. Based on the responses and discussions to these documents, UNSD has re-drafted the sections on these issues in Part I, which is now complete, although there was not unanimous agreement on the issue of soil water.

21. Other issues were identified and resolved during the review process. For example:

- Alignment of the monetary data items with the International Recommendations for Industry Statistics
- Use of term economic units to denote establishments and households
- For aquifers, the differentiation between the concepts of: renewable/non-renewable; sustainable/unsustainable, and; confined/unconfined

22. A new draft of Part II will be available for review by the Expert Group over July and August 2009. The comments from the review will be addressed in September and the complete document should be available for a period of worldwide review beginning in October. The results of the review plus the draft will be submitted to the Bureau of UNCEEA for transmission to the Statistical Commission in 2010.

Technical cooperation and promotion

23. In addition to the development of the IRWS, the UNSD in collaboration with a range of partners (countries, regional and international agencies) has undertaken a range of activities to assist countries implement the SEEAW and to make others aware of the SEEAW. Since the adoption of the SEEAW in 2007 the UNSD has conducted six

[10] Final Report of the EGM on the IRWS: http://unstats.un.org/unsd/envaccounting/irws/egm2008/ac170-8.pdf

regional workshops, contributed via video link to two others as well as provided 11 missions to countries. In addition, 3 delegations have visited New York for training. A list of these activities is found in Annex I.

24. As part of the technical cooperation programme a range of materials, including presentations, country experiences, and exercises have been developed to explain the key concepts of the SEEAW and the data sources and methods which can be used to populate the standards tables. Many of these materials are currently available on the web on the pages of the individual workshops. Many of the materials have been used by others in workshops or when assisting countries (e.g. as part of the Med Stat II statistical capacity building programme of the EU).

25. SEEAW has been promoted at a range of events. The most notable was the 5th World Water Forum held in Istanbul, Turkey March 2009. The Forum is held every three years and in this case was attended by more than 20,000 delegates. The UNSD in partnership with the World Meteorological Organisation (WMO) and the International Association of Hydrological Sciences (IAHS) organised four sessions under the banner of "Data for All". UNSD created a web page to host material for these four sessions[11], which were:

- 6.4.1 Data needs and data acquisition
- 6.4.2 Data integration and dissemination
- 6.4.3 Barriers to data availability
- 6.4.4 Action to ensure data for all

26. A diversity of organisations contributed to the sessions (see Annex II) and the quality of the presentations and discussion was very high. The sessions were attended by approximately 200 people. The UNSD co-chaired session 6.4.2 with the National Water Commission of Mexico (CONAGUA).

27. In addition to the 5th World Water Forum, the SEEAW was promoted through a range of other activities including:

- Learning centres conducted at the UN Statistical Commission in February 2009 and at the Commission of Sustainable Development in May 2009. In both cases participants were introduced to the main concepts of water accounting and provided with a range of examples and country experiences to illustrate the implementation and application of the accounts in countries.
- In regional workshops on environment statistics (e.g. ECLAC)
- Participation in the World Water Assessment Programme Expert Group on Indicators, Monitoring and Databases
- Participation in the UN Water Task Force on Indicators

[11] Data for All sessions of the 5th World Water Forum: http://unstats.un.org/unsd/envaccounting/workshops/wwf2009/lod.htm

- Liaison with countries, regional and international agencies (e.g. ESCWA, ECLAC, Global Water Partnership, IGRAC, UNESCO, UNICEF, WMO, WHO, UNDP, World Bank)

D. Issues in implementation

28. While the SEEAW has been recognised as useful by many countries, regional commissions and international agencies, a number of factors have impeded its adoption and use. The following issues have been identified:

- Lack of knowledge and understanding of the SEEAW by the users and producers of water statistics
- Institutional arrangements
- Data availability

Lack of knowledge and understanding of the SEEAW

29. The SEEAW, and water accounting in general, are relatively new, not well known and poorly understood. As such both the users and producers of water statistics have over estimated its complexity and the resources needed to implement the SEEAW. The Global Assessment of Water Statistics and Water Accounts and UNSD experience with workshops and training missions have generally found that once explained the key concepts are readily understood and that many countries already have much of the information they need to populate some of the accounts. In particular the physical supply ad use tables and asset accounts have been populated very rapidly by several countries, for example China, the Dominican Republic, Jordan, Mexico and Turkey.

Institutional arrangements

30. In every country a large number of agencies are involved in the management of water and the production of information. Within countries large number of agencies have data that are needed for the accounts. However, in virtually all countries coordination between agencies is not ideal and there are legal, institutional, technological and other barriers to bring the data together. The problem is made more difficult because of the number of profession disciplines involved in creating and using water data (accountants, engineers, scientists, economists, statisticians, social scientists, etc) and each of these have their own history, terminology and analytical frameworks.

31. One of the challenges of the SEEAW, which is also its strength, is that it is integrating framework and thus requires that many institutions work together to produce the accounts. This means that agencies cannot work independently (in “stove pipes”) to produce the accounts.

32. SEEAW provides a reason to bring institutions together and for data from different sources to be compared. This provides several benefits: available data can be checked; value can be added to specific datasets; missing data can be identified, and; provides a framework for agencies to work together to develop a strategy to address key information deficiencies.

Data availability

33. Perhaps the most difficult issue to address is that of data availability. This has been raised as a critical area not just for the SEEAW implementation but also in many other conferences, meetings and documents. For example, at the 5th World Water Forum and in the 3rd World Water Development Report.

34. Session 6.4.2 of the 5th World Water Forum concluded:

> *"The lack of integrated water related data is re-affirmed as a systemic impediment for informed decision making related to the sustainable use of water resources. Progress has been hampered by a range of factors, including a lack of an overarching framework for data integration and lack of effective institutional and legal arrangements for data collection, integration and dissemination.*
>
> *The SEEA-Water promises a way forward. The SEEA- Water is an internationally agreed accounting framework adopted by the United Nations Statistical Commission in 2007. The SEEA-Water is based on the existing, well established system of national accounts and is linked to hydrological systems.*
>
> *What is needed are the enabling legal and institutional arrangements to collect, integrate and disseminate data. This requires strong leadership at the country and international levels."*

35. The 3rd World Water Development Report[12] released in March 2009 highlights the problems with water data in many places, but in particular in chapters: 13 Bridging the Observation Gap; 16 The Way Forward, and; the appendix on indicators. To quote from Chapter 16 (p. 294):

> *"Data on water resources – where the water is, where and how it flows – are essential for understanding these global changes. Yet the necessary data are not being collected. As the need for information is increasing, attention to collecting environmental data is waning, even though technologies for collecting data, democratizing data access and gathering are becoming more affordable. We must invest in these technologies and in often-neglected local data-gathering systems to enhance our common understanding of water systems, water resources and water management.*
>
> *Equally important is information about how much water is being used, by whom and for what purposes, the ability and willingness of water users to pay, cost recovery rates and the investments needed"*

36. Other reports also explicitly identify problems with data availability issue. For example:

- EEA Water Resources Across Europe[13]
- OECD Managing Water for All: An OECD perspective on pricing and financing[14].
- WHO Global Annual Assessment of Drinking Water and Sanitation (GLAAS)[15]

[12] See http://webworld.unesco.org/water/wwap/wwdr/wwdr3/tableofcontents.shtml
[13] See http://www.eea.europa.eu/publications/water-resources-across-europe/at_download/file
[14] See http://oberon.sourceoecd.org/vl=10056620/cl=42/nw=1/rpsv/~6674/v2009n2/s1/p1

- UN Water/FAO Water Monitoring: Mapping Existing Global Systems and Initiatives[16]
- Global Water Partnership 2008 Annual Report[17]

E. The way forward

37. While there has been substantial progress with the implementation of the SEEAW, problems with lack of understanding of the concepts and application of SEEAW and with data availability and data quality limit the ability of many countries to populate the standard tables. The problems of data availability and data quality are not unique to SEEAW and are related to the issue of coordination.

38. To address these issues the following activities are proposed. A key part of the proposed activities is the establishment of a network of water accounting and statistical experts to assist countries to implement the SEEAW. It is also proposed to establish a working group to help coordinate international activities related to water data, as well as to assist countries build capacity in the collection and reporting of basic water data.

Promotion

39. An important outcome of the promotional activities is that the SEEAW has been recognised within the water community as part of the way forward. However, the SEEAW needs to be continually promoted to countries, regional and international agencies. In particular, it needs to be brought to the attention of leaders in the field of water policy and decision making.

40. The UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB) is an example of such leaders. The UNSGAB is an independent body established in March 2004 by the United Nations Secretary-General, Mr. Kofi Annan, to give him advice as well as to galvanize action on water and sanitation issues. Chaired by His Royal Highness the Prince of the Netherlands, the Board is composed of a wide range of dignitaries, technical experts, and individuals with proven experience in providing inspiration, moving the machinery of government, as well as working with the media, the private sector and civil society.

41. In addition to promoting a basic awareness and understanding of the SEEAW, it is increasingly necessary to demonstrate its usefulness to policy makers, especially for specific issues. To address this need, it is proposed to develop a brief publication (20-30 pages) covering the main concepts of the SEEAW illustrated with country examples and link it to key policy issues such as climate change, water pricing, water efficiency and the MDGs. This would be developed by UNSD with assistance from two regional commissions (ESCWA and ECLAC) and would include country examples (e.g. Australia, China, The Netherlands and Mexico). It could be jointly published the WWAP, UNSD and regional agencies. It is expected that the publication be launched at the World Water Week (August 2010, Stockholm, Sweden).

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[15] See http://www.unwater.org/downloads/glaas_2008_pilot_finalreport.pdf
[16] See http://www.unwater.org/downloads/UNW_MONITORING_REPORT.pdf
[17] See http://www.gwpforum.org/gwp/library/GWPinAction2008_AnnualReport.pdf (p. 31)

42. As part of the preparation of this publication, UNSD would work in partnership with countries, regional and international agencies to use existing global data to produce some of the water accounts, and in particular the asset account and the physical supply and use tables, for a selection of countries. This experience could also be used to improve the current data collection activities (see below), and the results could also be verified by countries and be used to help improve basic statistical capacity of countries.

Training and network of water accounting experts

43. At present many countries are requesting assistance with the implementation of the accounts. To date this has been done via a variety of means including: the preparation of the IRWS; workshops; country missions; presentations at meetings and conferences, and; making materials available on the web.

44. The number of people able to provide assistance to countries, or explain the key concepts and uses of the SEEAW, needs to be expanded to meet the demands for assistance. The UNSD has worked with regional commissions (ESCWA and ECLAC), statistical capacity building programs (Med Stat II) and countries (Austria, Mexico, The Netherlands) to train country representatives and others in the implementation of the SEEAW. As a result of this regional several experts have emerged, but their number is limited and the UNSD and these experts are unable to meet all of the demand for assistance.

45. As such, it is proposed to establish a network of water accounting experts from countries, regional and international agencies that can be drawn upon to provide assistance when it is requested by countries, regional and international agencies. Furthermore, in order to increase the number of people with sufficient knowledge and experience to assist countries, it is proposed to develop a programme to train-the-trainers, particularly for experts in the water community. Areas that should be given more attention in the future training programmes are institutional arrangements and data sharing.

46. As part of this it is planned to prepare standard training modules for workshops and on-line materials to assist with SEEAW implementation. In addition, a knowledge-base platform, compiling country practices and methodological documents from regional and international agencies, will be developed. This platform will be in addition to the existing functions of the UNSD website, for example, the searchable archive of publications on environmental-economic accounts, which could be extended to water statistics. This platform or its underlying structure could also by regional commissions and others for organising training material and other information related to water statistics and accounts.

Certification

47. Several countries have requested certification, endorsement or approval of water accounts by the UNSD as part of the production process. At present no process exists for the certification of environmental account, but a process to address this issue could be considered and developed under the auspices of the Committee.

International data collections and data availability

48. There is a strong demand for global data on water. However, the water data available at the global level are very poor and in many cases the availability of data in countries is declining[18]. As such there is a need to re-assess the current processes used by regional and international agencies to collect and compile global statistics on water and to develop a strategy to improve the effectiveness of current activity. This is addressed in the paragraphs that follow and also in the next section "international coordination".

49. A range of agencies, including the UNSD, UNEP, OECD, Eurostat, EEA, FAO and others including the Global Run-off Data Centre and the International Groundwater Resources Assessment Centre, collect and compile water data from or about countries. These agencies often make estimates of data items based on models using, for example, remotely sensed data, historical data or data from near-by areas.

50. International questionnaires on water are conducted every two years by the UNSD/UNEP and OECD/Eurostat. The UNSD/UNEP questionnaire has a poor response rate and when there is a response the data that are supplied by many countries are incomplete. The data available from the OECD/Eurostat questionnaire are also incomplete.[19]

51. An analysis of the UNSD/UNEP and OECD/Eurostat Water questionnaires undertaken in relationship to the development of the IRWS shows that these questionnaires could be used to produce some of the SEEAW standard tables, chiefly the physical supply use and asset tables. In addition, relatively little work is needed to fully harmonised the existing questions with the SEEAW terms and definitions. However, much of the economic information related to water is not included the UNSD/UNEP and OECD/Eurostat water questionnaires and questions on these would need to be added to in order to produce the standard tables.

52. In addition to the UNSD/UNEP and OECD/Eurostat water questionnaires, other collections, such as the GLAAS, need to be examined for consistency with the SEEAW. If they are inconsistent then a process of harmonisation should be undertaken. In the short term, if necessary, this could include the production of bridge tables. The long term the goal should be full harmonisation with the SEEAW.

53. Furthermore, the existing regional and international data collections need to be examined to see if they can collectively be used to produce a more comprehensive suite of water data or fill gaps in existing datasets. For example, the data FAO or the Global Runoff Data Centre may be able to be used to populate the UNSD/UNEP water questionnaire.

International and regional coordination

54. As noted above, many countries, regional and international agencies are struggling to collect, integrate and disseminate the data needed for water management. Two key reasons for this are that: (1) the responsibilities for water data and water policy

[18] See 3rd World Water Development Report: http://webworld.unesco.org/water/wwap/wwdr/wwdr3/tableofcontents.shtml

[19] See Water Resources Across Europe: http://www.eea.europa.eu/publications/water-resources-across-europe/at_download/file

are spread across many agencies at the international, regional and country levels, and; (2) many countries do not have the human or financial resources or institutional arrangements needed to effectively collect, integrate and disseminate water data.

55. Some aspects of improving the availability of data for indicators have been the subject of two groups coordinated by the World Water Assessment Program. The first is the Expert Group on Indicators, Monitoring and Databases, chaired by Mr Mike Muller, and the second is the UN Water Task Force on Indicators, coordinated by Ms Domitille Vallee. Both groups report to the coordinator of the World Water Assessment Programme (Mr Olcay Unver). While these groups have focused mostly on identifying the data items that can be used in the short term for indicators in the World Water Development Report, they have also touched on the longer term needs to improve data in countries.

56. A third activity is the Global Annual Assessment of Sanitation and Drinking-Water (GLAAS)[20] which is a UN-Water pilot initiative coordinated by the World Health Organization (WHO). The GLAAS aims to strengthen evidence-based policy-making towards and beyond the Millennium Development Goals (MDGs) and the 2008 report presents the concept of a global, periodic, comprehensive reporting mechanism to inform policy-making in the sanitation and drinking-water sectors. However, the pilot study found many problems with the data. For example, it found that only 4 out 7 countries were able to provide disaggregated financial information for the water supply and sewerage industries.

57. What is needed is a mechanism to coordinate activity related to water data. It is proposed to establish a small working group under the auspices of the UNCEEA and World Water Assessment Program to help develop a strategy that encompasses the activities mentioned above (i.e. promotion, training, network of water accounting experts, certification, regional and international data collections, and data availability) and aims to:

- Strengthen the water data at country levels
- Coordinate and improve the regional and international activity relater to water data collection
- Ensure that the water data are regularly reported to regional and international agencies, through either an expansion of existing activities or through new initiatives, and that these data are available to a range of data users

58. This group could build on the World Water Assessment Program Expert Group, the UN Water Task Force and the UNSD Expert Group convened for the development of the IRWS as well as members of the expert group involved in the development of the SEEAW(a sub-group of the London Group on Environmental Accounting).

59. The resources needed to prepare and implement the strategy need to be considered. For the preparation of the strategy countries, regional and international agencies will need make available staff time. To implement the strategy significant

[20] The Global Annual Assessment of Sanitation and Drinking-Water
http://www.who.int/water_sanitation_health/glaas/en/

resources are likely to be needed if progress is to be made in many countries and funding options would need to be explored. If there is goodwill and support from countries, regional and international agencies then the strategy could be prepared relatively quickly, possibly before the end of 2009.

Conclusions on the way forward

60. International agencies and countries need to work together to raise awareness and understanding of the SEEAW as well as to develop the capacity of countries to produce the basic data needed to populate the accounts. Many countries will need technical and material support to implement the SEEAW and to develop the institutional arrangements and human resources necessary to ensure the sustainable collection and reporting of basic water data needed for the accounts and the management of water in general. In many countries this will require significant financial resources.

61. The problem of data availability is widely recognised and there appears to be a core group of countries, regional and international agencies willing to address the problem in a systematic fashion. However, there are no established processes for taking this issue forward. The establishment of a working group, building on the work of the World Water Assessment Programme Task Force and Expert Group as well as the UN Expert Group on Water Statistics and the London Group would be a first step towards creating such a process.

F. Questions to the UNCEEA

62. The Committee may wish to consider the following questions:

(1) Do you agree with the proposed way forward? In particular do you agree with the following activities:

- *a. Development of a publication promoting water accounts (para.40-41)*
- *b. Establishment of network of water accounting experts (para. 44)*
- c. *Development of standardised training modules and programme of train-the-trainers(para. 44 -45)*
- *d. Development of a process for the certification of water accounts and environmental accounts in general (para. 46)*

(2) Do you agree that the regional and international data collection activities should be reviewed and updated to provide better global data? (para. 47-52)

(3) Do you agree to the proposal to establish a working group consisting of countries regional and international agencies to help coordinate the collection and sharing of water data by regional and international agencies and assist in building basic statistical capacity in countries? (para. 56-58)

Annex I. List of regional workshop and other technical cooperation

Regional Water Accounting Workshops

- Luxemburg, February 2007
- Cairo, Egypt, June 2007
- Santo Domingo, Dominican Republic, July 2007
- Amman, Jordan, March 2008
- Beirut, Lebanon, August 2008
- Santiago, Chile, June 2009

Country missions on Water Accounting

- South Africa, March 2007
- Namibia, April 2007
- Jordan, June 2007
- Dominican Republic, July 2007
- China, August 2007
- Jordan, March 2008
- Dominican Republic, July 2008
- Lebanon, August 2008
- Oman, August-September 2008
- Mexico, December 2008
- Turkey, March 2009

Training in New York

- China – November 2006
- China – January 2008
- Guatemala – June 2009

Other activity

- London Group Meeting, Johannesburg, South Africa, March 2007
- UNENSC-IHE Training Course, The Netherlands, September 2007
- ECLAC Environmental Statistics Workshop, Havana, Cuba, May 2008)
- Learning Centre at the UN Statistical Commission, New York, USA, February 2009
- Learning Centre and the Commission for Sustainable Development, New York, USA, May 2007
- 5th World Water Forum, Istanbul, Turkey, March 2009
- 2nd Meeting of the World Water Assessment Program Expert Group on Indicators, Monitoring and Databases, Delft, The Netherlands, April 2009
- 3rd Meeting of the World Water Assessment Program Expert Group on Indicators, Monitoring and Databases, Copenhagen, Denmark, June 2009

Participation via video link

- EEA Workshop on Water Accounting, Paris, France, January 20099
- Med Stat II Workshop on Water Accounting, Vienna, Austria, March 2009

Annex II. 5th World Water Forum: Session Outcome Documents

Outcome Document

Session 6.4.2 Data Integration and dissemination

Background

The challenges are that:

- Data on almost every subject related to water is usually lacking, unreliable, incomplete or inconsistent.
- Collecting data is not enough. Data must be compiled, analysed and converted into information and knowledge
- Data and information needs to be shared widely within and between countries and stakeholders to focus attention on water problems at all scales.
- It is only when the data has been collected and analysed that we can properly understand the many systems that affect water (hydrological, socio-economic, financial, institutional and political alike), which have to be factored into water governance.

Data is needed on the environmental, economic and social aspects of water:

Environmental

- Volume of water available. E.g. as rain, surface water flows or stored in reservoirs, (renewable) groundwater, wetlands
- Water quality and water pollution (surface water and groundwater)

Economic

- Price and value of water
- Water supply and sewerage treatment industries
- Use in agriculture
- Use by other production processes (e.g. manufacturing, hydro-power, cooling)

Social

- MDGs, etc

Data from social, economic and environmental (hydrological) areas needs to be collected and integrated in order to provide comprehensive information to address important issues, such as:

- Integrated Water Resource Management
- Global changes
  - Population growth and migration,
  - Economic growth, clearing of forests
- Climate change
  - Adaptation to changes in availability of water resources

        - Impact on agriculture and other activities reliant on water
    - Economics of water
        - Water pricing and valuation in the absence of market prices
        - Water markets
        - Externalities
        - Economic efficiency and productivity of water supply and use
        - Water allocation
        - Investment in water supply and sewerage infrastructure
    - Maintaining environment quality

There are many institutions involved in the production and use of water data at the country level

- Ministries of Government for
    - Water supply and management
    - Environment
    - Agricultural
    - National statistical offices
    - Economics and national development
    - Geological (groundwater)
- Government agencies at other administrative levels, within countries (e.g. cities, provinces, states) and also groups of countries (e.g. UN, OECD, etc))
- Water supply and sewerage “companies”
- Universities and other research agencies
- International agencies

There are some difficulties with having so many institutions involved. All have systems for data for their own needs (e.g. to support administrative/management functions)

- Data are collected using different concepts and methods
- Data use different spatial boundaries (e.g. river basins, states/provinces)
- Difficult to assess if data is comprehensive / complete
- Some disincentives to cooperate or share data (e.g. the exposure of lack of progress against targets, inefficient use of resources, data is a source of revenue or power)
- Institutions may view each other with suspicion

There are many different professions or disciplines involved, for example hydrologist, engineers, scientists, economists, accountants, sociologists, politicians, etc.

- Different traditions, philosophies, viewpoints and imperatives
- Different vocabulary, definitions and interpretations of words

- Different concepts and methods
- Often view each other with suspicion

Because of the many data needs, the different institutions and professions involved data integration is difficult:

    - Between different information areas (e.g. economic, social and environment)
    - Across spatial and temporal scales
- Many concepts, frameworks and methods are used, some data exist but it is not complete and little data can be integrated or reliably compared over time
- Often confusion and misunderstanding of roles among data producers and data users

The solution is to use agreed frameworks and classifications. Many are in use, covering different aspects of water information:

Global

- World Water Assessment Program (WWAP) – environment, economic, and social
- Water Accounting (SEEA-Water) – environment and economic, some social
- Aquastat – hydrological and agricultural
- Millennium Development Goals (MDGs) – MICS/JMP, social (covered in session 6.2.1)
- UNEP – GEMS – water quality
- Flow Regimes from International Experimental and Network Data (FRIEND) – hydrological flows
- International Groundwater Resources Assessment Centre (IGRAC) – groundwater
- Global Runoff Data Centre (GRDC) – surface water

Regional approaches

- Water Environment Partnership Asia (WEPA) – water quality
- Water Framework Directive
    - Water Information System for Europe (WISE) – EEA and Eurostat – water quality and quantity

There is a new framework, the System of Environmental-Economic Accounting for Water (SEEA-Water), which promises a way forward

- Developed by the international statistical community and adopted as an international statistical standard in 2007 by the United Nations Statistics Commission

- Comprehensive coverage of the environmental and economic stocks and flows of water (monetary and physical). Water quality and integration of social dimensions not yet fully integrated
- A total of 44 countries are using or intending to use water accounting: it is already used by 33 countries and planned to be used in 11 more
    - Examples: Australia, Austria, China, Jordan, Lebanon and Mexico
    - Shown to be useful, particularly in water scare countries and those with concerns about water pollution and water quality

All frameworks need to be populated by data, and are only as good as the data within them.

- Basic data are generally collected by government agencies within countries
- These data are often supplemented by estimates based on a wide range of available data from within the country (e.g. from universities) or from near-by countries
- These data are assembled and used by a range on international agencies and research institutions

Overall conclusion

The lack of integrated water related data is re-affirmed as a systemic impediment for informed decision making related to the sustainable use of water resources.

Progress has been hampered by a range of factors, including a lack of an overarching framework for data integration and lack of effective institutional and legal arrangements for data collection, integration and dissemination.

The SEEA-Water promises a way forward. The SEEA-Water is an internationally agreed accounting framework adopted by the United Nations Statistical Commission in 2007. The SEEA-Water is based on the existing, well established system of national accounts and is linked to hydrological systems.

What is needed are the enabling legal and institutional arrangements to collect, integrate and disseminate data. This requires strong leadership at the country and international levels.

Recommendations

That the issues of data collection, integration and dissemination needs to be elevated on the agenda of next World Water Forum.

In the interim an on-going process should be established to address the issues of data collection, integration and dissemination. This requires a process for bringing together

hydrologists, economists, social scientists, statisticians, etc. and therefore the strengthening of the institutional processes to promote data sharing, the use of common standards and classification as well as the establishment of best practices (e.g. for metadata and data quality assessment). These processes need to involve countries and international organizations and all those institutions involved in the production and use of environmental (hydrological), economic and social data.

Countries need to develop strong legal and institutional arrangements to support data collection, data integration and dissemination. This includes establishing policies and procedures for the sharing of data and the development of metadata and quality assurance frameworks.

Countries need to increase the resources devoted to data collection, data integration and dissemination in countries, and where appropriate with assistance from the international donor community.

Proposals

It was agreed that the SEEA-Water provides a comprehensive framework for integrating economic and environmental data and that the current experience is promising. However, at present SEEA-Water is not widely known. As such there is a need for countries and international organizations to continue to work to promote the system and for additional countries to pilot the implementation of the SEEA-Water. Statistical capacity building and its funding should be scaled-up in developing countries to remedy data available and data quality and to promote the application of SEEA-Water.

It was also recognized that there was a need to further develop the SEEA-Water to more fully integrate social data and water quality. This could be done under the auspices of the United Nations Committee of Experts on Environmental Accounting and Environmental Statistics (UNCEEA).

It was recognized that there were numerous global web based hydrological and water quality databases. Some of these were already linked and exchanging information but the latest data dissemination and exchange technologies need to use for data sharing at the local, national and international levels.

Panelists

- Mr Ivo Havinga (United Nations Statistics Division)
- Mr José Ramón Ardavin (National Water Commission, Mexico)
- Mr Roberto Lenton. (Global Water Partnership & Water Supply and Sanitation Collaborative Council)
- Mr Pasquale Steduto (Food and Agricultural Organisation, Chair UN Water)
- Mr Mitsumasa Okada (Water Environment Partnership Asia, Ministry of Environment, Japan)
- Mr Rob Vertessy (Bureau of Meteorology, Australia)

- Mr Richard Connor (World Water Assessment Programme)
- Ms Wafa Aboul Hosn (UN Economic and Social Commission for West Asia)
- Mr Guozhi Du (Ministry of Water Resources, China)
- Mr Mauricio Cezar Rebello Cordeiro (National Water Agency, Brazil)
- Ms Sabrina Barker (United Nations Environment Programme)
- Ms Beate Werner (European Environment Agency, European Union)
- Mr Michael Nagy (Umweltbundesamt, Austria)
- Mr Seppo Rekolainen (Finnish Environment Institute – SYKE, Finland)
- Ms Cécile Roddier-Quefelec (Med Stat II, European Union)
- Ms Ghalia Hamamy (Central Administration for Statistics, Lebanon)
- Mr Mahmoud Alkhawalde, (Department of Statistics, Jordan)
- Mr Ulrich Looser (Global Runoff Data Centre, Institute of Hydrology, Germany)
- Ms Sophie Vermooten (International Groundwater Resources Assessment Centre, The Netherlands)

Contact details

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Session Outcome Document

Session N^{o}: 6.4.4
Session Title: Action to ensure data for all

1) Updated List of Session Conveners, Speakers and Panelists:

Session Conveners

- International Association of Hydrological Sciences
- United Nations Statistics Division
- World Meteorological Organisation

Session Chairs

- Mr Mike Muller (WWAP Expert Group on Monitoring, Indicators and Databases)
- Mr Rob Vertessy (Bureau of Meteorology, Australia)

Presenters

- Mr Hafzullah Aksoy (Istanbul Technical University, Turkey)
- Mr Michael Vardon (United Nations Statistics Division)
- Mr Mohamad Tawfik (World Meteorological Organisation)

Panelists

- Mr Gordon Young (International Association of Hydrological Sciences)
- Mr Ivo Havinga (United Nations Statistics Division)
- Ricardo Martinez (National Water Commission, Mexico)
- Mr. Bruce Stewart (World Meteorological Organisation)

2) Main Issues Discussed in the Session:

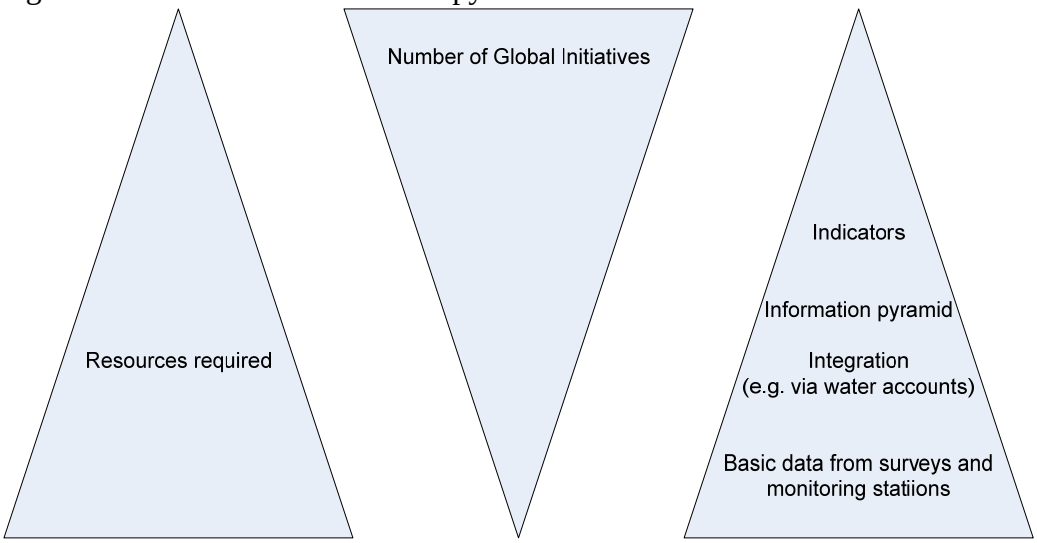
Session 6.4.4 summarised the discussion of the preceding three session, namely:

- 6.4.1 Data Needs and Data Acquisition
- 6.4.2 Data Integration and Dissemination
- 6.4.3 Barriers to Data Availability

3) Outcomes of the Session*:

In all sessions of the Data For All Topic (sessions 6.4.1 Data Needs and Data Acquisition, 6.4.2 Data Integration and Dissemination and 6.4.3 Barriers to Data Availability) there was a repeated message: the challenges faced in the water sector are growing but the data available to provide the information to guide and monitor water management and decision making is not. In many regions, data availability is decreasing. One particular problem was described as a series of inverted information pyramids, with a great deal of global activity at the top focused on the development and population of indicators, but that this was supported by a very narrow data base.

Figure 1. The inverted information pyramids



It was recognised that the lack of integrated water data was a systematic impediment to informed decision making related to the sustainable use of water resources. Data are needed to provide information not just about water quantity, both on the surface and underground, but also about its quality, socio and economic relations as well as other environmental dimensions.

It was noted that data provision and interpretation should be demand driven and reflect the needs of different disciplines and different users at different levels. What is needed are information programmes that are clearly specified, well designed and adequately funded. Priorities for information need to be established and hot spots recognised and the benefits from establishing priorities and identifying hot spots for information need to be better explained to decision makers and others using information.

There is a need for strong legal and institute arrangements in countries, encouraging cooperation and coordination between agencies with countries and between countries and other agencies using information. The role and contribution of the data suppliers should be recognised and they should receive systematic feedback.

There is a clear need to increase the resources devoted to for data collection, integration and dissemination and donors to recognise and these support these activities.

It was also agreed that these findings of the Topic Data for All should guide the existing work of UN Water, WWAP, UNCSD and the SEEA-W on national accounting systems and indicators and data. It was recognised that the SEEA-W offers a coherent and

valuable framework to support national data collection and is an important part of the way forward.
Finally, data collection, integration and dissemination must be elevated on the agenda at the next World Water Forum. There is a need for strong leadership to achieve this, and clear goals and timelines to support data for all need to be established by an ongoing process. This process should bring together hydrologists, economists, social scientists, statisticians, etc, to strengthen coordination and cooperation between countries and international agencies.

Please provide your name and contact information in case we need to clarify some of the information you have provided.

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