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REVIEW OF ACTION TAKEN IN THE FIELD OF WATER RESOURCES SINCE THE FIFTH SESSION OF THE COMMITTEE ON WATER RESOURCES

FOLLOW-UP OF IMPLEMENTATION OF THE RECOMMENDATIONS OF THE FIFTH SESSION OF THE COMMITTEE ON WATER RESOURCES

DRAFT STUDY ON BASIC WATER INDICATORS IN ESCWA MEMBER COUNTRIES

Summary

Pursuant to the recommendation issued by the fifth session of the Committee on Water Resources, a working group was established on basic water indicators for integrated water management in ESCWA member countries. This study is the outcome of the consultations conducted by the working group and is based on some 40 water indicators that have been gathered by ESCWA over the past several years from various countries of the region. It aims to review and evaluate the basic indicators that are currently being gathered by analysing the official data and information that have been summarized from the responses to a questionnaire specially prepared for the purpose, or from national reports presented at a variety of meetings with member countries.

The study consists of three main parts that deal with goals; the formulation and development of water indicators; and indicators relating to water resources in ESCWA member countries. It also contains a summary and recommendations. The importance of this activity at the regional level lies in the production of standardized indicators that are acceptable to all, thereby encouraging the interchange of data at the national and regional levels and facilitating the adoption of integrated water resource management procedures on the basis of the availability of sufficient and reliable data on available water resources and the economic, social, political and environmental aspects related to their use.

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Introduction

1. ESCWA continues to operate through the working groups established at the behest of the Committee on Water Resources, with a view to strengthening regional cooperation in implementing integrated water resource management programmes in the region. Pursuant to the recommendation made by the Committee on Water Resources at its fifth session, which was held in Beirut from 30 October to 1 November 2002, two working groups were established, the first of which is concerned with basic water indicators for integrated water management, while the second deals with water demand management in the ESCWA member countries. At the second consultative meeting of the latter working group, which was held in Manama on 11 and 12 February 2004, the importance was underlined of choosing and developing water indicators and providing a selection of the basic indicators that it has been decided the working group should prepare. Participants agreed that the relevant expert and the coordinator of the group should prepare a questionnaire in the light of the indicators currently available to ESCWA and send it to the representatives of all member countries, with a view to obtaining the most recent data for each country.

2. The improvement of water resource management in the ESCWA member countries is an enormous challenge, involving, as it does, not only the preservation of those resources for future generations, but also the future of development in those countries and the continuation of the economic and social gains that have been made to date. The water problem in the region lies in the sustained increase in demand caused by rapid population growth and increased levels of consumption in the various sectors at a time when ever more water is being pumped from non-renewable ground reservoirs and over-exploitation of available resources has severely depleted renewable surface and groundwater resources. The problem is exacerbated by the fact that in most countries of the region, there are very few of the precise data required in order to support the decision-making process and, as a result, decision makers and water experts in the region frequently lack the appropriate data and basic indicators needed in order to formulate sustainable development policies. It is therefore extremely important to translate the outcomes of the water resource evaluation into scientific and practical indicators and to formulate and develop water resource policies; identify goals; and monitor the performance of the parties responsible for management.

3. In the light of the foregoing, and in view of the pressing need for basic indicators for integrated water resource management, a working group of member countries was formed in order to prepare a study on the issue. The principal responsibility assigned to the group was to contribute to the formulation, development and updating of integrated water management indicators in the preparation of which member countries would be involved, agreeing specifications and procedure, thereby strengthening regional cooperation in that field. A further responsibility is the creation of a modern and reliable database on water resources at the national level, which would facilitate the formulation of appropriate water policies and the monitoring of their application as well as the identification of needs and future requirements. The importance of this work at the regional level lies in the production of standardized indicators that are acceptable to all and will both encourage the interchange of data at the national and regional levels and facilitate the adoption of integrated water resource management procedures based on sufficient and precise data on available water resources and the economic, social, political and environmental aspects related to the use of those resources.

I. THE GOALS OF THE STUDY

4. This study is based on some 40 water indicators gathered by ESCWA over the past few years from various countries in the region. The principal aim of the study was to update the data and link them to the basic indicators that were adopted by the United Nations World Water Development Report, Water for People, Water for Life. Specifically, the study aims to review and evaluate the basic indicators that are currently being gathered in the ESCWA member countries, by analysing the official data and information contained in the responses to the questionnaire that was specially prepared for the purpose and in the national reports that have been prepared in the course of a variety of meetings with member countries.

5. This document deals with the aims of the study, the formulation and development of water indicators and the indicators related to water resources in ESCWA member countries, and provides a summary and recommendations. Notwithstanding all the endeavours exerted by ESCWA and the member countries, the

indicators are being applied by using the data that were gathered by countries solely for the purpose of guidance, rather than in an absolute manner.

II. THE FORMULATION AND DEVELOPMENT OF WATER INDICATORS

6. There is no question but that the availability of precise and well-documented data is absolutely basic to and very important in the preparation and development of indicators, and that it is extremely difficult to achieve the desired aims in the absence of credible and reliable data from the relevant parties in member countries. It is also recognized that the scientific indicators based on such data give a realistic picture of the status of water resources in the region, albeit it is a little different from the reality, particularly with respect to the status of groundwater reservoirs. It is also well known that the economic and social statistics and data in the majority of countries constitute acknowledged and established indicators. However, that does not apply to statistics and indicators relating to water resources. It is therefore necessary to develop clearly-defined, simplified indicators that are easy to understand, in order to empower decision makers to formulate targeted policies, using reliable and well-documented sources of data that are closely related to the vision of development policy in each country.

A. THE PRINCIPAL CHALLENGES AND OBSTACLES

7. While water-related problems vary from country to country, in general, ESCWA member countries suffer from a scarcity of water and difficulties in applying integrated management procedures aimed at ensuring the sustainability of the available water resources. After consideration of the challenges and obstacles that must be dealt with in order to develop water indicators, it has become clear that they may be divided into three types, namely, challenges relating to the sources of water available, or the natural problems; those relating to resource use, or the social, economic and political issues; and challenges related to the identification and regulation of use, or the institutional and legal aspects of the issue. Set forth below is a brief review of the challenges.

1. *Challenges relating to natural problems*

8. Challenges relating to natural problems include the following:

(a) The difficulty of field work in most countries; the paucity of the material resources allocated to this work; and some officials' and decision makers' lack of understanding of the demands of field work are all matters that hinder the sustained provision of field data and precise statistics related to the quantity and quality of water, in groundwater reservoirs in particular, and lead in many cases to the lack of availability of basic data of the high quality necessary in order to identify and evaluate the surface and ground water resources at the national and regional levels with a view to formulating the relevant policies and work plans;

(b) Even when water data are available, the majority of national institutions responsible for the management of water resources lack the bases necessary to interpret, handle, store or control that data or to assign responsibility for the provision, review and handling of such data to the relevant parties and thereby ensure the participation of the pertinent bodies in the development and formulation of indicators;

(c) The lack of consistency between the data and indicators available in national institutions and the data that international organizations normally deal with, which may be ascribed to differences in the methodology employed in calculating those indicators or in their original sources.

2. *Challenges relating to social, economic and political issues*

9. Challenges relating to social, economic and political issues include the following:

(a) The lack of political stability and the occupation of certain countries in the region hinder the making of any perceptible progress in respect of the availability of the data required in order to develop the indicators;

(b) The scarcity of the financial resources necessary to cover the costs of developing and using modern collection, analysis and communication technologies;

(c) The lack of water-related awareness at all levels and the failure to include the water sector among the priorities of decision makers limits access to and the collection and analysis of all the necessary data;

(d) The insistence on considering water resource data and information as relevant to national security and therefore restricting access thereto;

(e) The social and political refusal to consider water as a consumer commodity, which restricts the use of economic indicators in managing water resources.

3. *Challenges relating to the institutional and legal aspects of the issue*

10. Challenges relating to the institutional and legal aspects of the issue include the following:

(a) Poor coordination and cooperation between central bureaux of statistics and the ministries and sectors working with water leads to the duplication of efforts and failure to circulate the data necessary to prepare indicators;

(b) The need for human and institutional capacity-building and the fact that the lack of continuity of training programmes or sound planning is counter-productive with regard to the accumulation of the expertise and information necessary to produce reliable, acceptable and scientific indicators;

(c) Poor coordination between United Nations organizations and the other regional and global bodies has led to a lack of agreement with regard to standardized indicators for adoption by both member countries and the aforementioned organizations.

B. THE NATURE OF WATER INDICATORS

11. Given the global exacerbation of water-related problems, the United Nations has concentrated its efforts in this field on the World Water Assessment Programme, in which 23 United Nations organizations are involved. The first report issued by the Programme contained 96 indicators relating to various aspects of water and its uses in sustainable development, of which 49 related to social, economic and political aspects, 39 to natural aspects and 8 to institutional and legal aspects. Albeit arrangements are currently being made for the publication of the second United Nations report on the development of world water, a complete picture has not yet emerged of the indicators that have been agreed upon: the first report recommended that some 67 additional indicators should be prepared. It is therefore clear that the process of selecting, developing and classifying water indicators is not simple and has economic, social, environmental and political implications that make it difficult to reach consensus on the nature of the indicators.

12. Furthermore, the Secretary-General of the United Nations, in his report to the Commission on Sustainable Development at its twelfth session, 14-30 April 2004 (E/CN.17/2004/17), referred to a list of seven problems that had been circulated to countries with a request to identify the three most difficult problem areas in the establishment of indicators of sustainable development at the national level. Of the 38 countries involved, 34 responded. The most commonly reported problem areas were basic data and/or statistics (quality and quantity), followed by training in methodologies relating to indicators of sustainable development and thirdly by financial resources. It should be noted here that the ESCWA region was only represented in that survey by two countries, neither of which cited any problem with regard to basic data and/or statistics (quality and quantity), whereas more than half of the other countries involved saw that as the most serious problem. Nevertheless, there remains a scarcity of basic data on water in the region and, at the same time, the awareness of the officials responsible of the size and severity of the problem remains insufficient.

C. THE METHODOLOGY OF INDICATOR SELECTION

13. This study was prepared in three stages, as set forth below:

(a) In the first stage, a comprehensive survey was conducted of the information available in United Nations and other international organization technical reports on water statistics and the means of choosing

and developing them. Furthermore, some of the statistics proposed in this report were selected from a number of sources, the most important being section 18 of Agenda 21; World Bank indicators; the United Nations Children's Fund; the Millennium Development Goals; the indicators for sustainable development in the Mediterranean; the United Nations World Water Development Report, Water for People, Water for Life; the Organization for Economic Cooperation and Development; and the Indicators for Monitoring the Millennium Development Goals. Those indicators include aspects relating to the availability of water, the efficiency with which it is used, levels of water services and the changes that can affect the status of the quality and quantity of natural water resources, including, inter alia, population growth and agricultural and industrial activity;

(b) The second stage began with the preparation of a preliminary study on the indicators appropriate for the region, taking into account the extent to which they were consistent with, on the one hand, the Millennium Development Goals, the indicators for sustainable development in the Mediterranean and the United Nations World Water Development Report and, on the other hand, the particularities of the region. Then all the data and indicators available were compiled, updated and analysed in the light of a questionnaire that was specially designed for the purpose;

(c) In the third stage, the data provided by the countries of the region were applied to the proposed indicators in order to identify the data that it is most important to gather in the future with a view to gaining a precise picture of the situation of water in the region and thereby assisting in the preparation of future United Nations water reports, including the second United Nations World Water Development Report, Water for People, Water for Life, which is scheduled for publication in 2006.

14. The analysis resulted in the selection of 31 indicators (see annex), of which 18 are consistent with the indicators contained in the second United Nations World Water Development Report, while the remainder reflect the particularities and current needs of the region. The indicators fall into three categories, namely, those relating to conventional and other sources of water; those relating to water services; and those relating to social and economic considerations. Given that good and sustainable governance of water resources can only be achieved if based on a clear picture of the available resources and if priority is given to drinking water and human health, this study will analyse the indicators related to water sources and water services.

D. INDICATORS RELATING TO WATER RESOURCES AND WATER SERVICES IN THE ESCWA MEMBER COUNTRIES

1. *Indicators relating to conventional water resources*

15. Table 1 shows that the need to complete and correct the data relating to those indicators is pressing. There are a number of countries for which no recent, complete or precise data are yet available. Through a comparison of the data that were gathered from the current questionnaire with previous information, it was noted that certain figures remain unchanged from the 1980s or 1990s, despite the fact that use of both surface and groundwater has increased. It is therefore extremely important that the data should be amended from time to time and at frequent intervals. In any case, it is very clear that the unsustainability indicator is very high in every country, which means that it is essential to correct the current usage patterns.

2. *Non-conventional water resource indicators*

16. Several countries have not completed the registration of the relevant data, regardless of the fact that the part played by such resources is increasing, given that they are new, additional resources. It should also be noted that some figures are in need of verification (see table 2).

3. *Indicators relating to drinking water and sanitation*

17. Notwithstanding the perceptible progress made in providing supplies of drinking water and sanitation facilities throughout the region and, in particular, in the countries of the Gulf, where coverage has, in most, reached 100 per cent, with the exception of Oman and Saudi Arabia, a high percentage of the population in Egypt, Iraq, Palestine, the Syrian Arab Republic and Yemen lack safe water and sanitation.

TABLE 1-A. INDICATORS RELATING TO TRADITIONAL WATER RESOURCES

Name of indicator	Unit of measurement	Value of indicator and year of measurement												
		Syrian Arab Republic	Oman	Jordan	Lebanon	Saudi Arabia	Egypt	Palestine	Iraq	United Arab Emirates	Kuwait	Yemen	Bahrain	Qatar
Total surface water	Millions of cubic metres	10 767* (2003)	918**	423* (2000)	2 200* (2004)	5 000* (2000)	55 500* (2000)	2* (2003)	73 100* (2003)	190* (2002)	0.1**	1 500* (2004)	0.2**	..
Annual average replenishment of groundwater supply	Millions of cubic metres	5 417* (2003)	276**	102* (2000)	500**	3 000**	1 384* (2000)	739* (2003)	2 000* (2002)	129* ..	160**	1 000* (2004)	100**	85**
Total renewable water	Millions of cubic metres	16 186* (2003)	1 294* (2003)	525* (2000)	2 700* (2004)	8 000* (2000)	56 800* (2000)	734* (2003)	75 100*	319* ..	160.1**	2 500**	100.2**	..
Total groundwater used	Millions of cubic metres	7 350 (2003)	..	412 (2000)	..	14 769 (2000)	7 022 (2000)	1 354*	1 000	2 226	..	1 900	195	294 (1997)
Proportion of groundwater withdrawn and used total renewable water (proportion of allocation)	Percentage	45.4*	..	18*	..	185*	12.3*	177*	10.3*	85*	10**	125*	154**	94**
Annual per capita of renewable water (water poverty indicator)	Cubic metres per capita per annum	920*	..	105*	562*	..	864*	63*	2 578*	85*	..	125*	154*	..
Per capita water for domestic use	Litres per capita per day	125*	..	87*	200*	..	250*	31*	450*	535*	..	33*	569*	..
Proportion of water used annually to total renewable water (unsustainability indicator)	Percentage	134*a/	..	156*	58*	..	126*a/	100*	100*	832*b/	..	136*	308*b/	..

Notes: * Figures obtained for this study.

** Figures taken from previous studies, need verification.

Two dots (..) indicate that data is not available.

a/ The high level of the indicator in Egypt and the Syrian Arab Republic is caused by the recycling of agricultural and other waste water and its use as a non-traditional water source.

b/ The high level of the indicator in the Gulf States is the result of the basic dependence on desalinated water as a non-traditional water source.

TABLE 1-B. NON-TRADITIONAL WATER RESOURCE INDICATORS

Name of indicator	Unit of measurement	Value of indicator and year of measurement												
		Syrian Arab Republic	Oman	Jordan	Lebanon	Saudi Arabia	Egypt	Palestine	Iraq	United Arab Emirates	Kuwait	Yemen	Bahrain	Qatar
Desalinated water production	Millions of cubic metres	0 (2003)	..	10 (2000)	..	1 050	66 (2000)	0.65 (2003)	..	975 (2002)	..	0.02	92 (2003)	152.2 (2001)
Re-use of treated waste water	Millions of cubic metres	1 000 (2003)	..	70 (2000)	..	..	1 400 (2000)	0.5 (2003)	450	226	..	0.12	22 (2003)	44 (2003)
Re-use of agricultural waste water	Millions of cubic metres	4 000 (2003)	..	..	..	..	7 500 (2000)	..	..	..	..	..	..	..
Total non-traditional water	Millions of cubic metres	5 000 (2003)	..	..	..	..	8 966 (2000)	1.15 (2003)	1 820	1 201	..	0.14	114	..
Proportion of desalinated to total renewable water	Percentage	0	..	1.9	..	..	..	..	..	306	..	0.001	92	..
Proportion of recycled agricultural and other waste water to total renewable water	Percentage	30		..			16	..	0.5	71		0.01	22	..
Proportion of non-traditional water to renewable water	Percentage	30	..	..	..	..	19	..	..	376	..	0.0056	114	..

Note: Two dots (..) indicate that data is not available.

TABLE 2. PERCENTAGE OF POPULATION SUPPLIED WITH CLEAN DRINKING WATER AND SANITATION SERVICES IN ESCWA MEMBER COUNTRIES

Country	Year	Percentage of population supplied with safe drinking water	Percentage of population supplied with appropriate sanitation services
Bahrain	2002	100	73
Egypt	2003	67.2	68.3
Iraq	2001	67	67
Jordan	2002	98	56
Kuwait	2003	100	100
Lebanon	2004	96	60
Oman	..	..	..
Qatar	..	..	..
Saudi Arabia	2000	80	40
Syrian Arab Republic	2000	84.2	71.8
Yemen	2004	66	45
Palestine	2002/2003	83	30
United Arab Emirates	2003	100	100

Source: Responses from focal points to the ESCWA questionnaire.

Note: Two dots (..) indicate that data are not available.

III. SUMMARY AND RECOMMENDATIONS

18. This study is the first step in a long and arduous process aimed at filling the gaps in information about the water sector in the region and producing reliable indicators that can be used for the purpose of comparisons between member countries, with the goal of achieving integrated management of water resources. The study has made it clear that there are grievous deficiencies in the data and information that hinder the realization of that goal, the logical and proper analysis for evaluative purposes of the available water resources in the region, and management methods that could ensure the sustainability of those resources for future generations. The following recommendations are therefore made:

(a) Priorities should be identified in the list of indicators on the basis of national and regional needs, policies and strategies;

(b) Consensus should be reached on a standardized list of the most important indicators which correspond to the circumstances and requirements of the ESCWA region, taking into account the feasibility of preparing those indicators;

(c) Attention should be paid to data derived from sources other than central departments of statistics and a mechanism should be found for cooperation between the bodies responsible for controlling and overseeing water in the relevant sectors, with a view to establishing a data bank;

(d) Cooperation and coordination should be established with national statistics departments with respect to the selection and classification of national indicators and the priorities of economic and social development plans should be considered, together with the availability of data. Cooperation with the United Nations and donor agencies should also be established and their assistance and participation sought in developing and preparing indicators;

(e) There is a need to create standardized official information systems for the collection of data and control of indicators on the basis of harmonised scientific methodologies and continuous development and updating. The process of amassing, analysing and documenting data must also be improved;

(f) Training courses on the formulation of indicators should be organized in coordination with the United Nations Statistics Division and the regional organizations working in the field;

(g) It is essential to establish data banks, with a view to providing precise data on water resources and their use, in order to develop their management in line with development, economic and social goals;

(h) Action should be taken to harmonize information from different sources and the standards used in gathering and analysing that information, in order to facilitate controlled development in the water sector at the national and regional levels;

(i) There is a need to evaluate the systems used in gathering information and managing data; systems should be established for information management that are capable of integrating data on water and economic and social data and relating them to the Millennium Development Goals.

19. ESCWA intends to continue formulating and developing indicators in the future, in coordination with the focal points. In this context, the Syrian Arab Republic has requested that indicators on the percentage of safe drinking water should be added to those relating to water used for agriculture, together with the recovery of operational and maintenance costs, the percentage of all land that is irrigated using new methods, and the decision-making level and participation of users in water management. Palestine has requested the inclusion of indicators on water yield. ESCWA hopes to receive more comments on the issue, in order to be able to produce effective indicators that reflect water-related problems in the region.

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Annex

BASIC INDICATORS FOR THE INTEGRATED MANAGEMENT OF WATER RESOURCES IN THE ESCWA MEMBER COUNTRIES

Number	Name of indicator
1.	Annual per capita share of renewable water (water poverty indicator)
2.	Total surface water
3.	Annual average replenishment of groundwater supply
4.	Total renewable water
5.	Average desalinated water production
6.	Proportion of desalinated to total renewable water
7.	Re-use of treated waste water
8.	Re-use of agricultural waste water
9.	Proportion of recycled agricultural and other waste water to total renewable water
10.	Total non-traditional water
11.	Percentage of non-traditional water to renewable water
12.	Total consumption of water for civil (domestic) use
13.	Proportion of domestic water consumption to total water consumption
14.	Per capita domestic water consumption
15.	Total consumption of water for agricultural purposes
16.	Proportion of agricultural water consumption to total water consumption
17.	Total consumption of water for industrial purposes
18.	Proportion of industrial water consumption to total water consumption
19.	Total water consumption
20.	Proportion of growth of water consumption to population growth
21.	Total groundwater used
22.	Proportion of groundwater withdrawn and used to total renewable water (proportion of allocation)
23.	Proportion of water used annually to total renewable water (unsustainability indicator)
24.	Proportion of gross domestic product (GDP) represented by total agricultural production
25.	Proportion of GDP represented by total industrial production
26.	Percentage of total labour force represented by agricultural workers
27.	Percentage of population with access to safe drinking water:
28.	- Percentage of overall population represented by the urban population
29.	- Percentage of overall population represented by the rural population
30.	Percentage of population with access to appropriate sanitation services
31.	- Percentage of overall population represented by the urban population
32.	- Percentage of overall population represented by the rural population
33.	Under five child mortality rate