

ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)

ESCWA WATER DEVELOPMENT REPORT 5
ISSUES IN SUSTAINABLE WATER RESOURCES MANAGEMENT
AND WATER SERVICES IN THE ARAB REGION

United Nations

Distr.
GENERAL
E/ESCWA/SDPD/2013/4
13 December 2013
ORIGINAL: ENGLISH

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United Nations
New York, 2013

UNITED NATIONS PUBLICATION
E/ESCWA/SDPD/2013/4
ISBN-13. 978-92-1-128366-2
e-ISBN. 978-92-1-056547-9
ISSN. 1817-1990
Sales No. E.14.II.L.3
13-0332

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ABBREVIATIONS

ACWUA	Arab Countries Water Utilities Association
AMCOW	African Ministers' Council on Water
AMWC	Arab Ministerial Water Council
AWC	Arab Water Council
CEDARE	Centre for Environment and Development for the Arab Region and Europe
CEN	National Census
DHS	Demographic and Health Surveys
EC	European Commission
ECM	Enquête Nationale sur la Consommation et les Dépense des Ménages
ECV	Enquête Nationale des Conditions de Vie
EDAM	Enquête Djiboutienne auprès des Ménages
EIM	Enquête Intégrale auprès des Ménages
EIS	Egypt In-depth Study
EMIP	Enquête sur la Mortalité Infantile et le Paludisme
ENE	Enquête Nationale sur l'Emploi
ENV	Enquête Nationale sur les Niveaux de vie des Ménages
EPCV	Enquête Permanente sur les Conditions de vie des Ménages
EPP	Enquête Préliminaire sur la Pauvreté
EPSF	Enquête Algérienne sur la Santé de la Famille (PAPFAM)
FEI	Family Expenditures and Income Survey
FHS	Family Health Survey
GCC	Gulf Cooperation Council
GFHS	Gulf Family Health Survey
HBS	Household Budget Survey
HCS	Household Living Conditions Survey
HIES	Household Income and Expenditure Survey
HS	Health Survey
HSES	Household Socio-Economic Survey
ILCS	Living Conditions Survey
JMP	Joint Monitoring Programme for Water Supply and Sanitation
LAS	League of Arab States
LDC	Least Developed Country
MCHS	Maternal and Child Health Survey
MDG	Millennium Development Goal
MHM	Menstrual Hygiene Management
MICS	Multiple Indicator Cluster Surveys
NFP	National Focal Point
NMT	National Monitoring Team

ABBREVIATIONS (*continued*)

NS	Nutrition Survey
PAPC	Pan Arab Project for Child Development Survey
PAPF	Enquête Algérienne sur la Santé de la Famille
PAPFAM	Pan Arab Project for Family Health
RAED	Arab Network for Environment and Development
RIM	Regional Implementation Meetings
SES	Socio-Economic Survey
SIDA	Swedish International Development Cooperation Agency
SHHS	Sudan Household Health Survey
SDG	Sustainable Development Goal
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNSGAB	United Nations Secretary-General Advisory Board on Water and Sanitation
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WHOSIS	World Health Organization's Statistical Information System
WHS	World Health Survey
WSS	Water Supply and Sanitation
WSSD	World Summit on Sustainable Development

Executive summary

At the United Nations Millennium Summit in September 2000, Member States adopted the Millennium Declaration. Among the outcomes of this Declaration were a set of global political commitments, namely, the Millennium Development Goals (MDGs), aimed at tackling major challenges impeding socio-economic development. These formalize eight development goals, whose progress is monitored and reported upon through a series of targets and associated indicators for measuring achievement by the target year 2015.

Access to water and sanitation services are addressed within Goal 7 articulated as to “ensure environmental sustainability”. Consequently, target 7-C of Goal 7 seeks to improve access to drinking water and sanitation, and aims to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”. Indicators 7.8 and 7.9 quantify the progress achieved in countries by measuring the “proportion of population using an improved drinking water source” and the “proportion of population using an improved sanitation facility”, respectively.

The importance of incorporating water considerations into the social, economic and environmental sectors is articulated in the concept of Integrated Water Resources Management (IWRM), which is not well reflected in the rationale and scope of MDGs. While target 7A indicates the need to reverse the unsustainable use of water resources, it does not set a quantitative target upon which achievements will need to be measured against. Moreover, while almost all MDGs can be indirectly linked to water supply and sanitation (WSS) issues, target 7-C of Goal 7 addresses them directly. Evidence show that access to improved water and sanitation services and facilities has both direct and indirect positive impacts on other sectors, including education, health and poverty, and, as such, is considered cross-cutting.

Monitoring efforts of the progress to achieve MDGs require the collection of spatial-temporal data records that support the calculation of adopted indicators, which is complicated by the fact that data are often compiled from different government institutions. National systems for monitoring and reporting have thus been established over the past decades that engage ministries and institutions responsible for planning, statistics, economy, social affairs, health, environment and water, among others, in a complex, iterative process. This results in the generation of periodic studies and reports, which draw upon census data as well as surveys and questionnaires and other statistical activities vetted and approved by national statistical organizations, scientific research centres and international organizations.

After the adoption of the Millennium Declaration, the United Nations system has largely adopted the Joint Monitoring Programme for Water Supply and Sanitation (JMP), prepared by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), as the official instrument to measure progress towards achieving the MDG drinking water and sanitation target. The Programme draws exclusively upon household surveys to monitor and report on the progress achieved on access to improved water sources and sanitation facilities. While this source of data is necessary to monitor access to drinking water and sanitation facilities, analysis of such data needs to be complemented by data collected from national authorities, water and sanitation utilities and service providers. JMP publishes biennial reports of updated estimates on access to various types of drinking water sources and sanitation facilities at the provincial, national, regional and global levels, of which the latest update was released in 2013. A comprehensive database of country-level data is also maintained by JMP and is accessible at its website.

After the adoption of MDGs and given the difficulty to monitor the safety and sustainability components of target 7-C, JMP recommended that certain types of water sources and sanitation facilities were safer or more adequate than others, and, as such, JMP indicators measure accessibility to “improved” water sources and “improved” sanitation facilities. However, the definitions of an improved water source and improved sanitation facility adopted by JMP remains oriented towards monitoring public health improvements in the light of reducing the risk of spreading disease. Other indicators that are necessary for

monitoring and managing the level and quality of water and sanitation services are not represented in the indicators, including, for example, those related to service quality, reliability and affordability.

According to JMP, out of the total Arab population, estimated at 355 million in 2011, nearly 17 per cent (or 60 million people) do not have access to improved drinking water sources, and 20 per cent (or 71 million people) do not have access to improved sanitation facilities. The difficulty of ensuring universal access is revealed when the progress figures are disaggregated between urban and rural areas, with around one in every five and one in every three Arabs living in the rural areas still lacking access to an improved water source and improved sanitation facilities, respectively. Generally, the Arab Least Developed Countries (LDCs) of Djibouti, Mauritania, Somalia, the Sudan and Yemen are off-track to achieve the water and sanitation MDG target by the year 2015.

In terms of sanitation, the Arab region has reached 80 per cent, which represents an access rate that is higher than that of the Southeast Asia, the average for developing countries and the world average, at 71, 57 and 64 per cent, respectively. By contrast, the Arab region still lags behind other regions in access to improved water sources, with 83 per cent compared to 89, 94, 87 and 89 per cent achieved respectively in Southeast Asia, Latin America and the Caribbean region, the average for developing countries and the world average. A factor that may have contributed to the low progress in access to improved water sources is water scarcity and the difficulties faced by the rural population, in particular, in reaching improved water sources. This conclusion could assist in reshaping water policies in some countries in order to focus more on water resource development and reallocation to satisfy the water needs of rural communities.

Additional analysis of JMP data reveals inadequate water supply infrastructure in the Arab LDCs and is reflected in relatively high dependencies on water tankers for drinking water supply, reaching nearly 40 per cent of the urban population in Mauritania, 22 per cent in Somalia, 19 per cent in the Sudan and 17 per cent in Yemen. The high population growth rates coupled with increasing urbanization of the Arab region will exacerbate water scarcity and exert pressure on the technical and financial elements of the water supply and wastewater systems, and demand the upgrade and expansion of existing infrastructure. The growing water shortages has also increased the frequency of water supply service interruptions to the degree that intermittent supply patterns have become the norm in many countries of the region.

While, at first glance, the current MDG water and sanitation indicators appear to measure access to water and sanitation services, they fall short of clarifying the level and quality of the services accessed by the population. For example, while the latest JMP report estimates that 83 per cent of the population in the Arab region has access to improved water sources, this does not mean that 83 per cent of the total population has regular or reliable access to water supplies, or that the quality of water supplied is fit for drinking. This demonstrates the need to develop additional indicators that can more appropriately reflect the delivery of water supply and sanitation services. These additional indicators can in turn be used to better measure progress on access to clean drinking water and improved sanitation, taking into considerations the dimensions of quality, sustainability, reliability and affordability of the service as well as such environmental considerations as wastewater collection, treatment and reuse. Monitoring these aspects is critical to provide decision makers and the general public with a clear picture on the level and quality of the water and sanitation services provided. The information can then be used for informed planning, leading to targeted investment, increased coverage and, eventually, enhanced and sustainable service levels.

In view of improving monitoring and reporting on water supply and sanitation services in the Arab region, a regional effort by the Arab Ministerial Water Council (AMWC) was launched to develop a mechanism that builds upon the baseline information collected by JMP through a set of additional indicators that respond to regional issues and concerns that affect access to water supply and sanitation services in the Arab region. The resulting MDG+ Initiative aims to establish and institutionalize a regional mechanism for monitoring and reporting on access to water supply and sanitation services in Arab countries based on the regional context in view of developing a knowledge platform that provides reliable data, information and analysis regarding the level and quality of access to water supply and sanitation services in

the Arab region. The information generated and disseminated from this platform will serve as a basis for informed decision-making on the needs, priorities and targets to realize the human right to water and sanitation in the Arab region. The outcome of the Initiative will also serve to inform national, regional and international policy dialogue and planning discussions on the adoption of regionally sensitive approaches for framing development targets in a post-MDG environment.

The MDG+ Initiative is an outcome of a series of resolutions adopted by AMWC since its first ministerial session in June 2009. These resolutions request ESCWA to coordinate the establishment of a regional mechanism for improved monitoring and reporting on water supply and sanitation indicators in the Arab region in consultation with the Arab Countries Water Utilities Association (ACWUA), the Centre for Environment and Development for the Arab Region and Europe (CEDARE), the Arab Water Council (AWC) and the Arab Network for Environment and Development (RAED). Endorsement of the MDG+ Initiative was further articulated by the ESCWA Committee on Water Resources at its ninth session in March 2011, which called on ESCWA to seek the mobilization of resources in support of the implementation of the MDG+ Initiative.

Based on a set of criteria and a regional inter-governmental consultation process involving Arab governments and institutions, a set of additional indicators was proposed. The additional indicators seek to expand the scope of analysis and examine regional realities affecting access to these services by incorporating considerations of water consumption, continuity of supply, water quality, distance to the water source and the financial burden to access water supply. The proposed indicators for access to sanitation services and facilities aim to clarify the degree of environmental protection provided and include the level of wastewater treatment, type of treatment, wastewater reuse and the financial burden to access sanitation services.

Once the proposed set of additional indicators was developed by ESCWA, discussed with partners and approved by the Technical Scientific Advisory Committee of the AMWC, it became necessary to elaborate their methodology and format in a comprehensive and unified questionnaire template in order to facilitate the collection and compilation of the primary and secondary data needed for their calculations. ESCWA formally presented the unified template to the Technical Scientific Advisory Committee during its fourth session in April 2011, which was subsequently approved by AMWC during its third session held in June 2011. In order to operationalize the MDG+ Initiative, AMWC also requested all Arab countries to nominate national focal points in order to facilitate the coordination with ESCWA and other partners on data collection and analysis. The Ministerial Council also requested ESCWA and the other partner organizations to raise the necessary funds for the implementation of the MDG+ Initiative. A user guide that presents methods of data processing and computation of indicators has been prepared by ESCWA. Moreover, in an effort to unify the data-entry procedures for all countries, an Excel worksheet has also been developed by ESCWA to support data entry and indicator computation. The implementation of the MDG+ Initiative is supported by a project funded by the Swedish International Development Cooperation Agency (SIDA) that was launched in December 2011.

The implementation of this project is led by ESCWA in partnership with ACWUA and in consultation with the other partner organizations included in the mandating resolutions of AMWC. The project is expected to enhance the regional and national monitoring capacity, establish a regional data management platform, institutionalize the regional monitoring programme, strengthen the regional dialogue and contribute to the global policy debate on the preparation and adoption of development objectives in a post-2015 environment.

The ambition of the global community in launching global targets and pursuing a global monitoring programme as articulated in the Millennium Development Goals has led to significant progress in several areas and even the early achievement of some targets. Indeed, the global community announced in March 2012 that the global target of reducing by half the number of people without access to drinking water had been achieved in 2010, five years ahead of the 2015 target year. The global target on sanitation would not,

however, be reached by 2015, and more concerted work is needed to achieve that target. The paradigm shift at the global level in the ways in which access to drinking water and sanitation should be pursued is influenced by the recognition of the United Nations General Assembly and Human Rights Council that access to these basic services should be considered a human right. This introduces two major challenges for governments, namely: (a) the challenge of pursuing universal service provision for all; and (b) the challenge of ensuring rights to those universal services for all. Through the inter-governmental and consultative processes that ensued following the adoption of this new human right, discussions turned to the process of how accessibility to these basic services would be measured, reported upon and guaranteed. This resulting global debate echoed the concerns articulated by AMWC at the regional level regarding the effectiveness of using the current JMP indicators to monitor and report on the actual access to safe drinking water and sanitation. Under the United Nations General Assembly and Human Rights Council resolutions, access to water and sanitation facilities will need be based on the criteria of availability, quality, acceptability, accessibility, affordability, wastewater treatment and wastewater reuse, similar to those introduced by the MDG+ Initiative.

Accepting the legal implication of the human right to drinking water and sanitation gives everyone the right to access sufficient, safe, acceptable and affordable water and sanitation services. Accordingly, the recognition of this right will lead to the realization that drinking water and sanitation services become a legal entitlement demanding governments to work hard for the development and provision of these services to all citizens without discrimination. The shift towards a human rights-based mandatory universal access for all necessitates reconsidering the current monitoring indicators to include such additional criteria as availability, reliability and affordability.

With the target date for achieving MDGs approaching, iterative debates are underway on the structure and approach that will be applied in a post-2015 landscape. Among the major issues of discussion are the following: (a) whether a sectoral or cross-sectoral approach should be pursued related to the integration of the water sector in the formulation of development goals; (b) whether global goals are preferable to regional and/or national goals that respond to different development needs and priorities; and (c) whether visionary goals or more practical, measurable goals should be adopted for inspiring or guiding greater progress over the coming decades.

There is little doubt that MDGs, particularly the water and sanitation target, have been a driving force behind much of the progress achieved. However, with 2015 approaching, many organizations have been engaged in the process of re-evaluating the shortcomings of the current target and indicator system and making proposals to improving on it. From an over-simplified, two-indicator system constituting the current MDG water and sanitation monitoring programme, the new JMP proposal introduces 14 main indicators, divided into a total of 28 sub-indicators. It thus becomes clear that several stakeholders aim for a more comprehensive post-2015 development agenda when it comes to integrated water resources management and access to water, sanitation and hygiene, which reflects a definitive change in direction from that of the pre-2015 era. If the enthusiasm reflected in the proposals for a dedicated or stand-alone water goal in the post 2015 global development agenda is attributed to practitioners and experts, there is a chance that politicians may add to these aspirations for political and funding reasons, resulting in the formulation of even more ambitious targets. This presents the risk of approving a complex goal/target-indicator system that does not provide for intermediate milestones, and is thus costly to monitor and difficult to attain in the near future. The agenda to be adopted in the year 2015 should therefore not be viewed as the only opportunity to achieve sustainable development, but rather it needs to be understood as a progressive and positive step forward towards achieving sustainable development for all.

Introduction

The development commitments expressed at the United Nations Millennium Summit in 2000 and the World Summit on Sustainable Development (WSSD) in 2002 led to the formulation and adoption of the Millennium Development Goals (MDGs). These formalize eight development goals whose progress is monitored and reported upon through a series of targets and associated indicators for measuring achievement by the target year of 2015. Goal 7 on ensuring environmental sustainability includes one target and three indicators related to water, two of which are used for monitoring access to drinking water and sanitation.

The Joint Monitoring Programme for Water Supply and Sanitation (JMP), prepared by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), serves as the institutionalized mechanisms for monitoring the MDG target on access to safe drinking water and basic sanitation at the global level. The JMP 2013 update report is based on data for 2011 and shows that of the estimated 355 million people in the Arab region, approximately 60 million people (17 per cent) did not have access to improved drinking water sources and approximately 71 million people (20 per cent) did not have access to improved sanitation facilities.¹ While many Arab countries have already achieved or are on track to achieve the water supply and sanitation target by 2015, some Arab countries still face major challenges, which have generally been attributed to insufficient investment and weak institutional capacity. However, deeper analysis shows that access to water supply and sanitation services in the Arab region is much more limited than these figures reveal. This is because the definition of the indicators related to the MDG 7-C target are primarily health-related and measure access to infrastructure; as such they do not accurately represent the actual quality and continuity of water supply and sanitation services in the region.

At first glance, the MDG water and sanitation indicators appear to measure access to water and sanitation services. However, a closer look into the different categories that define "improved water sources" and "improved sanitation facilities" reveals that the rationale behind their categorization is directly related to public health improvements and the risk of unimproved water sources and sanitation facilities spreading disease.² These indicators therefore fall short of clarifying the level and quality of water and sanitation services accessed by the population. For example, while the latest JMP report estimates that 83 per cent of the population in the Arab region has access to improved water sources, this does not mean that 83 per cent of the total population has regular or reliable access to water supplies, or that the quality of water supplied is adequate for drinking.

This demonstrates the need to develop additional region-specific indicators that can more appropriately reflect the delivery of water supply and sanitation services in the different Arab countries. Such an effort has been pursued at the Arab regional level with the launching of the regional initiative for the development of a mechanism to monitor the implementation of MDGs related to water and sanitation in the Arab region, namely MDG+ Initiative. The Initiative is an outcome of a series of resolutions adopted by the Arab Ministerial Water Council (AMWC) starting in June 2009 that set forth a set of regional-specific indicators aimed at monitoring and reporting on access to water supply and sanitation services in the Arab region. These additional indicators are in turn used to better measure progress on access to clean drinking water and improved sanitation. This effort complements and reinforces efforts to achieve the goal of universal access to safe water and sanitation within the context of human rights as well as efforts to ensure that universal access to these water services are incorporated into a post-2015 development framework that espouses key sustainable development goals.³

¹ WHO/UNICEF, 2013a.

² Water-related diseases are categorized into four categories, namely: water-borne diseases, such as cholera, typhoid and dysentery; water-washed diseases, including skin and eye infections; water-based diseases, such as schistosomiasis; and water-related insect vectors causing diseases, including dengue and malaria.

³ The United Nations General Assembly on 28 July 2010 adopted resolution 64/292 recognizing the right to safe and clean drinking water and sanitation as a human right. The resolution is available at: <http://www.un.org/en/ga/64/resolutions.shtml>.

Universal access to drinking water and sanitation was affirmed by the United Nations General Assembly and the United Nations Human Rights Council through resolutions adopted in 2010 recognizing the right to safe and clean drinking water and sanitation as a human right. As highlighted in the United Nations Human Rights Council resolutions, measuring access to water and sanitation facilities should be performed on the basis of the criteria of availability, quality, acceptability, accessibility, affordability, wastewater treatment and wastewater reuse. A quick comparison of these criteria with the current global indicators shows that access to improved or unimproved water and sanitation services (accessibility) is the only criterion currently applied under MDGs, and that the other criteria (availability, quality, acceptability, affordability, wastewater treatment and wastewater reuse) are not measured. By contrast, the Arab MDG+ Initiative incorporates JMP accessibility indicator in addition to indicators related to water consumption, water quality, affordability, wastewater treatment and wastewater reuse. The Arab MDG+ Initiative indicators are thus consistent with the goals expressed in the subsequent United Nations Human Rights Council recommendations.

A review of the positions of some of the main actors that are contributing to the deliberations on the post-2015 development agenda related to the water sector reveals a wide consensus that the water agenda needs to incorporate three elements, namely: (a) water resource management; (b) access to water, sanitation and hygiene; and (c) wastewater management. However, there are differences in the way that stakeholders are positioning these water elements within the post-2015 development agenda. Two approaches have emerged. The first group calls for incorporating all the three elements within a single goal based on the justification that a dedicated water goal is necessary for the integrated management of water resources and that access to drinking water and sanitation and wastewater management are merely components of an integrated water management framework. The second group sees water as a cross-cutting issue and calls for mainstreaming the water targets across different thematic areas (including, for example, poverty, climate change, disaster risk reduction and ecosystem biodiversity, among others), or across different sectors (including, for example, agriculture, urban/rural development and health, among others). The implications of selecting one of the two directions will have profound impacts on the monitoring modality that will be formulated following the adoption of the new global targets.

The current MDG water and sanitation monitoring system has been criticized by many as being oversimplistic. Many proposals for the post-2015 development agenda thus seek to introduce a comprehensive set of indicators, some of which range from pursuing water use efficiency targets in irrigation to setting the number of toilets available for girls in schools. Whether water is eventually addressed in a stand-alone, dedicated goal with several composite targets or mainstreamed across other sectors, the way water challenges are dealt with in a post-2015 development agenda will be dramatically different than the current ways under the MDG framework. What is important is to ensure that the ambitious targets being discussed do not discount the importance of simplicity and practicality. In doing so, policymakers, development practitioners and stakeholders should pursue the adoption of global, visionary goals that reflect the international commitment of establishing access to water and sanitation as a human right, while avoiding the temptation to adopt targets and indicators that are unattainable on the given timeframe, hard to understand, complicated to communicate and excessively costly to monitor for developed and developing countries alike. The agenda to be adopted in the year 2015 should thus not be viewed as the only opportunity to achieve sustainable development-related goals, but rather it needs to be understood as a progressive and positive step forward in the right direction.

This report aims to highlight the current regional developments in the area of water supply and sanitation, with a focus on the new inter-governmental mechanism for monitoring water supply and sanitation services in the Arab region. The publication also seeks to review the processes and progress related to regional follow-up on MDGs and regional preparations for the post-2015 development agenda within the context of the water sector, and address global and regional perspectives on securing access to drinking water and sanitation as a fundamental human right.

The ESCWA Water Development Report is a recurrent publication issued once every biennium to highlight new regional developments related to the water sector.

I. WATER AND SANITATION IN THE MILLENNIUM DEVELOPMENT GOALS

This chapter highlights the extent to which water resources management and water and sanitation services are incorporated within MDGs. A brief review of the history of the global monitoring system for the water and sanitation MDG target along with the mission of JMP are also presented. Finally, data sources and the estimation method of JMP indicators are examined, with a focus on the sources and availability of data in the Arab region.

A. THE MILLENNIUM DEVELOPMENT GOALS

1. *Background*

At the United Nations Millennium Summit in September 2000, Member States adopted the set of global political commitments, namely, the Millennium Development Goals, which call on all countries to develop achievable action plans and allocate the financial and human resources needed to meet global targets. In doing so, MDGs formalize eight development goals, whose progress is monitored and reported upon through a series of targets and associated indicators for measuring achievement by the target year 2015. These goals are listed in table 1

TABLE 1. THE MILLENNIUM DEVELOPMENT GOALS

Goal 1.	Eradicate extreme poverty and hunger
Goal 2.	Achieve universal primary education
Goal 3.	Promote gender equality and empower women
Goal 4.	Reduce child mortality
Goal 5.	Improve maternal health
Goal 6.	Combat HIV/AIDS, malaria and other diseases
Goal 7.	Ensure environmental sustainability
Goal 8.	Develop a global partnership for development

MDGs are indivisible and interdependent and seek to overcome key issues impeding development. While they should thus be viewed collectively, they are divided into targets and expressed in measurable, time-bound indicators.⁴ Access to water and sanitation services are addressed within the goal to ensure environmental sustainability. Consequently, target 7-C of Goal 7 seeks to improve access to drinking water and sanitation by measuring increased access to these basic services needed by poor and vulnerable groups to support progress towards sustainable development.⁵

Monitoring efforts to evaluate progress in achieving these development goals and targets require the adoption and application of common indicators and associated methodologies that can be used to measure progress towards achieving MDGs. These methods can thus provide quantitative values for measuring and evaluating progress towards a common goal. Such efforts require the collection of spatial-temporal data records that support the calculation of these indicators, which is complicated by the fact that data are often compiled from different government institutions. National systems for monitoring and reporting have thus been established over the past decades that engage ministries and institutions responsible for planning, statistics, economy, social affairs, health, environment and water, among others, in a complex, iterative process. This results in the generation of periodic studies and reports, which draw upon census data as well as surveys, questionnaires and other statistical activities that are vetted and approved by national statistical

⁴ United Nations Economic and Social Council, 2008.

⁵ ESCWA, 2009.

organizations, scientific research centres and international organizations. The regularity of these activities, however, varies from country to country and is often subject to human and financial resources availability, as well as a determination at the national level as to whether national, regional or global goals and indicators will be priorities for monitoring and reporting at the national level, and at what level of frequency. The different methodologies applied by different institutions to collect data related to similar or complementary indicators further complicate the situation. A harmonized, common system for data collection undertaken at a specific frequency must thus be maintained over time to support regular monitoring and reporting on indicators.

B. WATER RESOURCES MANAGEMENT IN MDGS

Table 1 illustrates that the water sector is not addressed as a stand-alone goal in MDGs. It is addressed formally within MDG 7, and also evident as a cross-sectoral issue that affects the achievement of nearly all the other MDGs, such as those related to poverty, health and education.

The importance of incorporating water considerations into the social, economic and environmental sectors is articulated in the concept of Integrated Water Resources Management (IWRM), which tries to deal with water using a holistic approach that “promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”.⁶ This approach is not well reflected in MDGs. Indeed, water resources management is only addressed under target 7A, which aims to “integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources”.

For water use, this target is translated into indicator 7.5, which calls for monitoring the “proportion of total water resources used”. While target 7A clearly indicates the need to reverse the unsustainable use of water resources, it does not set a quantitative target upon which achievements will need to be measured against. However, establishing such targets could be an important measure in such water-scarce territories as the Arab region, where growing water demand coupled with limited water availability result in a negative trend for this indicator (see table 2). Moreover, this could affect achievements otherwise reported for indicators measuring progress in accessibility to drinking water and sanitation. This has marginalized the importance of considering water resources management as a central factor that influences the achievement of the other MDGs and targets, particularly in water-scarce regions.

Furthermore, indicator 7.5 only measures the unsustainable use of water resources as a ratio of water use to water availability. In doing so, it fails to provide a holistic picture of all the external and internal factors that may also contribute to an unsustainable situation. Such factors could include natural aridity, low water use efficiency and/or dependency on non-conventional water resources. Given the strong influence of these mostly natural factors that determine water availability, this indicator alone does not sufficiently reflect the efforts being exerted nationally or regionally to enhance water resources management through policies, plans, programmes and projects. Similarly, in regions that are well-endowed with water resources, this indicator may show positive trends over time, regardless of the efforts being exerted on water resources management. However, in water-scarce regions, progress will appear limited or negative, despite significant efforts being made to improve water resources management locally.

⁶ Global Water Partnership, 2000.

TABLE 2. PROPORTION OF TOTAL WATER RESOURCES USED TO TOTAL RENEWABLE WATER RESOURCES
IN THE ARAB COUNTRIES
(Percentage)

Country	1990	1995	2000	2005
Algeria	38	..	52.7	..
Bahrain	161.1	..	..	205.8
Comoros	..	..	0.8	..
Djibouti	..	..	6.3	..
Egypt	..	102.3	113.8	..
Iraq	56.6	71.9	87.3	..
Jordan	100	..	..	90.5
Kuwait	..	0	2075	..
Lebanon	..	29.3	31.8	18.6
Libya	793.3	766.7	711.3	..
Mauritania	..	..	14	..
Morocco	38.1	38.8	43.5	..
Oman	85.5	..	94.1	83.9
Qatar	..	537.7	336	381
Saudi Arabia	680.8	..	..	936.2
Somalia	..	..	22.4	22.4
The Sudan	24	20.1	57.6	..
Syrian Arab Republic	..	83.7	94.1	99.8
Tunisia	66.8	61.6	61.3	..
United Arab Emirates	..	1405	1556	1867
Yemen	139.1	..	161.1	168.6

Source: The official United Nations site for the MDG indicators (<http://mdgs.un.org/unsd/mdg/data.aspx>). In accordance with the articulated target, no data were reported for the years after 2005.

Notes: Some of the MDG data presented in the website have been adjusted by the responsible specialized agencies to ensure international comparability, in compliance with their shared mandate to assess progress towards MDGs at the regional and global levels.

Two dots (..) indicate that data are not available or are not separately reported

Consequently, this indicator may be considered an indicator of natural water availability or scarcity within the context of the environmental sustainability goal. However, it is not sufficient to reflect upon or measure progress or efforts that drive a development agenda towards better management of freshwater resources.

C. WATER SUPPLY AND SANITATION IN MDGS

While almost all MDGs can be indirectly linked to water supply and sanitation (WSS) issues, Goal 7 on environmental sustainability addresses them directly. Target 7-C aims “to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”. Moreover, governments and heads of State at the World Summit on Sustainable Development in 2002 agreed to add an additional target “to halve, by 2015, the proportion of people lacking improved sanitation”.

These targets are measured by the following indicators:⁷ (a) proportion of the population using an improved drinking water source; and (b) proportion of the population using an improved sanitation facility.

The associated targets and indicators are listed in figure 1 below. The baseline year for measuring progress towards these goals was established as 1990.

⁷ WHO/UNICEF, 2013b.

Figure 1. Water supply and sanitation targets and indicators



While the MDG water target specifically references safe drinking water, the adopted monitoring system measures access to improved water sources as a proxy indicator to reflect accessibility to potable water. This shift simplifies the monitoring mechanism and assumes that all improved water sources would necessarily provide water of potable quality, which constitutes a questionable assumption in many cases. For example, while piped water supply is considered an improved water source, in many cases water supplied from distribution networks is not of potable quality. Moreover, while the water target points to drinking water, it actually entails all water used by households. This is evident from the fact that bottled water used for drinking is not considered an improved water source unless the water for other in-the-home uses is supplied from improved sources as well. Therefore, throughout this report, access to drinking water is considered within a wider perspective that incorporates all the water used inside the home.

The progress in developing adequate water supply and sanitation services is a key pillar of sustainable development for any nation. Evidence show that access to improved water and sanitation services has direct and indirect impacts on education, health and poverty, thereby impacting most MDGs. Opportunities for adequate basic education, especially for impoverished segments of the population, is positively influenced by the availability of safe water and sanitation in a community. Many children spend hours each day collecting water, which contributes to increased dropout rates from primary schools. With easy access to safe water and sanitation, primary school attendance rates usually rise. Furthermore, infants and young children are the first victims of unsafe drinking water and inadequate sanitation services.⁸ Many published studies confirm that sanitation and hygiene are the major causes for diarrhoeal diseases.⁹ In addition, household disposable income increases after gaining access to safe drinking water and sanitation, where people no longer have to pay high rates to commercial water vendors, and less time and resources are needed to seek medical treatment for such illnesses as diarrhoea, scabies, intestinal worms and conjunctivitis that are all caused by inadequate water and sanitation. Moreover, time saved, mostly by women and girls, could be dedicated for schooling or increasing production (including, for example, on agricultural output, post-harvest processing, the manufacture and sale of goods, services and handicrafts, among others), which in turn leads to higher household income.

⁸ WHO/UNICEF, 2005.

⁹ Fewtrell and Colford, 2004.

D. THE JOINT MONITORING PROGRAMME (JMP)

1. *A brief history of global water supply and sanitation monitoring*

Monitoring WSS started when the United Nations General Assembly declared the 1980s as the International Drinking Water Supply and Sanitation Decade, with the explicit target of achieving universal coverage by 1990. WHO established a framework and procedures for monitoring progress towards achieving this target. The information collected essentially originated from national water and sanitation related authorities, and focused on infrastructure, utilities and service provision.¹⁰

In 1991, WHO and UNICEF decided to maintain the momentum of the water supply and sanitation decade by establishing the Joint Monitoring Programme for Water Supply and Sanitation (JMP), with the following main objectives and activities:

- (a) Monitoring trends and progress within the water supply and sanitation sector and disseminating data to stakeholders (including, for example, global reports and regional snapshots, among others);
- (b) Informing policymakers globally on the status of access to water supply and sanitation services;
- (c) Building of national capacity for the water supply and sanitation sector and enhancing interaction between countries and JMP (including, for example, through regional workshops);
- (d) Maintaining the integrity of JMP database and fulfilling JMP's normative role in developing target indicators, procedures and methods aimed at strengthening monitoring mechanisms.

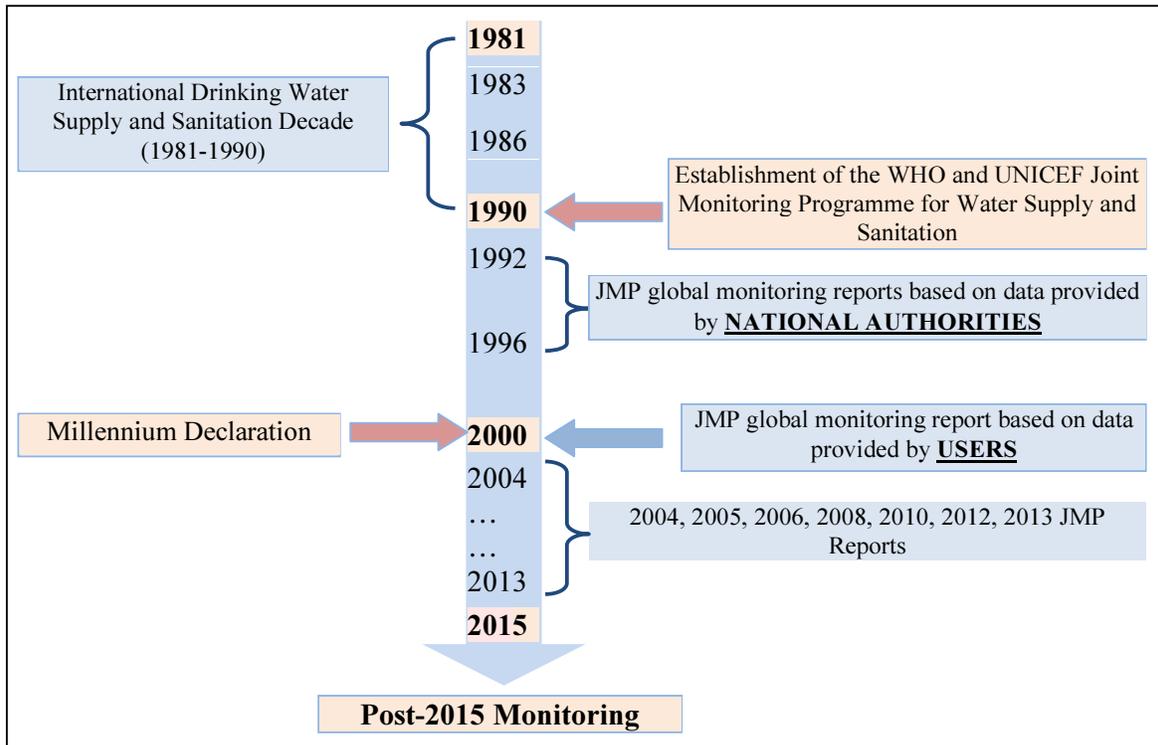
After the adoption of the Millennium Declaration, JMP became the official instrument to measure progress towards achieving the MDG drinking water and sanitation target. Accordingly, JMP underwent a paradigm shift after 2000 and started to use available data gathered from country-level surveys on the use of drinking water and sanitation for collecting information on WSS. In practice, this meant measuring access at the household level, rather than at the service-provider level.

JMP considers that the collection of data from national authorities and service providers was unsatisfactory given the inherent inconsistencies in the data and the lack of comparability between countries and within countries over time. The challenge of ensuring data consistency demands streamlining methodologies applied by national authorities across the globe. However, inconsistency is to be expected when there is no harmonization mechanism in place to train, systematize and periodically update the data collection processes on the basis of the same metrics. Additionally, such a consistent and harmonized monitoring mechanism can be costly to implement at the global level.

As a proxy, JMP thus draws upon household surveys – that is, water user data sources – to monitor and report on the progress achieved on access to improved water supply and sanitation facilities. While it is useful, the analysis of such data should be complemented by data collected from national authorities and utilities that are responsible for the operation, management and delivery of water supply and sanitation services. This is considered an important source of information given that water authorities possess (nearly exclusively) data related to the technical and financial aspects of water and sanitation systems, such as the number of subscribers, water production and consumption, water treatment, supply frequency, water tariffs, collection and treatment of wastewater, reuse of treated wastewater, a geospatial understanding of service coverage and other data.

¹⁰ WHO/UNICEF, 2011b.

Figure 2. The development timeline of JMP



2. Mission and objectives of JMP

The United Nations system has largely adopted the WHO/UNICEF JMP as the official mechanism for monitoring progress towards the MDG target related to drinking water and sanitation (MDG 7, Target 7-C). This is despite the fact that the Programme pre-dates the adoption of MDGs, as illustrated in figure 2.

JMP publishes a biennial report of updated estimates on the use of various types of drinking water sources and sanitation facilities at the provincial, national, regional and global levels. The latest update was released in 2013;¹¹ and a comprehensive database of country-level data is maintained by JMP and is accessible at its website.

3. JMP definitions of improved/unimproved sources of drinking water and sanitation facilities

Access to drinking water and to basic sanitation is measured by the following indicators:¹²

- (a) Proportion of the population using an improved drinking water source;
- (b) Proportion of the population using an improved sanitation facility.

An improved water source is defined by JMP as one that “by nature of its construction or through active intervention, is likely to be protected from outside contamination, in particular from contamination

¹¹ WHO/UNICEF, 2013a.

¹² Ibid.

with fecal matter”. An improved sanitation facility is defined as one that “is likely to hygienically separate human excreta from human contact”.

Based on the two definitions of what constitutes an improved drinking water source and an improved sanitation facility, JMP identified a list of drinking water sources and sanitation facilities that are considered improved or unimproved, as detailed in figure 3 below.

Figure 3. JMP classification of “improved” and “unimproved” water sources and sanitation facilities

<p>Access to:</p> <p>Improved drinking water</p>	<p>Use of the these sources:</p> <ul style="list-style-type: none"> • Piped water into dwelling, yard or plot • Public tap or standpipe • Tube well or borehole • Protected dug well • Protected spring • Rainwater collection 	<p>Access to:</p> <p>Improved Sanitation Facilities</p>	<p>Use of the these facilities:</p> <ul style="list-style-type: none"> • Flush or pour-flush to: • Piped sewer system • Septic tank • Pit latrine • Ventilated improved pit (VIP) latrine • Pit latrine with slab • Composting toilet
<p>Access to:</p> <p>Unimproved drinking water</p>	<p>Use of the these sources:</p> <ul style="list-style-type: none"> • Unprotected dug well • Unprotected spring • Cart with small tank or drum • Tanker truck • Surface water (river, dam, lake, pond, stream, canal, irrigation channel) • Bottled water^{a/} 	<p>Access to:</p> <p>Unimproved Sanitation Facilities</p>	<p>Use of the following facilities:</p> <ul style="list-style-type: none"> • Flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank or pit latrine) • Pit latrine without slab/open pit • Bucket • Hanging toilet or hanging latrine • Shared facilities of any type • No facilities, bush or field

Source: WHO/UNICEF, 2011a.

Note: ^{a/} Bottled water is not considered an “improved” source because of limitations concerning the potential quantity of supplied water, not the quality. Although bottled water is considered of acceptable quality similar to other improved water sources, there is no guarantee that water used for other in house uses like bathing, washing, and cooking are supplied from improved sources.

4. Rationale behind the water and sanitation target

During the period 1990–2000, the coverage figures of JMP assessments referred to “safe” water supply and “adequate” sanitation. The terms “safe” and “adequate” were used to emphasize the hygienic orientation of the targets. After the adoption of MDGs and in order to evaluate and monitor the MDG target 7-C, JMP recommended that certain types of water sources and sanitation facilities were safer or more adequate than others. The terms “safe” and “adequate” were thus replaced with “improved” in order to accommodate for the difficulties and cost associated with defining “safe drinking water” and “adequate sanitation”. In this regard, JMP indicators measure the population with access to “improved” water sources and sanitation facilities. However, as highlighted above, the definitions of an improved water source and an improved sanitation facility adopted by JMP remains oriented towards monitoring public health improvements in the light of reducing the risk of spreading disease. Other indicators that are necessary for monitoring and

managing the level and quality of these services are not represented in the targets, including, for example, those related to service quality and reliability, among others.

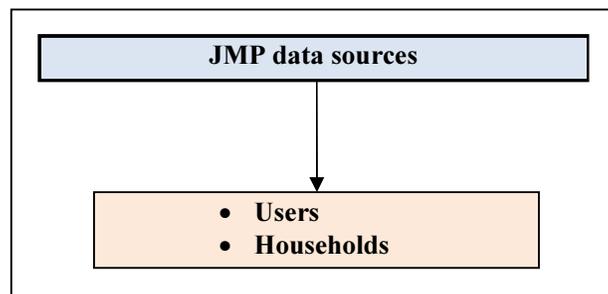
Moreover, JMP does not report on water consumption in terms of water quantity; rather it adopts the 20 litres per capita per day as the minimum consumption level (quantity) for establishing access to improved water sources as sufficient.¹³ This leads to an implicit criterion of improved water sources requiring sufficient water availability to supply at least the minimum water consumption needs for all of those using that water source. However, this criterion is not checked during the field surveys given that there are no questions on water consumption or the source capacity of a water source included in any of the major survey questionnaires used to inform JMP figures. The minimum water consumption level of 20 litres has also been contested by several countries and institutions as insufficient to be used as a threshold for measuring access to water as a human right.¹⁴

Indeed, by adopting the minimum target at only 20 litres per day, it becomes evident that MDGs sought to pursue a water goal aimed at meeting the most basic of water needs from a health perspective. By doing so, other essential water-related indicators were omitted, namely, those that seek to determine the regularity, accessibility, quality and sustainability of the water supplied. These limitations are further elaborated in chapter II.

5. Data sources of JMP indicators

The estimates for the use of drinking water sources and sanitation facilities originate from data collected by national statistics offices and international survey programmes through nationally representative household surveys and national censuses (see figure 4).

Figure 4. JMP data sources



The major recurrent surveys conducted at the global, regional, and national levels include the following:

- (a) Multiple Indicator Cluster Surveys (MICS), supported by UNICEF;¹⁵
- (b) Demographic and Health Surveys (DHS), funded by USAID;¹⁶
- (c) World Health Survey (WHS), supported by WHO;¹⁷

¹³ World Health Organization, 2003.

¹⁴ See, for example, Chenoweth, 2008; Stockholm International Water Institute, 2010; and United Nations Human Rights Council, 2010b.

¹⁵ For more information, see http://www.unicef.org/statistics/index_24302.html.

¹⁶ For more information, see <http://www.measuredhs.com>.

¹⁷ For more information, see <http://www.who.int/healthinfo/survey/en>.

- (d) Pan Arab Project for Family Health (PAPFAM);¹⁸
- (e) Household Budget Surveys (HBS), performed by national statistical offices;
- (f) Household Income and Expenditure Surveys (HIES), performed by national statistical offices;
- (g) National Census and other user-based household surveys.

Questionnaires related to the above mentioned surveys generally include the following questions:

- (a) Questions related to households water supply sources:
 - (i) What is the main source of drinking water for members of your household?
 - (ii) What is the main source of water used by your household for other purposes such as cooking and hand washing?
 - (iii) How long does it take to go to the source, get water and come back?
 - (iv) Who usually goes to this source to fetch the water for your household?
- (b) Questions related to water quality:¹⁹
 - (i) Do you treat your water in any way to make it safer to drink?
 - (ii) What do you usually do to the water to make it safer to drink?
- (c) Questions related to sanitation facilities used by households:
 - (i) What kind of toilet facility do members of your household usually use?
 - (ii) Do you share this facility with other households?
 - (iii) How many households in total use this sanitation facility?

In addition to its global and regional summary reports, JMP issues a special brief for each country that includes all the available data from the different sources, including, among others, surveys and censuses.²⁰ Table 3 lists a summary of all surveys included in Arab countries, which are assembled by JMP and used to report on the water supply and sanitation in the region for its 2012 update report.²¹

¹⁸ For more information, see <http://www.papfam.org>.

¹⁹ While information on water quality at the household level are gathered by the various questionnaires, no data on water quality were reported by JMP in its progress reports.

²⁰ Country files can be viewed and downloaded from the following link: <http://www.wssinfo.org/documents-links/documents>.

²¹ WHO/UNICEF, 2013c.

TABLE 3. SUMMARY OF THE SURVEYS AND CENSUSES USED BY JMP TO MONITOR THE WATER SUPPLY AND SANITATION SECTOR IN THE ARAB REGION, 2012 UPDATE

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Algeria						MICS					MICS		PAPF				MICS				
Bahrain	WHO					GFHS															
Comoros		CEN					DHS				MICS			WHS	EIM						
Djibouti							EDAM						EPP EDAM	PAPF			MICS				
Egypt			DHS			DHS	CEN MICS	EIS			DHS			DHS		DHS	CEN		DHS		
Iraq							MICS	CEN			MICS				ILCS		MICS	HSES			
Jordan	DHS							DHS					DHS HIES		CEN			DHS		DHS	
Kuwait							GFHS														
Lebanon										JMP	MICS				HCS		MICS	HCS			
Libya						MCHS															
Mauritania			EPCV	EPCV		EPCV CEN	MICS				EPCV	DHS		WHS	EMIP EPCV			MICS			
Morocco		ECV	DHS		CEN	DHS			ENV	ENV	ENE	ECM ENE		ENE WHS	EPSF ENE	ENE	ENE	ENE			
Oman							GFHS							CEN					HIES		
Palestine								CEN			HS		NS			MICS	PAPF	CEN			
Qatar								GFHS						WHO							
Saudi Arabia				CEN			FHS														
Somalia										MICS			SES			MICS					
The Sudan			PAPC	CEN							MICS						SHHS		CEN		
Syrian Arab Republic							MICS						PAPF				MICS				PAPF
Tunisia					CEN						MICS		PAPF	WHS							
United Arab Emirates						GFHS								WHS						FEI	
Yemen			DHS					CEN DHS	HBS						FHS	HBS	MICS				

Note: The surveys and censuses in the table refer to the following:

MICS: Multiple Indicator Cluster Survey
 PAPF: Enquête algérienne sur la santé de la famille
 WHO: The International Drinking Water Supply and Sanitation Decade
 GFHS: Gulf Family Health Survey
 CEN: National Census
 DHS: Demographic and Household Survey
 WHS: World Health Survey
 EIM: Enquête intégrale auprès des ménages
 EDAM: Enquête Djiboutienne auprès des ménages, indicateurs sociaux
 EPP: Enquête préliminaire sur la pauvreté

MCHS: Maternaland Child Health Survey
 EPCV: Enquête permanente sur les conditions de vie des ménages
 EMIP: Enquête sur la Mortalité Infantile et le Paludisme
 ECV: Enquête Nationale des Conditions de Vie
 ENV: Enquête nationale sur les niveaux de vie des ménages
 ENE: Enquête nationale sur l'emploi
 ECM: Enquête Nationale sur la Consommation et les Dépense des Ménages
 EPSF: Enquête algérienne sur la santé de la famille (PAPFAM)
 HS: Health Survey
 NS: Nutrition Survey
 FHS: Family Health Survey

EDAM: Enquête Djiboutienne auprès des ménages
EIS: Egypt In-depth Study
ILCS: Living Conditions Survey
HSES: Household Socio-Economic Survey
HIES: Household Income and Expenditure Survey
HCS: Household Living Conditions Survey
JMP: Joint Monitoring Programme Global Water Supply and Sanitation
Assessment 2000- Questionnaire (1999)

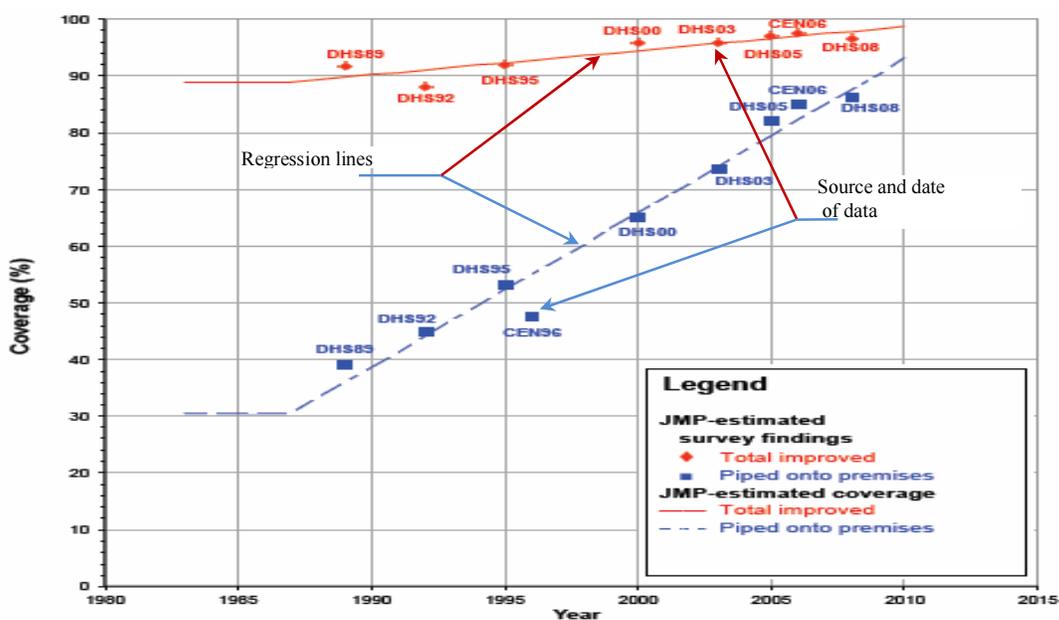
SES: Socio-Economic-Survey
PAPC: Pan Arab Project for Child Development Survey
SHHS: The Sudan Household Health Survey
FEI: Family Expenditures and Income Survey
HBS: Household Budget Survey

6. Estimation method

Given that surveys are not carried out on an annual basis, most countries have data at time intervals that vary between two to five years. This raises the need to adopt an estimation methodology to fill in the missing data statistically and thus complete the picture for all countries. JMP adopts a methodology whereby all available data collected from field surveys and population census on improved and unimproved water sources and sanitation facilities are plotted on a timescale from 1990 to the present for every country. If available data are four years apart or less, the weighted average is calculated and an extrapolation for a maximum of six years can be performed. If available data are five years apart or more, a linear trend line (based on the least-squares method) is drawn through these data points. Two years of extrapolation on the linear trend line and four years of horizontal extrapolation is then performed to provide estimates for all years between 1990 and 2013 (wherever possible).²²

Figure 5 shows an example of JMP method of estimation related to the proportion of rural population using improved drinking water sources. This figure is taken from JMP country file for Egypt and shows all available data for total improved and piped onto premises water sources for different years and from different sources, the linear trend lines, and the linear and horizontal extrapolations.

Figure 5. Example of JMP method for estimating the proportion of the rural population using improved drinking water sources in Egypt



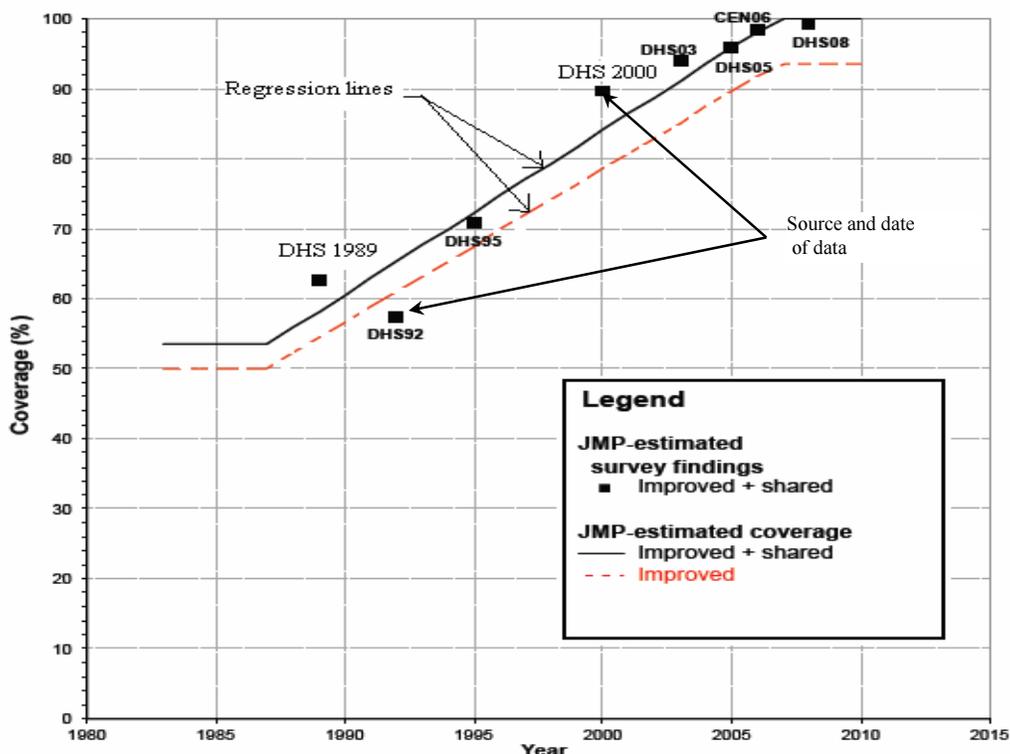
Source: ESCWA, based on the WHO and UNICEF on-line JMP country files for 2012 Update. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation Documents, available at [http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller\[type\]=country_files](http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller[type]=country_files).

Note: The figure after the name of the survey on the plotted lines signifies the year of the survey.

Figure 6 shows another example of the JMP method of estimation mentioned above related to the proportion of the rural population using improved sanitation facilities. This figure is taken from the JMP country file for Egypt and shows all available data for total improved with and without shared sanitation facilities for different years and from different data sources, the linear trend lines, and the linear and horizontal extrapolations.

²² Hossain, 2013.

Figure 6. Example of JMP method of estimating the proportion of the rural population using improved sanitation facilities in Egypt



Source: ESCWA, based on the WHO and UNICEF on-line JMP country files for 2012 Update. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation Documents, available at [http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller\[type\]=country_files](http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller[type]=country_files)

Within the JMP data system, drinking water trend analyses at the country level are made for the following: (a) piped water on premises; (b) other improved sources; and (c) surface water. The estimates for improved sanitation facilities presented are discounted by the proportion of the population that share an improved type of sanitation facility.

Sanitation trend analyses are made for the following: (a) improved sanitation facilities; (b) shared sanitation; and (c) open defecation. The resulting national average is thus estimated by computing the weighted average of the urban and rural access figures. JMP uses linear regression to estimate data for a given year in a particular country, even if no survey or census was carried out in that year, in order to be able to compare data across countries for a given year.

The main disadvantages of linear least squares estimation method are as follows: (a) limitations in the shapes that linear models can assume over long ranges; (b) possibly poor extrapolation properties; and (c) sensitivity to outliers. If these are not filtered from the data set, the presence of odd data points within the data used to fit a model can lead to uncontrolled errors. One or two outliers can sometimes seriously skew the results of the least-squares analysis. These drawbacks in the estimation methodology used by JMP raise questions regarding the margin of error in the reported progress figures.

7. Discrepancies in achievement between national and global reporting mechanisms

The figures presented in national progress reports on access to water and sanitation do not always coincide with those included in JMP reports. This is in many cases attributed to differences in the definitions

employed at the national level relative to those adopted by the JMP monitoring system at the global level, while in other cases may be attributed to the reliance of national reporting systems on data sources that differ from those employed by JMP. Generally, the following reasons can explain the discrepancies that are commonly found between the national and global figures on access to water and sanitation:

- (a) Differing definitions;
- (b) Differing sources of data (service provider based data or users based data);
- (c) Differing estimation methods;
- (d) Differing population estimates;
- (e) Differing definition of urban and rural areas.

In order to overcome these challenges, JMP exerts efforts towards global and national coverage data reconciliation.²³ This is pursued by seeking to increase understanding of JMP methods and definitions at the national level, and reduce the differences between global and national reported coverage. In doing so, JMP oversees a series of reconciliation and harmonization activities, which include the following:

- (a) Filling data gaps in the JMP database from the results of the various national surveys;
- (b) Organizing inter-country workshops aimed at enhancing the mutual understanding of methods and at moving towards data uniformity between national water and sanitation authorities and national statistics);
- (c) Organizing national stakeholders meetings;
- (d) Explaining methodologies;
- (e) Promoting the use of standardized data collection tools endorsed by the international community.

Despite these efforts to reach conformity between internationally monitored data and local data, discrepancies between national and global datasets prevail. The establishment of specialized regional or local mechanisms for monitoring water supply and sanitation could contribute to the convergence of observations generated, based on international monitoring requirements (indicators and data) and those applied at the regional and national levels.

²³ WHO/UNICEF, 2009.

II. PROGRESS MADE TOWARDS ACHIEVING THE WATER AND SANITATION MDG IN THE ARAB REGION

The aim of this chapter is to present the overall progress that has been achieved by Arab countries towards the water and sanitation MDG target. The analysis presented in this chapter is based on the latest JMP 2011 data set released in March 2013.²⁴ Given that the JMP 2013 update does not report on access to water sources and sanitation facilities in a fully disaggregated manner, additional information is also provided in an effort to complete the picture of progress made in Arab countries, namely: access to “public standpipe” and “tanker truck” water sources, and access to toilets that are connected to “piped sewer systems”.²⁵ By highlighting some specificities of the Arab region, it becomes apparent of the need for additional service-oriented indicators to complement JMP basic indicators and to clarify the level and quality of water and sanitation services. This is discussed in the later sections of the chapter.

A. ANALYSIS OF PROGRESS MADE IN ACHIEVING THE WATER AND SANITATION TARGET IN ARAB COUNTRIES

JMP publishes biennial progress reports on drinking water and sanitation showing the progress achieved at the country level in terms of the percentage of population (national, urban and rural) that has access to drinking water sources and sanitation facilities. The information within the progress reports are disaggregated in accordance to the following categories:

- (a) Drinking water:
 - (i) Access to total improved water sources;
 - (ii) Piped on premises;
 - (iii) Other improved;
 - (iv) Unimproved;
 - (v) Surface water.
- (b) Sanitation facilities:
 - (i) Improved;
 - (ii) Shared;
 - (iii) Unimproved;
 - (iv) Open defecation.

Data are disclosed and are available at the online JMP database. There are slight discrepancies between the results presented in the published update reports and those uploaded on the JMP online database. The reason for these discrepancies is attributed to the use of rounded estimates to the nearest integer in the published reports, while the online data base uses exact unrounded figures for more accuracy. In order to avoid confusion, therefore, the analysis presented in this chapter is based on the following:

- (a) The source of data used in this analysis is taken from the JMP online database between March and July 2013;
- (b) The data used to produce figures 7, 8, 9, 11, 12, 14 and 15 are based on the weighted averages of the improved/unimproved drinking water and sanitation coverage obtained directly from JMP online database;

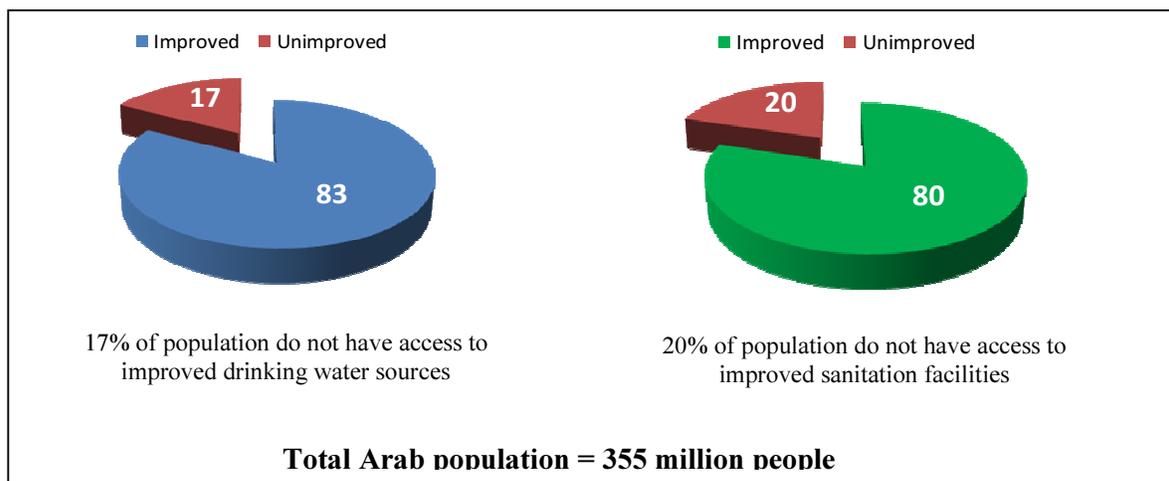
²⁴ See <http://www.wssinfo.org/data-estimates/table> (accessed May 2013).

²⁵ These are calculated using publicly available raw data obtained from JMP referenced surveys, albeit not included in JMP reports themselves.

(c) While the calculated regional average aims to represent the entire Arab region, complete temporal data sets are not available for some countries.²⁶

According to JMP, out of a total Arab population estimated at 355 million people in 2011, approximately 17 per cent, or 60 million people, do not have access to improved drinking water sources, and 20 per cent, or 71 million people, do not have access to improved sanitation facilities.

Figure 7. Access to drinking water sources and sanitation facilities in the Arab region, 2011



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

1. Drinking water coverage trends

Access to improved drinking water sources in the Arab region increased from 82 per cent of the population in 1990 to 83 per cent in 2011. While the increase is modest as a percentage change, it is considerable in coverage when viewed as a net number. This reflects the high population growth rates in Arab countries and the importance of pursuing water-related investments for increased service provision for the un-served as well as keeping pace with population growth trends.²⁷ Figure 8 compares access to drinking water from the “piped on premises” source (or house connection), other improved sources and unimproved sources for the years 1990 and 2011. Despite the lack of complete data sets for all Arab countries, available national averages were used in calculating the regional average in order to compare and report on the progress of access to drinking water sources and sanitation facilities in the Arab region during the period 1990-2011. It is therefore important to highlight that the presented number of population with access to improved water sources and sanitation facilities at the regional level are approximate.

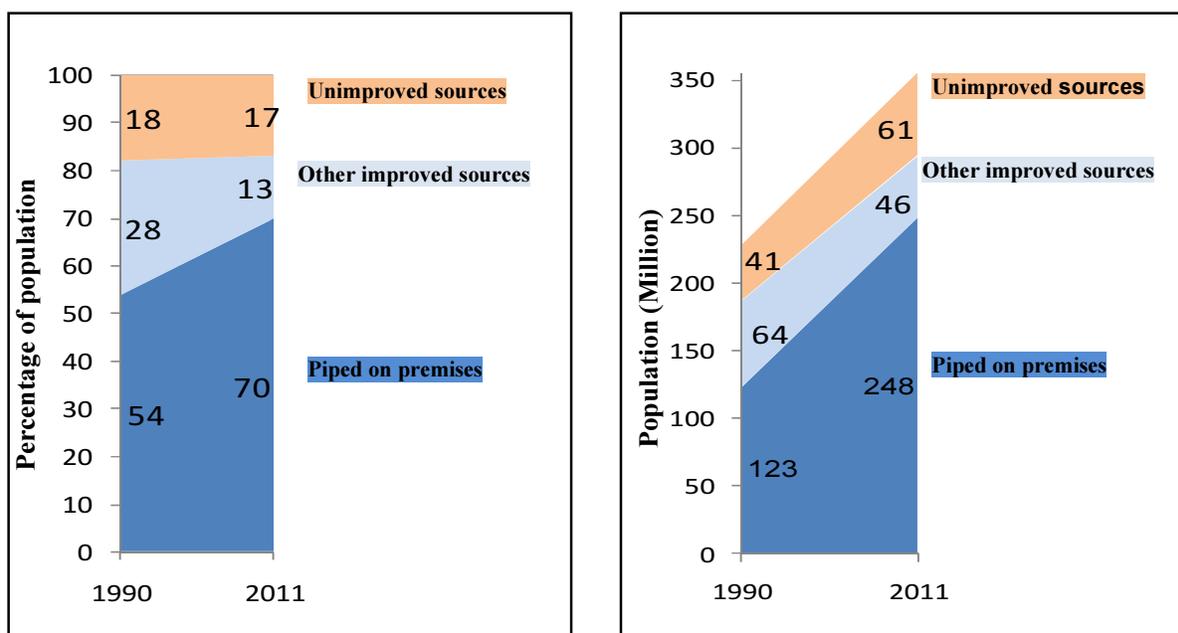
As shown in figure 8, the greatest gains in improved drinking water source were mainly people connected to water supply distribution networks, with about 125 million people in Arab countries gaining access to “piped on premises” water source since 1990. This indicates that significant investments have been made in developing additional water resources and the construction of distribution networks. Furthermore,

²⁶ This report considers the 22 member countries of the League of Arab States as those of the Arab region, namely: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen.

²⁷ According to the United Nations Statistics Division, out of all 22 Arab countries, only Morocco and Tunisia had a population growth rate below the world average during the period 2005-2010. Data obtained from the United Nations data website, available at <http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3A47>.

while the segment of the population relying on “other improved” water sources decreased by 18 million, those relying on “unimproved” water sources actually increased by 20 million between 1990 and 2011. The increase in access to “unimproved” water sources can be offset by the high gain in access to the “piped to premises” category.

Figure 8. Access to drinking water sources for 1990 and 2011 in the Arab region
(Percentage and population number)



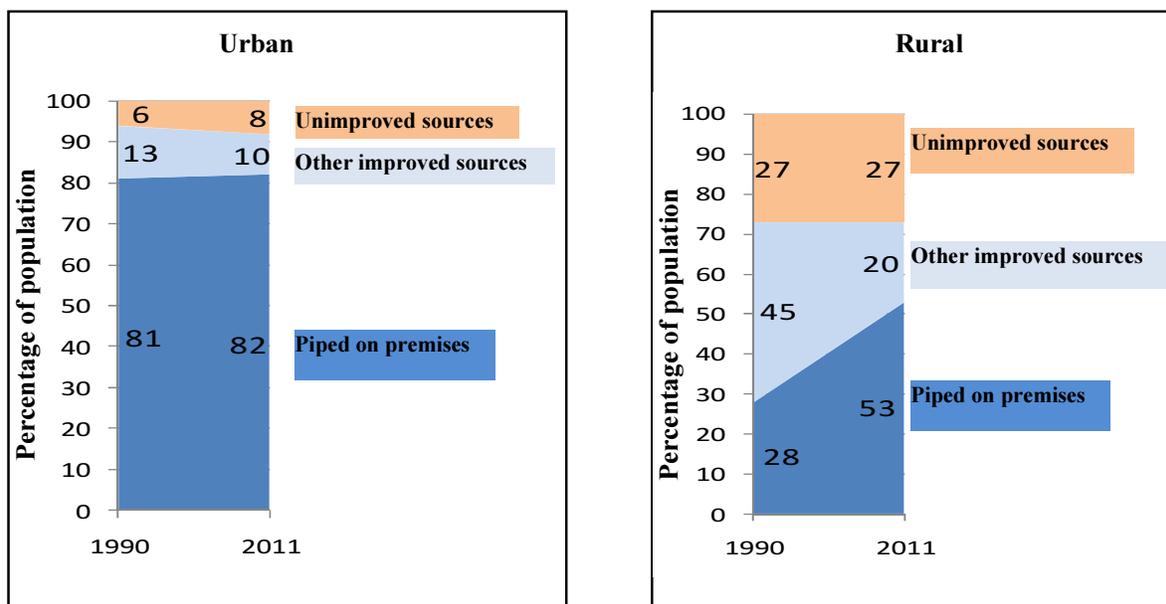
Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Note: In 1990, data are not available for Palestine and Somalia. In 2011, data are not available for Comoros, Libya, Qatar, Lebanon, Kuwait, United Arab Emirates and Tunisia.

In summary, progress in the Arab region on access to drinking water is mixed. While in terms of percentage coverage, access to improved water sources remained almost constant between 1990 and 2011, a significant progress took place within the “access to improved sources” category. In terms of the number of people, an additional 107 million people gained access to improved water sources during the same period. Nevertheless, those without access to improved water sources have increased by 20 million, reaching a total of 61 million people in 2011. This reflects the need to reorient investments in the water supply sector by giving priority to the un-served cohort before investing in improving the level of service for those already with an acceptable level of basic services. Moreover, an apparent obstacle to improving water supply services in particular and sustainable development in general is the high population growth that seems to offset any progress made.

The difficulty of ensuring universal access is further revealed when the figures are disaggregated between urban and rural areas. As seen in figure 9, as of 2011, 92 per cent of the urban population had access to improved drinking water sources compared to only 73 per cent of the rural population. Nevertheless, major improvements have taken place in access to piped water services in rural areas since 1990. With around one in every five people living in rural areas still lacking access to an improved water source, and rural-to-urban migration increasing in many Arab countries and fostering social discontent, this indicates a need for governments and donors to include improved access to drinking water sources in their rural development investment portfolios, noting the multiplier effects that access to clean water has for socio-economic development, health and girls education in un-served and underserved areas.

Figure 9. Access to drinking water sources in 1990 and 2011 in urban and rural areas of the Arab region

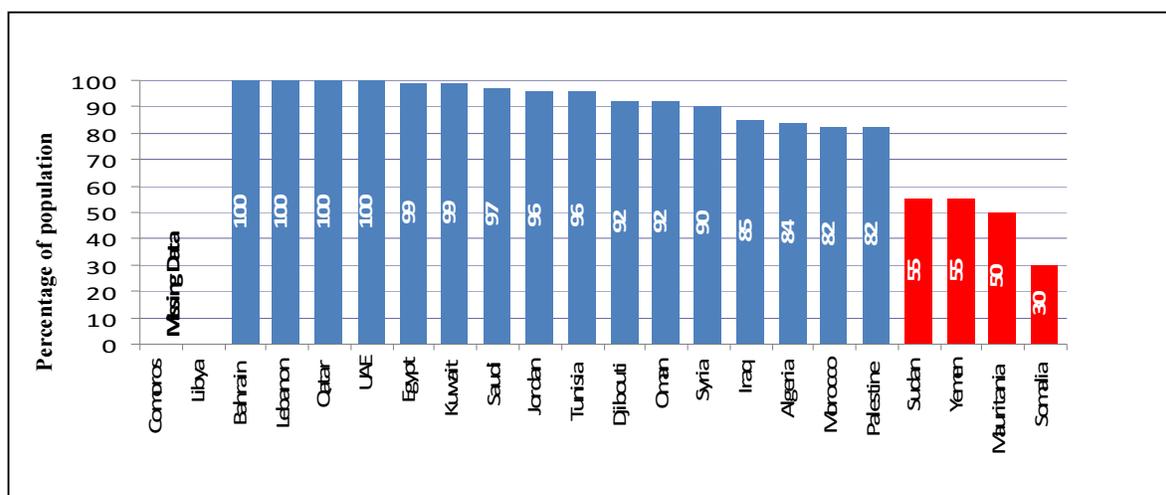


Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Note: In 1990, data were not available for Kuwait, Lebanon, Libya, Palestine, Qatar and United Arab Emirates. In 2011, data were not available for Comoros, Kuwait, Lebanon, Libya, Qatar, Tunisia and United Arab Emirates.

As shown in figure 10, which details access to improved drinking water sources at the country level, only Bahrain, Lebanon, Qatar and United Arab Emirates have reached full coverage of their population. The situation is particularly critical in the Sudan, Yemen, Mauritania and Somalia, where more than 40 per cent of their population still lacks access to improved water sources. There are no data available in the JMP report for Comoros and Libya.

Figure 10. Percentage of population with access to improved drinking water sources in Arab countries, 2011

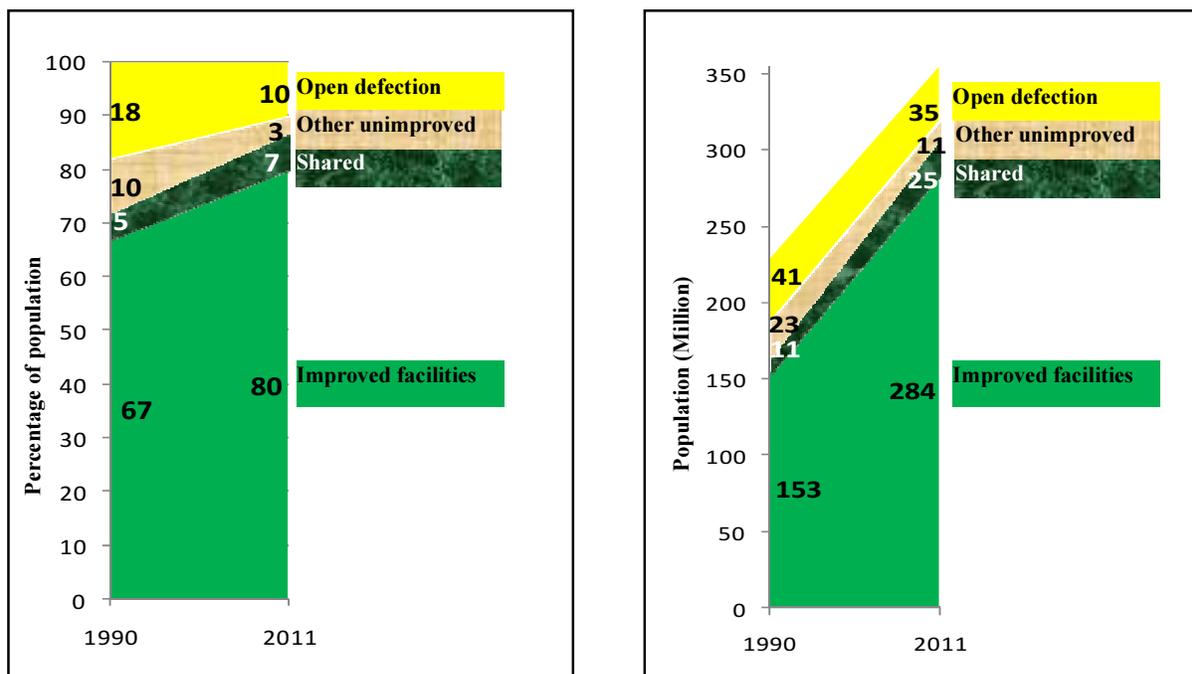


Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

2. Sanitation coverage trends

Access to improved sanitation facilities in the Arab region increased from 67 per cent in 1990 to 80 per cent in 2011, which translates into an additional 131 million people. Despite this progress, figure 11 shows that the segment of the population relying on unimproved sanitation facilities decreased only by 4 million people between 1990 and 2011, which can be attributed to the high population growth rate.

Figure 11. Sanitation coverage trends for the Arab region, 1990-2011

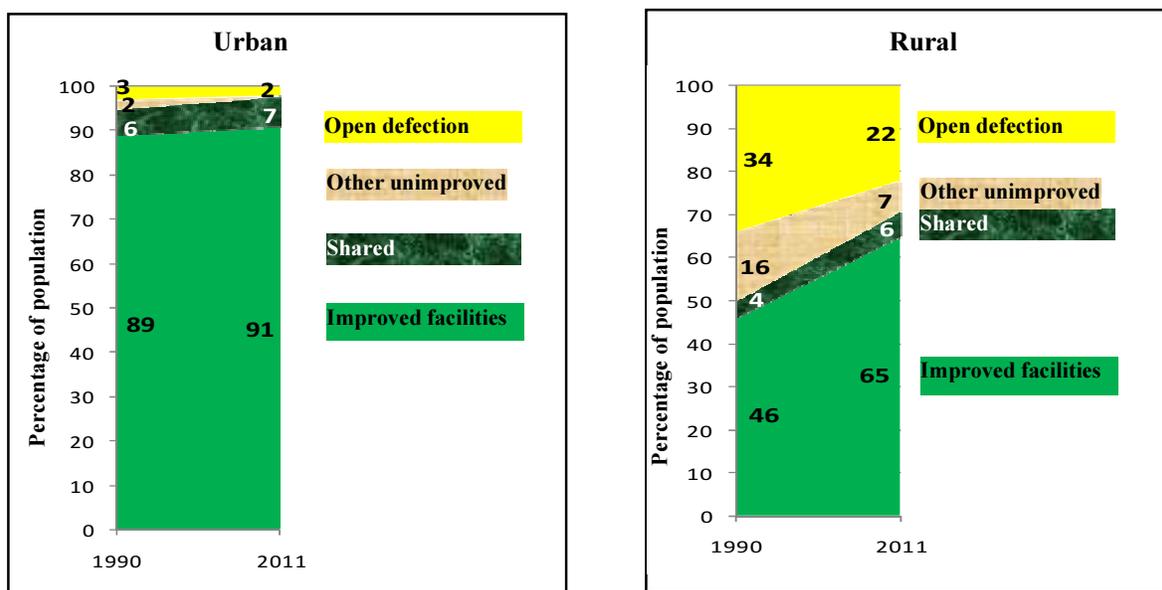


Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Note: In 1990, data were not available for Iraq, Lebanon, Palestine and Somalia. In 2011, data were not available for Comoros and Lebanon.

The disparity between urban and rural areas is wider for access to improved sanitation facilities compared to that of drinking water. As presented in figure 12, while 91 per cent of the urban population have access to improved sanitation facilities, only 65 per cent of the rural population have access to improved sanitation facilities. In terms of net population numbers, 83 million people living in urban areas in Arab countries gained access to improved sanitation facilities between 1990 and 2011, compared to only 47 million people living in the rural areas. Again the inequality between urban and rural areas is a cause for concern and an indicator of the need for more balanced investment and development policies.

Figure 12. Urban/rural sanitation coverage trends for the Arab region, 1990-2011

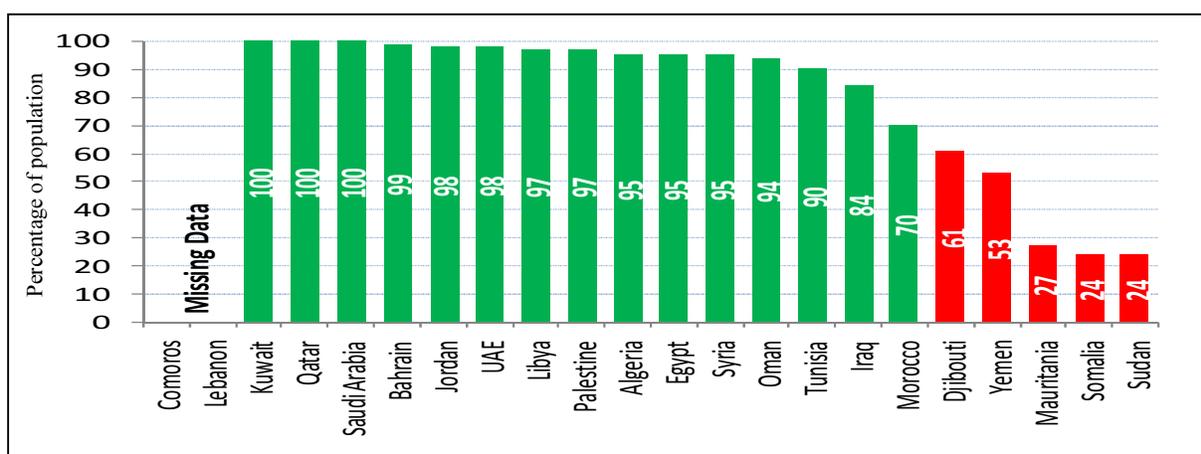


Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Note: In 1990, data were not available for Iraq, Lebanon, Palestine and Somalia. In 2011, data were not available for Comoros and Lebanon.

Compared to the baseline year of 1990, improvements were achieved in many countries of the Arab region. Egypt, for example, witnessed a substantial decrease in the number of people without access to improved sanitation from more than 16 million people in 1990 to fewer than 5 million in 2011. The Sudan, on the other hand, witnessed a significant increase in the number of people without access to improved sanitation, moving from 19 million people in 1990 to 26 million in 2011. As can be seen in figure 13, the Sudan, Somalia, Mauritania, Yemen and Djibouti (in ascending order) still suffer from large gaps in terms of access to improved sanitation facilities for a significant proportion of their population.

Figure 13. Sanitation coverage in Arab countries, 2011



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

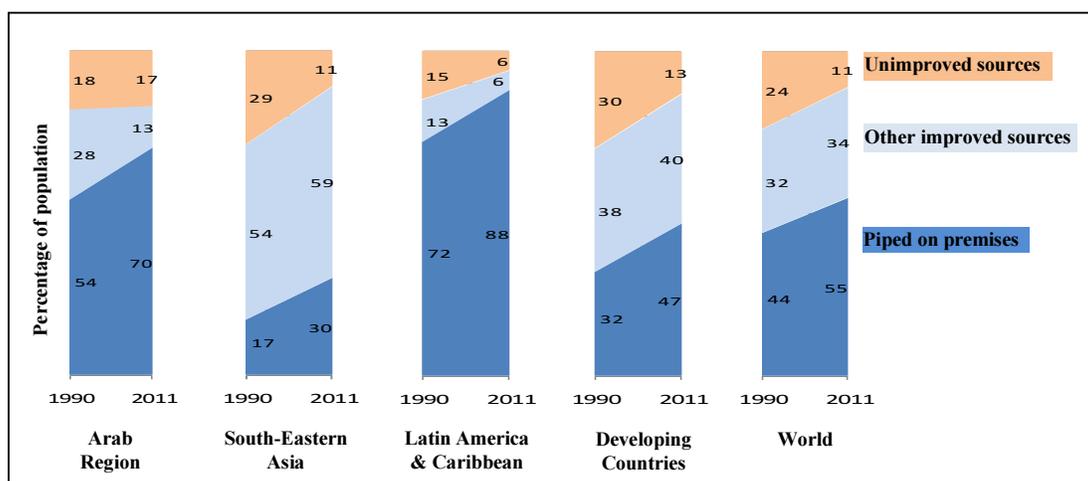
Detailed information related to connections to sewerage systems is not reported by JMP. Given the importance of such information for public health and the environment, progress made by Arab countries in this regard will be presented in the next section.

2. Global and intraregional comparison of coverage trends

Having examined the progress that Arab countries have made, both individually and collectively, in trying to achieve the water and sanitation MDG target, it is appropriate to compare the progress made by the region compared to other regions. Out of the regions categorized by JMP, three relevant regions were selected, namely, Southeast Asia, Latin America and the Caribbean, and the grouping classified as developing countries, in addition to the world average. Figures 14 and 15 show that access to improved water sources and sanitation facilities in the Arab region were higher in 1990 than they were in Southeast Asia, developing countries and the world average. While the Arab region did not witness progress in terms of a percentage increase in access to total improved water sources between 1990 and 2011, figure 14 shows a similar rate of progress by the Arab region with the Latin America and Caribbean region in terms of access to piped water services and higher rate of progress than the other regions.

In sanitation, the Arab region has reached a level of access by percentage that is higher than that of Southeast Asia, developing countries and the world average, reaching 80 per cent versus 71, 57 and 64 per cent, respectively. However, the Arab region still lags behind other regions in terms of access to total improved water sources, with 83 per cent achieved for the Arab region compared to 89, 94, 87 and 89 per cent, respectively, for Southeast Asia, Latin America and the Caribbean, developing countries and the world average. A factor that may have contributed to the low progress in access to improved water sources is water scarcity and the difficulties faced by rural populations in particular in reaching improved water sources. This indicates that some countries need to refocus their attention to water resources development as well as the delivery of services to satisfy the water needs of rural communities.

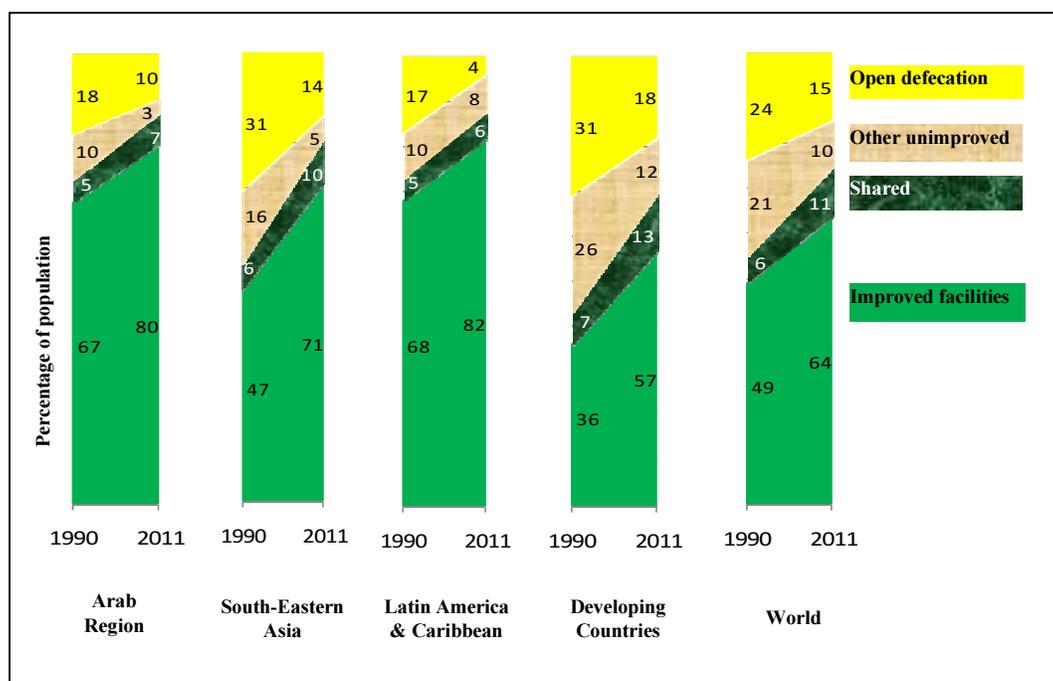
Figure 14. Progress achieved in the MDG water target in different regions of the world



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Notes: In this context, the following classification of regions is used in the calculation of indicators: (a) Arab region, which comprises all 22 member countries of the League of Arab States, including five LDCs (Comoros, Djibouti, Mauritania, the Sudan and Yemen); (b) Southeast Asia, namely, Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam; (c) Latin America and the Caribbean, comprising Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bolivia, Brazil, British Virgin Islands, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Falkland Islands, French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, United States Virgin Islands, Uruguay and Venezuela; and (d) developing countries, which comprises 167 countries distributed over nine regions. Refer to the JMP website for a detailed list.

Figure 15. Progress achieved in the MDG sanitation target in different regions of the world



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

4. Progress towards the MDG target at the national level

Declaring that the water target has been achieved can, theoretically, be interpreted differently depending on the scale viewed, global or national. Looking at the achievement from a global scale does not differentiate whether the progress was achieved in all the countries as long as the target number is reached, even if, for the sake of argument, all the progress has been achieved in only a few populous countries, such as China, India, Indonesia and Brazil. Viewing the achievement from the national perspective requires that all countries would need to achieve the target individually and, by doing so, would collectively reflect success at the global level as well. It is clear that the declaration made in 2012 that the water target had been achieved is based on viewing the progress from the global scale, as made evident from the statement of the Secretary-General of the United Nations that “since 1990, more than 2 billion people have gained access to drinking water sources”.²⁸ In fact, as a region, sub-Saharan Africa is not on track to achieve the water target by 2015. In order to clarify the progress made in the Arab region, it becomes important to make the assessment as to clarify the position of each country in the region. This is particularly relevant given that, according to the JMP assessment of 2010, while the Arab region is not expected to achieve the water target, it is expected to achieve the sanitation target by 2015, unlike the global trend.

Based on the JMP database and the baseline information provided for the year 1990, national targets for halving the population without access to improved water sources and sanitation facilities needed to achieve the water and sanitation MDG target have been calculated, as shown in table 4.²⁹

²⁸ Ibid.

²⁹ Targets are calculated as follows, noting TU = Target of proportion of people without access to safe drinking water and basic sanitation: $TU = 0.5 * (\text{proportion of people without access to safe drinking water and basic sanitation in 1990 baseline year})$. When 1990 data is not available for some countries, 1991, 1992 or 1993 data is used). Target of proportion of people with access to safe drinking water and basic sanitation = $100 - TU$.

TABLE 4. NATIONAL TARGETS FOR INCREASING ACCESS TO WATER AND SANITATION IN ARAB COUNTRIES
BASED ON THE MDG GLOBAL TARGET
(Percentage)

Country	Improved drinking water sources		Improved sanitation facilities	
	1990 ^{a/}	National target (2015)	1990 ^{a/}	National target (2015)
Algeria	94	97	89	94.5
Bahrain	95	97.5	99	99.5
Comoros	87	93.5	18	59
Djibouti	75	87.5	62	81
Egypt	93	96.5	72	86
Iraq ^{b/}	78	89	72 (1991)	86
Jordan	97	98.5	97	98.5
Kuwait	99	99.5	100	100
Lebanon ^{b/}	100	100	98 (1993)	99
Libya	54	77	97	98.5
Mauritania	30	65	16	58
Morocco	73	86.5	53	76.5
Oman	79	89.5	82	91
Palestine ^{b/}	96 (1991)	98	86 (1991)	93
Qatar	100	100	100	100
Saudi Arabia	92	96	92	96
Somalia ^{b/}	19 (1993)	59.5	21 (1993)	60.5
The Sudan	67	83.5	27	63.5
Syrian Arab Republic	86	93	85	92.5
Tunisia	82	91	73	86.5
United Arab Emirates	100	100	97	98.5
Yemen	66	83	24	62

Source: ESCWA.

Notes: a/ 1990 is the baseline year for measuring progress towards drinking water supply and sanitation indicators.

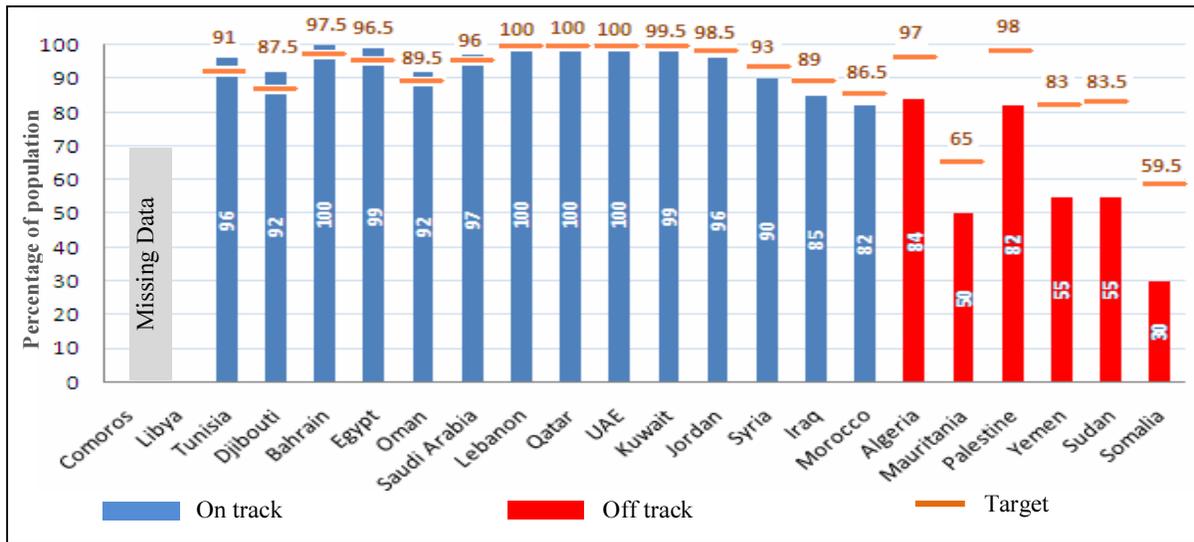
b/ Data for 1990 were not available for Iraq, Lebanon, Palestine and Somalia; available data of the next year closest to 1990 was used.

While Arab countries are on track to meet the MDG sanitation target, progress towards the drinking water target is lagging (see figures 16 and 17).³⁰ Globally, however, it was reported by JMP that while the drinking water target had been achieved in 2010, the sanitation target will not be met by the target date of 2015.

As presented in figure 16, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia and United Arab Emirates have met or are on track to meet the MDG drinking water access target; while Algeria, Mauritania, Palestine, Somalia, the Sudan and Yemen still face major challenges, which have generally been attributed to water shortages, inadequate water management, lack of financial resources and insufficient investment. No complete estimates are available for Comoros and Libya.

³⁰ WHO/UNICEF, 2011a.

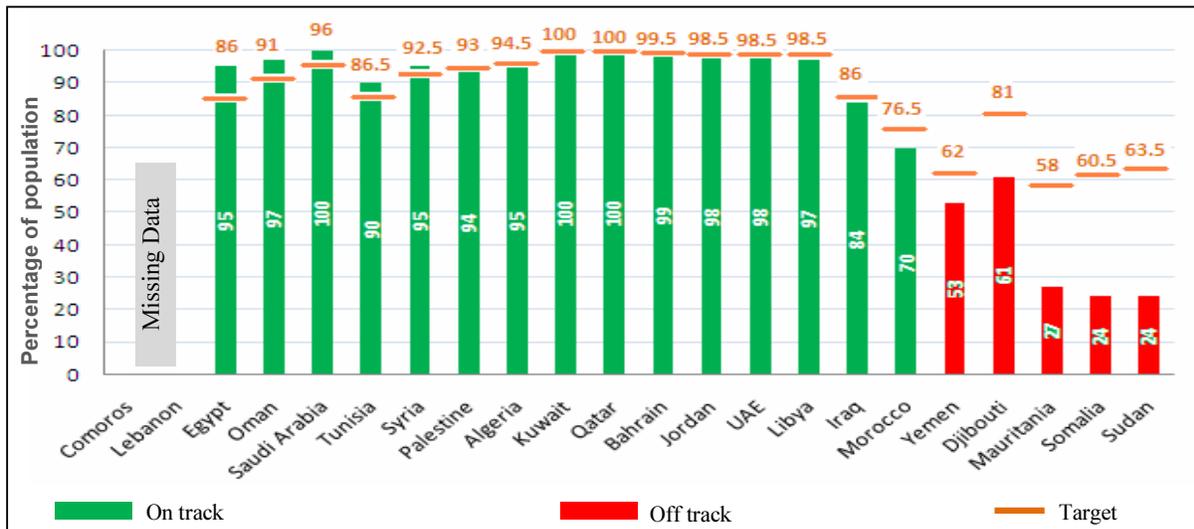
Figure 16. Proportion of the population using improved water sources: Arab countries that are on track to meet their MDG drinking water target, 2011



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

While most Arab countries have met or are on track to meet the MDG sanitation target by 2015, Djibouti, Mauritania, Somalia, the Sudan and Yemen are not expected to be able to do so by 2015, as shown in figure 17. No complete estimates were available in the JMP online database for Comoros and Lebanon.

Figure 17. Proportion of the population using improved sanitation facilities: Arab countries that are on track to meet their MDG sanitation target, 2011



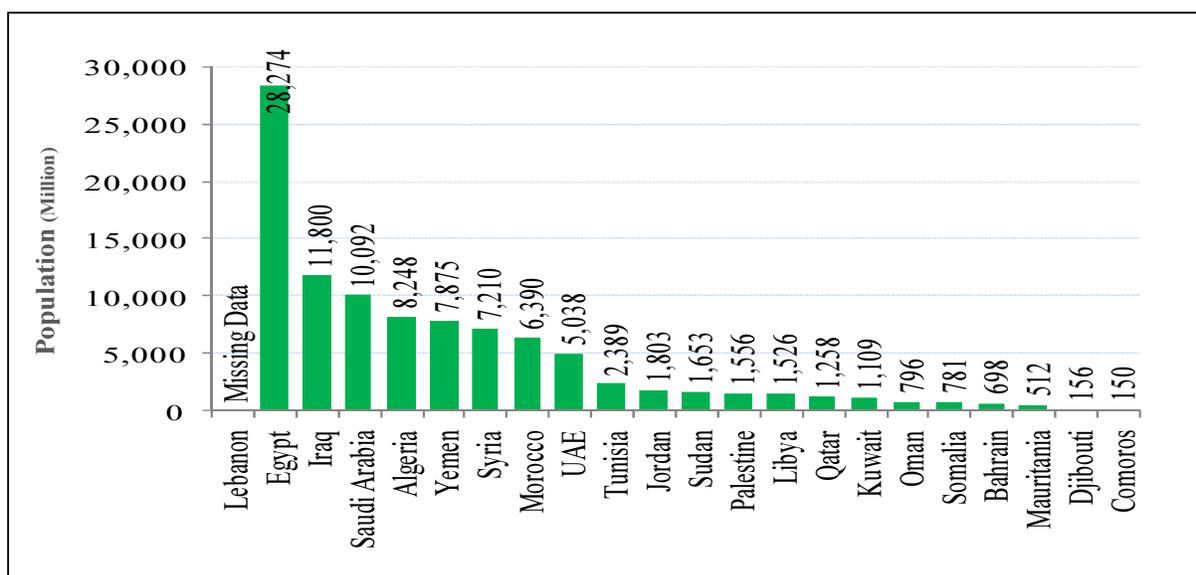
Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

5. Assessing performance based on net population figures

The standard MDG progress indicator may not be able to represent fully the progress made in countries that struggle with high population growth and that lack financial resources to invest in developing water and sanitation services, which could be the case of LDCs in the Arab region. Therefore, it seems appropriate to represent the results of the section above in a manner that puts less emphasis on coverage rates and highlights the progress made in terms of the number of people.

Figure 18 presents the share of the population that has gained access to improved sanitation facilities over the period 1995-2011. As can be seen, impressive progress has been achieved in Egypt despite significant population growth. Iraq was also able to achieve significant progress despite the unstable political situation and conflicts that the country witnessed during that period. Out of Arab LDCs, Yemen shows good progress, although it was outstripped by high population growth rates reported to be 3.09 per cent between 1995 and 2000, 2.78 per cent between 2000 and 2005, and 2.45 per cent between 2005 and 2010.³¹

Figure 18. Progress achieved in access to improved sanitation facilities in Arab countries, 1995-2011



Source: ESCWA, based on the online database of WHO/UNICEF Joint Monitoring Programme – updated data 2011 (accessed June 2013).

Note: The period 1990-1995 was not considered due to insufficient data availability at JMP database for some Arab countries.

B. ADDITIONAL INDICATORS FOR MEASURING PROGRESS MADE IN ACHIEVING THE WATER AND SANITATION MDG IN ARAB COUNTRIES

JMP issues a special file for each country that includes the original data related to the percentage of the population that have access to the different drinking water sources and sanitation facilities. These data are gathered from several questionnaires and field survey sources that are available at the JMP website (see table 3 above).³² Among the indicators that are related to improved and unimproved access to drinking water

³¹ Ibid.

³² See <http://www.wssinfo.org/documents-links/documents> (accessed May 2013).

and sanitation, albeit not reported separately by JMP, the following additional indicators are considered important to estimate:

- (a) Drinking water sources:
 - (i) Public standpipe;
 - (ii) Tanker trucks.
- (b) Sanitation: Toilets that are connected to piped sewer systems.

While the original data related to these indicators are available in JMP national files, these indicators are not calculated or presented in JMP update reports issued every two years. Review of the country files thus allows for estimating the percentage of the population that has access to a public standpipe drinking water source and the percentage of the population that is connected to a public sewer system, which are two indicators that can better inform understanding and policy formulation on access to drinking water and sanitation services. As an example, figure 19 shows how this data is obtained from the country file for Egypt.

Figure 19. Example of the original data for drinking water collected by JMP: Country file of Egypt

Drinking water original data submitted to the JMP	DHS95	Egypt		
	Demographic and Health Survey	1995		
	Generic classification	Original denomination	Urban	Rural	Total
Tap water: Total				
Tap water: Piped onto premises	Piped water- residence	92.4	53.2	73.2
Tap water: Piped water into dwelling				
Tap water: Piped water to yard/plot				
Tap water: Public tap, standpipe	Public tap	4.1	16.2	10.1
Protected well or spring: Total				
Wells: Total				
Wells: Private	Well in residence	0.7	13.3	6.9
Wells: Public	Public well	0.4	12.2	6.2
Tubewell, borehole: Total				
Traditional well: Total				
Protected well: Total				
Protected well: Private				
Protected well: Public				
Unprotected well: Total				
Unprotected well: Private				
Unprotected well: Public				
Protected spring: Total				
Unprotected spring: Total				
Bottled water: Total				
Bottled water: without other improved				
Surface water: Total				
River Nile/canal		0.0	0.3	0.1
Other improved source: Total				
Cart with small tank/drum				
Tanker truck provided				
Other non-improved: Other	Other	2.3	4.7	3.5
DK/missing				
Total	Total	99.9	99.9	100.0

Source: Country file of Egypt available at WHO/UNICEF JMP website for 2012 Update.

Table 5 below summarizes the data on the percentage of population relying on standpipes, which is available in the country file of Egypt.

TABLE 5. PERCENTAGE ACCESS TO STANDPIPES IN URBAN AREAS OF EGYPT, AS REPORTED BY VARIOUS SURVEYS, 2012 UPDATE

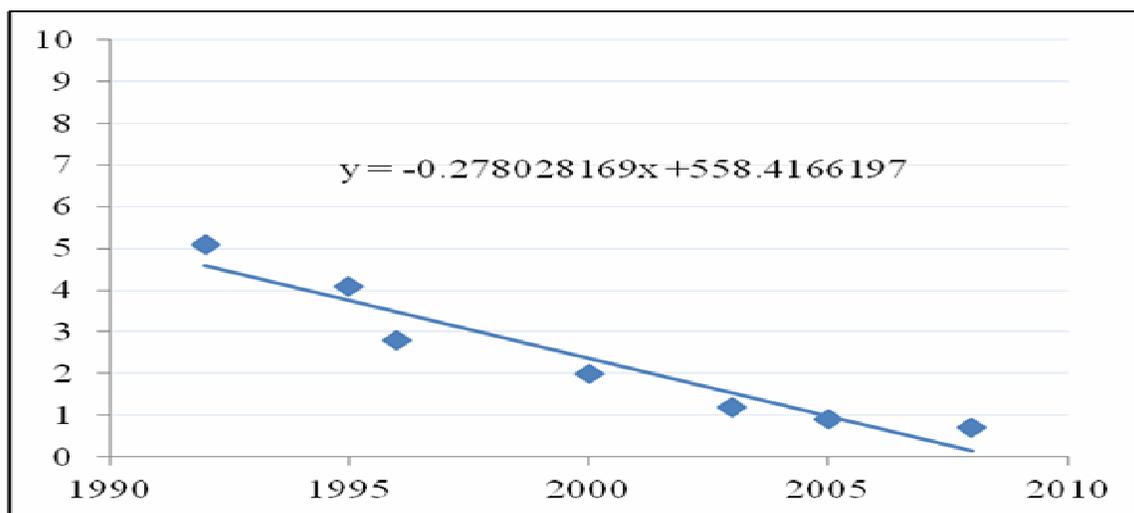
Date and source of surveys	DHS 1992	DHS 1995	CEN ^{a/} 1996	DHS 2000	DHS 2003	DHS 2005	CEN* 2006	DHS 2008
Percentage of population	5.1	4.1	2.8	2	1.2	0.9	2	0.7

Source: ESCWA, based on JMP 2012 update.

Note: ^{a/} Population census.

Using statistical analysis, the equation of the linear trend curve of the data points of table 5 is determined, as shown in figure 20.

Figure 20. Equation of the linear trend curve of the percentage of urban population that have access to public standpipe (Egypt)



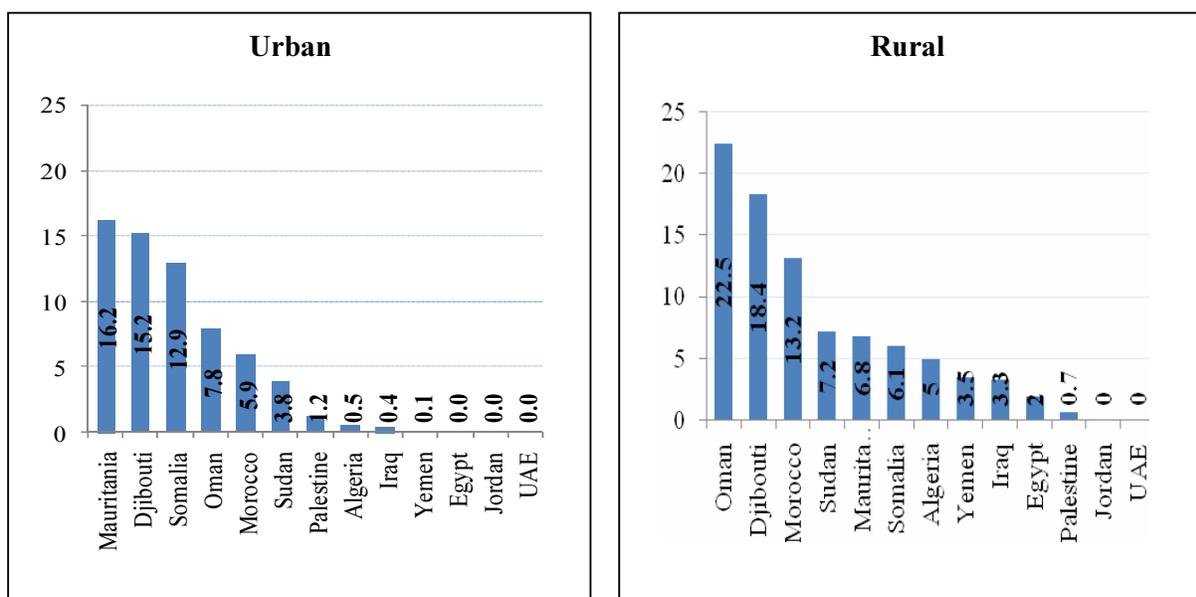
Source: ESCWA.

Using the obtained linear tendency curve equation, the percentage of population with access to a public standpipe can be determined for all years from 1990 to 2008, which are the upper and lower limits of the available data. Two years of extrapolation on the linear regression curve and up to four years of constant extrapolation (horizontally) can then be performed.

Based on the data available from the results of surveys in JMP national files, the percentages of the population that rely on “public tap/standpipe” and “tanker trucks” for drinking water in urban and rural areas were calculated using the methodology detailed above. The share of the population using public standpipes as a water source is presented in annex I for urban areas and annex II for rural areas in Arab countries, while the share of the population that uses tanker trucks as a water source in urban areas is presented in annex III and in rural areas in annex IV. Additionally, the same approach is used to calculate the percentages of the urban and rural population who rely on toilets connected to “piped sewer systems”, as presented in annex V for urban areas and annex VI for rural areas.

As shown in figure 21, a significant percentage of the urban population in Mauritania, Djibouti and Somalia relied on standpipes as a drinking water source in 2011. This provides important insights for understanding water distribution systems in other countries as well. For example, public standpipes situated at intermediate locations are used by water authorities in Oman as filling stations to distribute water to the population by water tanker trucks. However, data is missing for some countries on this indicator in the country files.

Figure 21. Percentage of the urban and rural population using standpipes as a source of drinking water, 2011

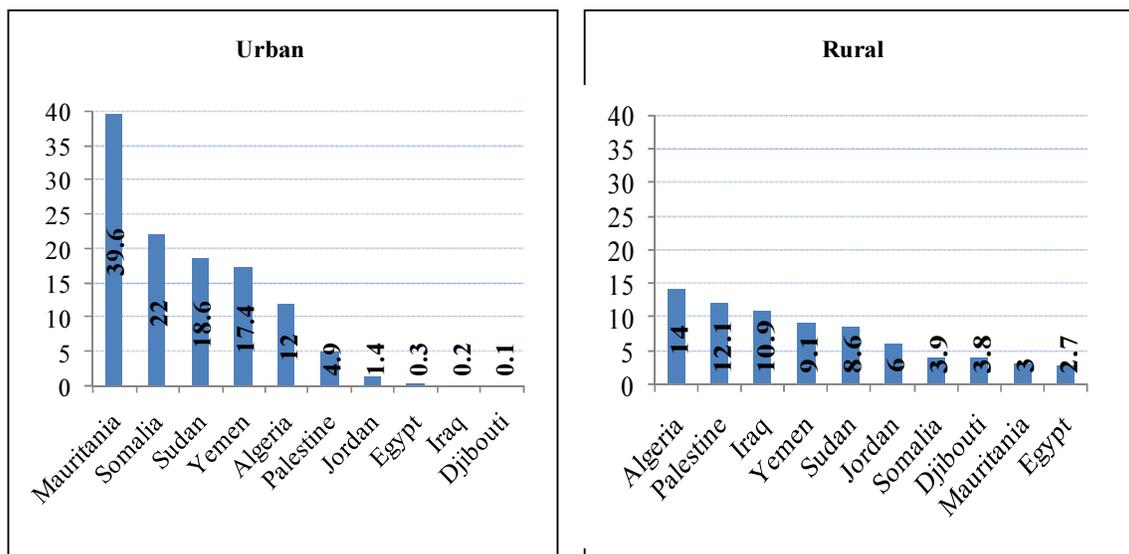


Source: ESCWA, based on WHO/UNICEF – JMP country files.

Note: Data are missing for Bahrain, Comoros, Kuwait, Lebanon, Libya, Qatar, Saudi Arabia, Syrian Arab Republic and Tunisia.

As noted above, annexes III and IV present the percentages of the population that used tanker truck provision of drinking water in urban and rural areas during the period 1990-2011. This is summarized in figure 22, which shows that nearly 40 per cent of the urban population in Mauritania relied on water tankers for water supply in 2011, which is significant and was similarly observed to a lesser extent in Somalia, the Sudan and Yemen. Even in more developed countries, tanker trucks remain an important source of water; for example, 14 per cent of Algerians relied on water tankers in rural areas in 2011. It is also well known that a significant proportion of the populations in Jordan, Lebanon and Palestine also depend on tanker trucks for the delivery of water, although this is not captured in the country files compiled by JMP.

Figure 22. Percentage of urban and rural population using tanker trucks as source of drinking water, 2011

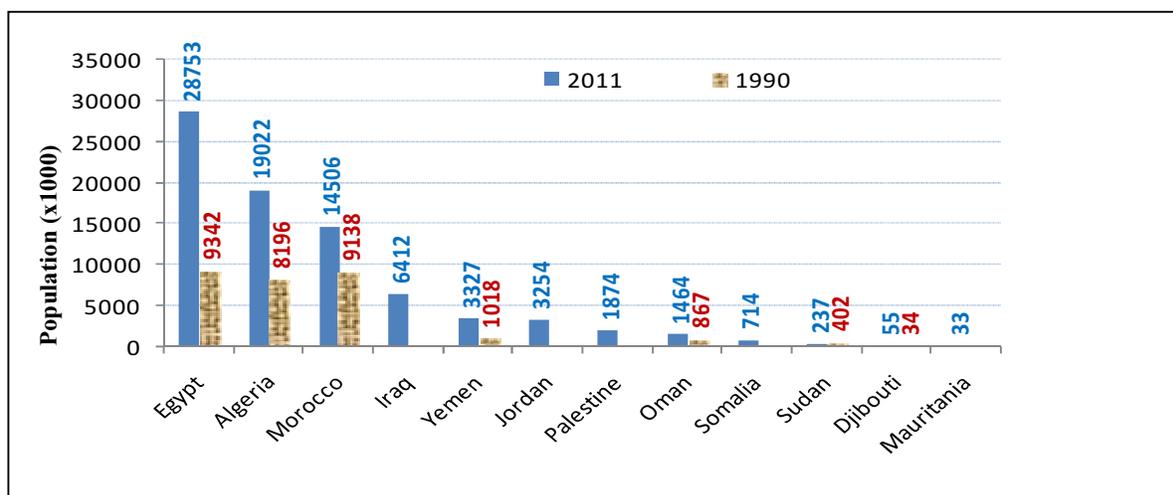


Source: ESCWA, based on WHO/UNICEF – JMP country files.

Note: Data are missing for Bahrain, Comoros, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia and United Arab Emirates.

Annexes V and VI present the percentages of the population that use toilets connected to “piped sewer systems” in urban and rural areas for the period 1990-2011. To summarize those findings, figure 23 shows that 19.4 million people living in urban areas in Egypt have gained access to public sewer networks since 1990, while only 21,000 people living in urban areas in Djibouti gained access to public sewer networks over the same period.

Figure 23. Urban population using toilets connected to piped sewer systems, 2011 and 1990



Source: ESCWA, based on WHO/UNICEF – JMP country files.

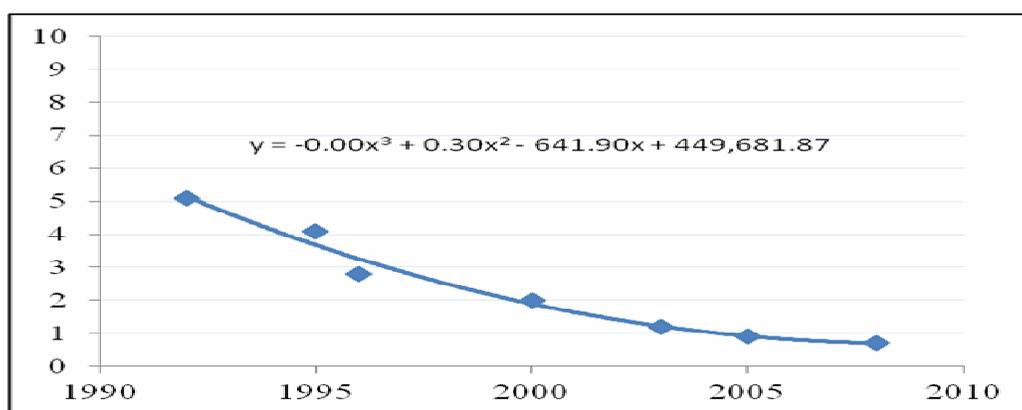
Note: Data are missing for Bahrain, Comoros, Kuwait, Lebanon, Libya, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia and United Arab Emirates.

C. ALTERNATIVE METHODS FOR ESTIMATING PROGRESS MADE IN ACHIEVING THE WATER AND SANITATION MDG TARGET IN ARAB COUNTRIES

It is also important to reveal the implications of the methodology adopted by JMP to estimate missing data over a period of years. While JMP uses linear regression to estimate missing data in a time series, figure 24 shows that polynomial curves of the second or third degree can better fit the original data points than the first degree approach applied by JMP.

Although it is simple, a linear regression simulates a tendency in only one direction (ascending or descending). The linear regression method is thus oversimplified and is inadequate for simulating the variation in access to drinking water and sanitation over time. Access to drinking water and sanitation trends could change at certain times from ascending to descending trends; in this case, linear equations can represent only ascending data, while the polynomial equation can represent ascending and descending trends. This is important for countries of the Arab region that have experienced fluctuations in access to water and sanitation services owing to changes in population rates that may have exceeded rates of water investments; and for countries that have suffered from conflict, crisis or occupation where water infrastructure has been damaged or destroyed.

Figure 24. Equation of the polynomial trend curve of a third degree of the percentage of urban population that have access to public standpipes (Egypt)



Source: ESCWA.

For instance, in figure 24 above, it can be noticed that the use of the polynomial equation to represent the percentage of urban population with access to public standpipe can better reflect the progression of coverage over time than the one currently applied by JMP. Moreover, polynomial curves allow the capture of any rapid changes in coverage over time.

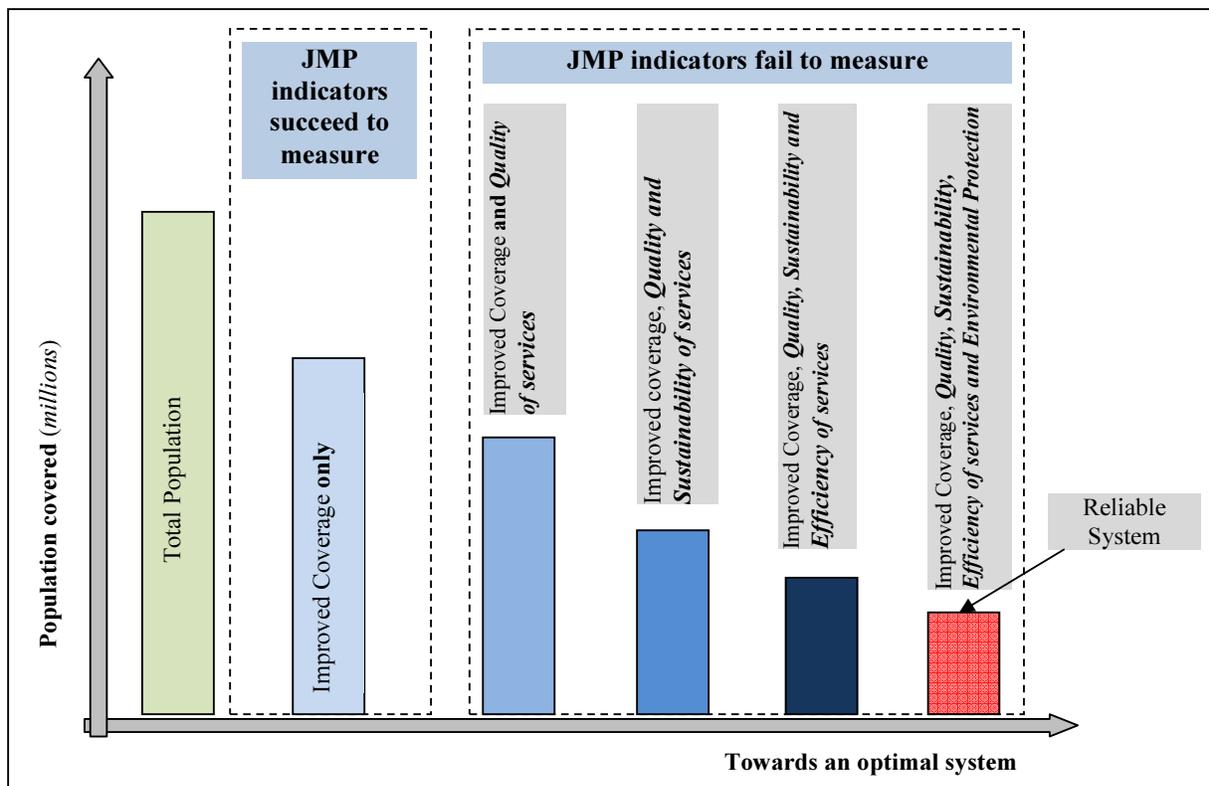
The suitability of using other types of curve-fitting than the linear trend line was argued by JMP in their 2013 progress update report: “Questions are often raised about the appropriateness of using a linear trend line. It can be argued that other types of curve-fitting procedures might better reflect the progression of coverage over time. However, the paucity of data points in many countries makes the use of more complex procedures inconsistent with good statistical practice. When MDG monitoring commenced, linear regression was deemed the best method for the limited amount of often poorly comparable data on file (some countries had as few as two data points for many years), especially given the relatively short time frame of MDGs – 25 years is only a fraction of the time needed to go from no access to full coverage. Unfortunately, the current use of linear regression to derive estimates does not allow rapid changes in coverage to be captured. The increased availability of comparable data now allows for the exploration of more sophisticated modeling in preparation for a new, post-2015 drinking water target.”

It can thus be concluded that the polynomial approach is more reliable than the linear approach, but that JMP was unable to pursue such curve-fitting procedures for all countries owing to data availability constraints, particularly given that some countries had as few as two data points reported between 1990 and 2011. It seems likely that JMP may envisage the adoption of more reliable data estimation methods for calculating water and sanitation targets and indicators, as developed in a post-2015 development agenda.

D. SHORTCOMINGS OF JMP IN MEASURING THE QUALITY AND RELIABILITY OF WATER AND SANITATION SERVICES

At first glance, the MDG water and sanitation indicators appear to measure access to water and sanitation services. However, a closer look into the different categories that define “improved water supply sources” and “improved sanitation facilities” reveals that the rationale behind their categorization is directly related to public health improvements. These indicators thus fall short of clarifying the level and quality of water and sanitation services accessed by the population. For example, while the latest JMP report estimates that 83 per cent of the population in the Arab region had access to improved water sources, this does not mean that 83 per cent of the total population had regular or reliable access to water supplies, or that the quality of water supplied was adequate for drinking. This is because the definition of the indicators related to the MDG 7-C target measure primarily access to facilities (installations) and, as such, they do not accurately represent the actual quality and continuity of water supply and sanitation services in the region. This demonstrates the need to develop additional indicators that can more appropriately reflect the delivery of water supply and sanitation services. These additional indicators can in turn be used to better measure progress on access to clean drinking water and improved sanitation, thereby resulting in more reliable information on access, taking into considerations the dimensions of quality, sustainability, efficiency of the service as well as such environmental considerations as wastewater collection, treatment and reuse (see figure 25).

Figure 25. Towards optimal water and sanitation monitoring systems



Source: ESCWA.

1. Shortcomings related to water supply coverage

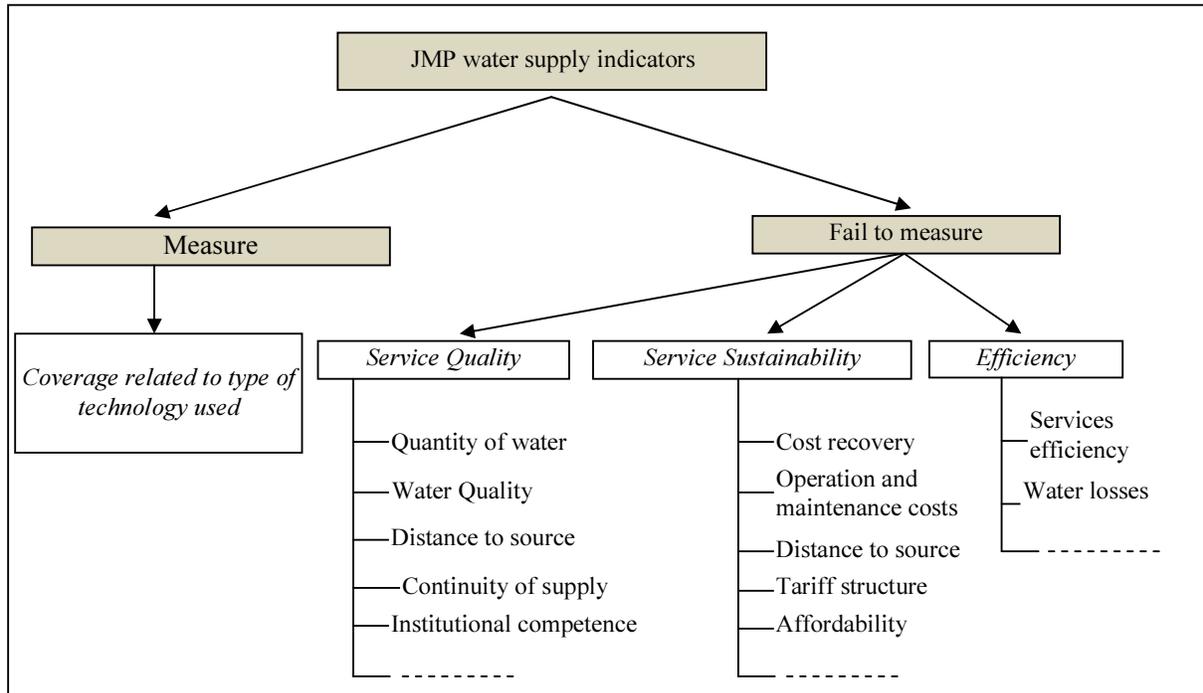
During the past years, the adopted JMP indicators have been subject to scrutiny, leading some experts and institutions to voice their concern about the need to develop further these indicators in order to incorporate some missing elements and issues. These, which are illustrated in figure 26, are as follows:

(a) *Quality of service*: The indicators do not include information related to water consumption (litres per person per day), water quality, the distance to source, continuity of supply, institutional competence, structural state of infrastructure and equipment, and other aspects related to the quality of services;

(b) *Sustainability of service*: The indicators do not include information related to cost recovery, operation and maintenance costs, tariff structure, the financial burden associated with the cost of water in proportion to income (affordability), and customer satisfaction;

(c) *Efficiency*: The indicators do not include information related to the service technical and financial efficiency. The most obvious indicator is the unit production cost, physical leakages rates and non-revenue water.

Figure 26. Shortcomings of the MDG indicators as measured by JMP



Source: ESCWA.

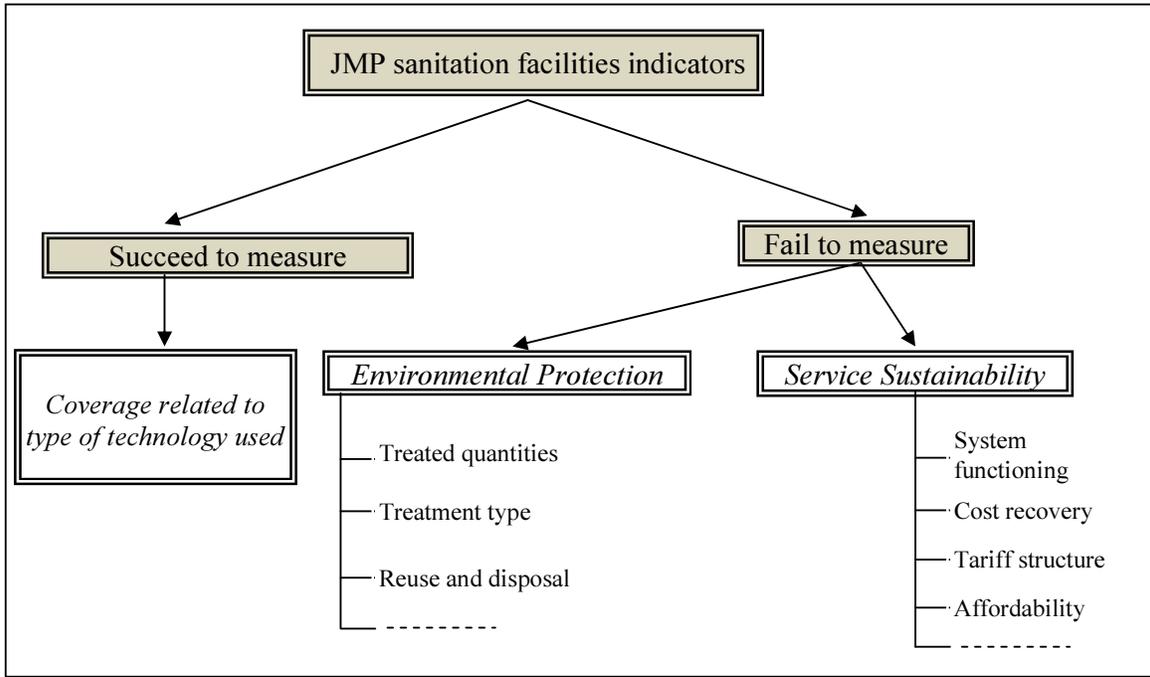
2. Shortcomings related to sanitation coverage

The indicators adopted by JMP for monitoring the MDG target, albeit simple and comprehensible, do not provide sufficient information regarding the following factors on the sanitation services (see figure 27):

(a) *Treatment*: It does not include information related to the wastewater treated quantities before discharge, or provide any information on the type of treatment;

- (b) *Ultimate disposal*: It does not include information on the level and type of wastewater reuse;
- (c) *Sustainability*: It does not include information related to the physical, institutional, financial and environmental of the sanitation/wastewater system.

Figure 27. Shortcomings of the MDG sanitation indicators as measured by JMP



Source: ESCWA.

Monitoring of these aspects of the water and sanitation system is critical to provide decision makers and the general public a clear picture of the level and quality of the water and sanitation services provided. The information can then be used for informed planning, thereby leading to targeted investment, increased coverage and, eventually, enhanced and sustainable service levels.

III. THE MDG+ INITIATIVE

In view of improving monitoring and reporting on water supply and sanitation services in the Arab region, a regional effort was launched to develop a mechanism that builds upon the baseline information collected by JMP. A set of additional indicators that respond to regional issues and concerns that affect access to water supply and sanitation services in the Arab region, have been developed. The resulting MDG+ Initiative aims to establish and institutionalize a regional mechanism for monitoring and reporting on access to water supply and sanitation services in Arab countries based on the regional context in view of developing a knowledge platform that provides reliable data, information and analysis regarding the level and quality of access to water supply and sanitation services in the region.

The information generated and disseminated from this platform will serve as basis for informed decision-making on the needs, priorities and targets to realize the human right to water and sanitation in the Arab region. During the process of its implementation, the Initiative will also serve to inform national, regional and international policy dialogue and planning discussions on the adoption of regionally sensitive approaches for framing development targets in a post-2015 environment.

A. REGIONAL SPECIFICITIES AND THE RATIONALE FOR ADDITIONAL INDICATORS

Given the direct connection between integrated water resources management and socio-economic development, it is hard to address sustainable development in the Arab region in isolation of its political context. The region continues to suffer the consequences of occupation, instability and conflict. It has experienced various intensities of violence and crisis in many countries, most notably in Palestine and countries of the Arab Spring. The despair of marginalized communities, elevated levels of unemployed youth and the resulting growing poverty have escalated on account of the inability of political actors to cope with the challenges and create the conditions to meet basic needs or effectively use the opportunities to improve human welfare.³³

Developing goals and targets for monitoring progress to access drinking water supply and sanitation services depends on the social, environmental and economic development at national, regional and global levels. In this introductory section, specificities of the Arab region with regard to its environmental conditions, water scarcity, water pollution and climate change are briefly highlighted.

1. *Environmental conditions*

The environment in the Arab region is mostly characterised by its water scarcity. Most of the region is arid or semi-arid, with almost 80 per cent of the Arab world covered by deserts, stretching from Mauritania and Morocco to Oman and the United Arab Emirates. Population pressures, the over-exploitation of resources and rapid urbanization contribute severely to its degradation.³⁴ The following review treats the environmental specificity of the Arab region in the light of water scarcity, water pollution and climate change to highlight the anticipated consequences on water supply and sanitation services in the region.

2. *Demographic trends*

The rapid rate of population growth in Arab countries is considered a major cross-cutting issue that contributes to pressure water availability and environmental sustainability. The total population of the Arab region reached 355 million in 2011, increasing by 127 million from the 1990 level (that is, the baseline year

³³ In 2013, unemployment in the Arab region exceeded their 1990 levels, reaching 25 per cent of Arab youth and 20 per cent of Arab women. In order to respond to this challenge, Tunisia has proposed a goal on job creation. For more information, see United Nations and League of Arab States, 2013.

³⁴ UNDP, 2009.

of the water and sanitation MDG target). The percentage of urban population in the Arab region reached 56.6 per cent in 2011, thereby surpassing the rural population and signalling that the Arab region had become more urban than rural.³⁵ This urban population is set to grow and projected to reach 284 million or 61.6 per cent of the total population by 2025.³⁶ This situation will exert pressure on the technical and financial elements of the water supply systems and require the upgrade of existing infrastructure. In addition, urbanization of the region will at the same time generate growing wastewater quantities, leading to the need for costly wastewater collection and treatment.

3. *Water scarcity*

The region faces severe water shortages that are exacerbated by several factors, notably the rapid increase in municipal, agricultural and industrial water demands and expanding aridity owing to climate variability, climate change and desertification. The per-capita share of renewable internal freshwater resources in many countries of the region is among the lowest in the world. Specifically, 60 per cent of Arab countries fall within the “absolute scarcity threshold” of 500 m³ per capita annually and drops to as low as 7, 19, 31, 85, 88 m³ in Kuwait, United Arab Emirates, Qatar, Saudi Arabia and Bahrain, respectively.³⁷

The very low level of renewable freshwater availability in the Arab region illustrates the extent that these quantities are not even adequate in some countries to cover the domestic water demand. Sustainable development at such low levels of water availability becomes a major challenge, considering the high water requirements for sustainable economic development in such activities as agriculture and industry. The severe water scarcity has forced the countries of the Gulf Cooperation Council (GCC) to produce drinking water from non-conventional water supplies in the form of desalination plants and from fossil groundwater, which eventually translates into extensively high production cost and adverse impacts on the environment.

4. *Water pollution*

Water pollution is a growing serious challenge in the Arab region. The main reasons of water pollution in the region are the increased use of chemical fertilizers and pesticides, and the increased uncontrolled disposal of untreated and partially treated domestic and industrial wastewater. Threats of water pollution in the region can pose substantial constraints on access to drinking water supply by polluting many of the easily accessible water sources (surface and groundwater) that the population relies on for domestic supply.

5. *Climate change*

Many of the water challenges are exacerbated by climate change manifested by more frequent extreme weather events, leading to floods and drought, and rising sea levels, all of which result in the loss of agricultural productivity, reduced incomes and increased rural to urban migration. This is particularly straining on coastal communities of the Arab region, where the majority of the region’s population resides.

Studies indicate that climate change is already underway. It has become evident that global temperatures have increased over the past 150 years, and that this increase is dynamically changing climate patterns and the sustainability of land, marine and freshwater systems.³⁸ Along with other regions, Arab countries will be greatly affected by climate change in the coming decades. According to the UNDP Human

³⁵ Ibid.

³⁶ ESCWA, 2011b.

³⁷ AQUASTAT data available at <http://www.fao.org/nr/water/aquastat/data/queriv/index.html?lang=en>.

³⁸ ESCWA, 2011a.

Development Report, Egypt, Lebanon, Palestine, the Sudan and the countries of North Africa could be the areas in the region most affected by climate change and decreased precipitation.³⁹ It is reported that an average increase of temperature by 1.2 degrees would reduce available water in Lebanon by 15 per cent as a result of the change in rainfall patterns and evaporation.⁴⁰ The severe water shortage in the region exacerbated by population growth and climate change has increased the frequency of water supply service interruptions, which have become the norm in many countries of the region.

B. INSTITUTIONAL AND POLICY FRAMEWORK AT THE ARAB REGIONAL LEVEL

AMWC is an inter-governmental ministerial-level council that was established by a resolution of Arab heads of State at the Arab Summit in 2008. The Council is supported by an Executive Bureau that consists of nine ministers; and a Technical, Scientific and Advisory Committee that comprises senior representatives of ministries responsible for water resources in Arab countries as well as international and regional organizations serving the Arab region. The Department of Environment, Housing, Water Resources, and Sustainable Development within the League of Arab States serves as the secretariat for the Ministerial Council and its associated bodies.

The Arab Economic Summit in Kuwait in 2009 tasked AMWC to prepare a water-security strategy for the Arab region. Issues related to the preparation, adoption and follow-up of this strategy have been addressed under the first agenda item for discussion at sessions of the Ministerial Council and its associated bodies since they first convened in 2009. In 2011, AMWC formally adopted the Arab Strategy for Water Security in the Arab Region to Meet the Challenges and Future Needs for Sustainable Development 2010-2030.

The Arab Strategy for Water Security aims to guide joint Arab efforts on the various areas of water resources management for sustainable development, including the provision of water services for drinking, agriculture and sanitation.⁴¹ An action plan to formalize a work plan for the implementation and follow-up on the Strategy is currently under preparation. However, before its adoption and the drafting of its action plan, AMWC had already identified the need for improved monitoring and reporting on water supply and sanitation in the Arab region as a key area of work that it wanted to pursue. This is evident in the resolutions the Ministerial Council has adopted since its first session in 2009 and the mandates they provided for the development of the MDG+ Initiative.

Other inter-governmental and inter-agency mechanisms also exist at the regional level and have provided the political framework for the establishment and implementation of the MDG+ Initiative. These include the ESCWA Committee on Water Resources, which comprises representatives from water ministries in the 17 ESCWA member countries and that meets biennially to review, contribute to and follow-up on the water work programme of ESCWA. Additionally, there is the Arab Countries Water Utilities Association (ACWUA) and its governing Board of Directors, which consists of the heads of water utilities in Arab countries, whereby each board member is elected by their national peers to represent them as their national representative on the ACWUA Board of Directors.

C. MANDATE AND DEVELOPMENT OF THE MDG+ INITIATIVE

The MDG+ Initiative is an outcome of a series of resolutions adopted by AMWC since its first ministerial session in June 2009. These resolutions request ESCWA to coordinate the establishment of a regional mechanism for improved monitoring and reporting on water supply and sanitation indicators in the

³⁹ UNDP, 2008.

⁴⁰ UNDP, 2011.

⁴¹ League of Arab States, 2011a.

Arab region in consultation with ACWUA, CEDARE, AWC and RAED. The rationale for establishing a regional mechanism has its origins at the first session of the Technical Scientific and Advisory Committee that advises the Ministerial Council, at which time high-level representatives from Arab water ministries expressed their concerns about the inaccuracy and inadequacy of JMP figures to detail access to water supply and sanitation services in their countries, particularly in countries that face significant water scarcity constraints. This resulted in the adoption of a ministerial resolution that called for the development of a set of region-specific indicators for monitoring access to water supply and sanitation services that moves beyond the MDG target on water supply and sanitation and takes into consideration the quality of service provided and based on a harmonized set of indicators and standards for evaluation and comparison across the Arab region.⁴²

Endorsement of the MDG+ Initiative was further articulated by the ESCWA Committee on Water Resources at its ninth session in March 2011 (Beirut), which called on ESCWA “to seek the mobilization of resources in support of the implementation of the MDG+ Initiative, including for capacity building, the collection of data, the calculation of indicators and knowledge management.” The Committee supported continued implementation of the Initiative at its tenth session in March 2013 through several recommendations on the need to expedite naming of national focal points, data verification and the contribution of the MDG+ Initiative to the Sustainable Development Goals (SDGs) development process.⁴³

The ACWUA Board of Directors also endorsed the Initiative at their annual board meeting in January 2010 (Rabat), and have received progress reports on its implementation since then.

Once a set of additional indicators was developed by ESCWA, discussed with partners and approved by AMWC’s Technical Scientific, Advisory Committee, it became necessary to elaborate their methodology and format in a comprehensive and unified template in order to facilitate the collection and compilation of the primary and secondary data needed for their calculation. With a view towards building upon the methodology and baseline of information provided by the JMP report, WHO was invited to participate in this effort.

In that regard, the Ministerial Council issued a resolution at its second session held in Cairo on 2 July 2010 to: “Invite ESCWA in coordination with ACWUA, CEDARE, WHO, AWC, and RAED to prepare a template based on unified indicators and criteria for the implementation of the water and sanitation MDG and to forward the template to the Technical Secretariat of the Ministerial Council no later than October 30, 2010.”⁴⁴

The indicators and draft questionnaire template was subsequently submitted by ESCWA to the Technical Secretariat of AMWC and finalized based on the comments received. The Arab heads of State at the Second Arab Economic Social and Development Summit (Sharm el-Sheikh, Egypt, 19 January 2011), recognized “the preparation of a unified template of indicators and standards for water supply and sanitation in cooperation with Arab, regional and international organizations” within the context of the efforts of Arab countries to achieve MDGs.

ESCWA formally presented the final unified template to the Technical Scientific Advisory Committee during its fourth session on 24-26 April 2011, which AMWC subsequently approved during its third session held on 15-16 June 2011.⁴⁵ Moreover, AMWC requested all Arab countries to nominate national focal points in order to facilitate the coordination with ESCWA and other partners on data collection and analysis,

⁴² League of Arab States, 2009.

⁴³ ESCWA, 2013a.

⁴⁴ Arab Ministerial Water Council, Session 2, Resolution 18, Item 1.

⁴⁵ League of Arab States, 2011b.

leading to the preparation of the first progress report on the achievements of Arab countries on the developed indicators in accordance with the approved template.

In this regard, the Ministerial Council asked ESCWA and other partner organizations to raise the necessary funds for the implementation of the MDG+ Initiative as stipulated in resolution 35, as follows: “Invite the United Nations Economic and Social Commission for Western Asia (ESCWA), Arab Countries Water Utilities Association (ACWUA), Centre for Environment and Development in the Arab Region and Europe (CEDARE), Arab Water Council (AWC) and Arab Network for Environment and Development (RAED), to contact regional and international funding agencies in order to secure funding for the implementation of activities related to the provision of an information system and the building capacity of national focal points and other activities related to the preparation of the first report on the progress made towards implementing the MDG on water supply and sanitation in the Arab region and that is based on the indicators and standards included in the adopted unified template.”⁴⁶

The MDG+ Initiative thus responds to the request to establish a new monitoring and reporting scheme for water supply and sanitation in the Arab region as articulated by Arab governments through the Arab Socio-Economic Summit and the Arab Ministerial Water Council. As detailed in the resolution, ESCWA is responsible for establishing and operationalizing this Initiative, which will be implemented in partnership with ACWUA and in collaboration with CEDARE, AWC, RAED and WHO under the auspices of AMWC.

D. JUSTIFICATION FOR THE MDG+ INITIATIVE

Based on the challenges and constraints affecting the provision of water supply and sanitation, AMWC determined that the existing MDG indicators did not adequately reflect the level and quality of water and sanitation services actually accessed by the population. The Council’s primary concern was that the MDG figures overstated the achievement of Arab countries in providing these basic services to its urban, rural and informal communities.

This resulted in the call to develop additional region-specific indicators that can more appropriately reflect the delivery of water supply and sanitation services in the Arab region, particularly in Arab countries that are water scarce and whose access to water supply and sanitation infrastructure does not necessarily reflect their ability to access regularly and reliably drinking water supply and sanitation services at a sufficient level of quality deemed sufficient to meet basic needs. This effort was pursued with a view to provide additional indicators that could be used to better measure progress on increasing access to clean drinking water and improved sanitation in the Arab region, thereby complementing the findings reported upon within the framework of MDGs and the JMP reports.

Based on a set of criteria and a regional inter-governmental consultation process involving Arab governments and institutions, a set of additional indicators was proposed and agreed upon by AMWC. These are listed in table 6 below.

TABLE 6. MDG+ INDICATORS ON WATER SUPPLY AND SANITATION

Water Supply	Sanitation
<ul style="list-style-type: none"> • Water consumption • Continuity of supply • Water quality • Distance to source • Tariff structure • Affordability 	<ul style="list-style-type: none"> • Treated quantity • Treatment type • Reuse utilization • Reuse type • Tariff structure • Affordability

⁴⁶ Arab Ministerial Water Council, Session 3 (June 2011), Resolution 35, Item 2.

As can be seen, these additional indicators seek to expand the scope of analysis and examine regional realities affecting access to these services by incorporating considerations of water consumption, continuity of supply, water quality, distance to the water supply source and the financial burden to access water supply. The additional indicators for access to sanitation services and facilities clarify the degree of environmental protection provided and include the level of wastewater treatment, type of treatment, wastewater reuse and the financial burden to access sanitation services. Efforts were made to consider indicators for water supply and sanitation in a comparable manner; as such, common types of indicators are reflected for both water supply and sanitation, albeit the methodology for collecting the supporting information would be respective to process and realities associated with each sector.

These additional indicators are intended to provide a new set of comparable information on water supply and sanitation services that can be used to inform integrated planning and decision-making on investment and service provision by ministries and water operators.

1. *Additional indicators for water supply*

The definition and scope of each of the additional indicators for water supply can be summarized as follows:

(a) *Water consumption*: This indicator measures the total amount of water consumed daily by an average person inside the home (litres per day). The consumed quantities of water vary widely between the different Arab countries; they also vary between urban and rural regions within the same country. For example, the average drinking water consumption in urban centres of Mauritania is reported to be 53 litres per capita per day;⁴⁷ in Saudi Arabia, it is an estimated 235 litres per capita per day.⁴⁸ The indicator reflects the extent of water availability used to cover the domestic water demand, and can help define the need to develop new or reallocate existing water sources for domestic use;

(b) *Continuity of supply*: This indicator distinguishes the level of service received by consumers, ranging between continuous and intermittent supply. Intermittent supply is further divided into four categories, namely: 3-4 days of supply weekly, once weekly, once biweekly, and less than once biweekly. This indicator can indirectly map the need for supplemental water supply by households or the need for in-house water storage structures, both of which exert an additional hidden financial burden, and can also have detrimental impacts on water quality. The situation in some Arab countries is acute; in Jordan, Lebanon, Palestine, Mauritania, the Sudan, Yemen, among others, water supply services are mostly intermittent. It is likely that increasing demand from growing urban populations, limited water resources, or aging infrastructures are contributing factors in these cases. Mapping water delivery to consumers and its consumption could trigger utilities to investigate the reasons for the low service level, which can stem from many interlinked factors, such as low production capacities or operational inefficiencies;

(c) *Water quality*: This indicator measures the proportion of the population using water from a house connection or standpipe that has been disinfected at the water source. Many Arab countries rely on centralized treatment plants and long distribution networks to serve consumers. However, major cities are often supplied with water directly from sources considered to be of good quality. In some cities, if installed, the disinfection equipment is often inoperative owing to financial or technical difficulties. While this indicator does not require measuring the impacts of the disinfection process at the consumer end due to the high costs of testing, it is assumed that disinfection at the water source provides an adequate level of protection for consumers. This is already a big step from the current practice where no information on water quality is monitored or reported. Of course, more data on water quality can be collected. However, weighing

⁴⁷ Van Den Berg and Danilenko, 2011.

⁴⁸ Abderrahman, 2006, p. 281.

the added value of the additional information against the associated costs within the overall objective to clarify the safety of the supplied water, the proposed indicator serves the purpose with minimum cost;

(d) *Distance to source*: This indicator measures the proportion of the population obtaining their water from a water source located within a 1,000-metre round-trip distance from the source in rural areas, or spending 30 minutes or less to collect water in urban areas. Mapping this aspect of water supply can underline the need to develop additional water sources in rural areas or invest in additional water distribution networks in urban areas. The information provided by this indicator could highlight the linkages between water supply options and, on the other hand, gender imbalances and enrolment levels of children in basic education, especially in rural areas. Such information and data is crucial to inform decision makers of the need to reprioritize investment within the water and sanitation sector;

(e) *Tariff structure*: This indicator provides information on the tariff structure employed by water utilities or service providers. It basically distinguishes between flat and volumetric tariff structures, thereby contributing towards clarifying the affordability for consumers to pay for water services and, when combined with other technical data on leakages, explaining water use efficiency and water production and consumption levels. Such information could have a profound role in shaping national policies on cost recovery of water supply services. According to the type of tariff used, this indicator can signal the financial sustainability of water supply utilities. Volumetric based tariffs discourage excessive use of water and thus promote water conservation. Variants of volumetric water tariff structures are common in many Arab countries;

(f) *Affordability*: This indicator measures the financial burden of water supply on the household. It is the ratio of the average monthly cost of water supply in relation to the average household monthly income, which is usually drawn from national household budget surveys and is available at national statistical bureaus. The United Nations General Assembly recently reaffirmed that access to water is a human right, and that basic needs for water and sanitation must be affordable for the poorest sections of society.⁴⁹ In many developing countries, a sizable percentage of the poor are often not connected to the public water network and thus pay a higher share of their small incomes for lower quantities and often a lower quality of water. Affordability of water charges for low-income households could become a significant issue in some Arab countries where higher tariffs are introduced to offset the cost of operation and maintenance of water utilities or to finance investment to rehabilitate existing or construct new water infrastructure.

2. Additional indicators for sanitation

The definition and scope of each of the additional indicators for sanitation is as follows:

(a) *Treated quantity*: This indicator intends to measure the quantity of treated wastewater and, as such, indirectly provides valuable information on the pollution load on the environment from the direct disposal of untreated wastewater. The aim is to quantify domestic wastewater generated from a certain coverage area, which usually ranges between 80 and 90 per cent of the consumed water. Given the high cost (capital, operation and maintenance) associated with wastewater collection and treatment, the level of wastewater services varies widely between different Arab countries. Higher levels of wastewater collection and treatment is not only the result of financial capacity, but is also connected to the national environmental legal setting as well as the institutional and administrative capacities of the water sector;

(b) *Treatment type*: This indicator complements the information provided by the previous indicator in that it distinguishes between the various treatment levels and therefore clarifies the residual environmental risk associated with the reuse or disposal of treated wastewater. To avoid the difficulty of quantifying the level of treatment through the use of discharge and effluent concentration limits, the indicator measures the treatment level in a qualitative manner using the general standard levels of wastewater treatment, namely:

⁴⁹ United Nations, 2010.

primary (physical), secondary (physical and biological) and tertiary (physical, biological and chemical). Owing to varying economic and environmental conditions, the extent of connection to wastewater treatment plants and the level of treatment vary significantly between Arab countries. Generally, coverage of sewerage systems and wastewater treatment is largely limited to capital cities and, to a lesser degree, the larger urban centres. Secondary and tertiary treatment plants have been installed in some of the major cities of some countries; while in other countries, the use of onsite wastewater disposal facilities, such as septic tanks and cesspits, is common practice. While certain treatment plants that have been installed in some countries were designed to produce effluent of secondary level quality, many of the constructed treatment plans are overloaded and produce effluent below the expected quality owing to the rapid population growth and the time lag between the design stage and securing the funds for construction;

(c) *Reuse utilization*: This indicator aims to quantify the amount of treated wastewater being used for different purposes. It is important for the purpose of environmental protection to clarify the volumes of wastewater being reused in relation to the type of reuse. Owing to the high cost of wastewater infrastructure, both for collection and treatment, many countries phase wastewater projects starting usually with the collection sewers and, subsequent to securing more funding, moving into treatment facilities. In some cases, projects involving the construction of the sewerage system are accompanied by the construction of partial treatment units. Funding restrictions and donor conditionalities related to water and wastewater projects is becoming an issue, which to a large extent reflects greater concern for environmental protection. While many Arab countries officially ban the use of raw wastewater and have severe restrictions on the use of treated wastewater, violations are common especially for irrigation. This indicator reflects the potential environmental impacts resulting from wastewater disposal. However, it highlights treated sewage effluent as a reliable and growing water resource that needs to be incorporated within the overall management of water resources, especially in water-scarce Arab countries;

(d) *Reuse type*: This indicator aims to differentiate and classify collected, treated or raw domestic wastewater. In many cases, collected wastewater, whether treated or not, is commonly used for a number of purposes, most notably for irrigation. This indicator includes the possible alternative uses of collected wastewater, including for irrigation, intentional or unintentional groundwater recharge, domestic consumption and/or other uses. Clarifying the reuse type of collected wastewater helps planners and decision makers to prioritise investment on the basis of environmental policies and strategies. It needs to be highlighted that well treated wastewater is in many cases a reliable and growing water source that can be incorporated within the overall water budget to meet some of the growing water demand for irrigation and industrial uses, thereby relieving some pressure on valuable freshwater resources. Technical and managerial capacities in the area of wastewater reuse varies between Arab countries with some, including Jordan, Tunisia and several GCC countries, showing competent capacities. Reuse of untreated wastewater for irrigation dominates all other uses, and given that crop restrictions are not strictly monitored, they are in many cases not respected;

(e) *Tariff structure*: This indicator measures the proportion of the population connected to a sewer network and billed through either a flat rate or a volumetric rate based on water consumption. The flat water tariff structure does not provide adequate incentives for water saving, resulting in increased generation of domestic wastewater. Besides putting stress on the existing scarce freshwater resources, flat tariff structures also result in increased quantities of wastewater and, as such, require additional funding for infrastructure or lead to pollution and adverse environmental impacts;

(f) *Affordability*: When combining the data collected from this indicator with those from the previous indicator, a clear picture on the financial burden on the household can be drawn. By using data on the household income, this indicator can clarify the affordability of an average household to obtain wastewater services, which is expressed as the percentage of the incurred cost of the service from the monthly income. The indicator can show to what extent the basic needs for sanitation are affordable, especially for the poorest segment of society. Comparing sanitation service charges to income will provide insights into the levels considered as excessive in comparison with international standards. This becomes an important issue when

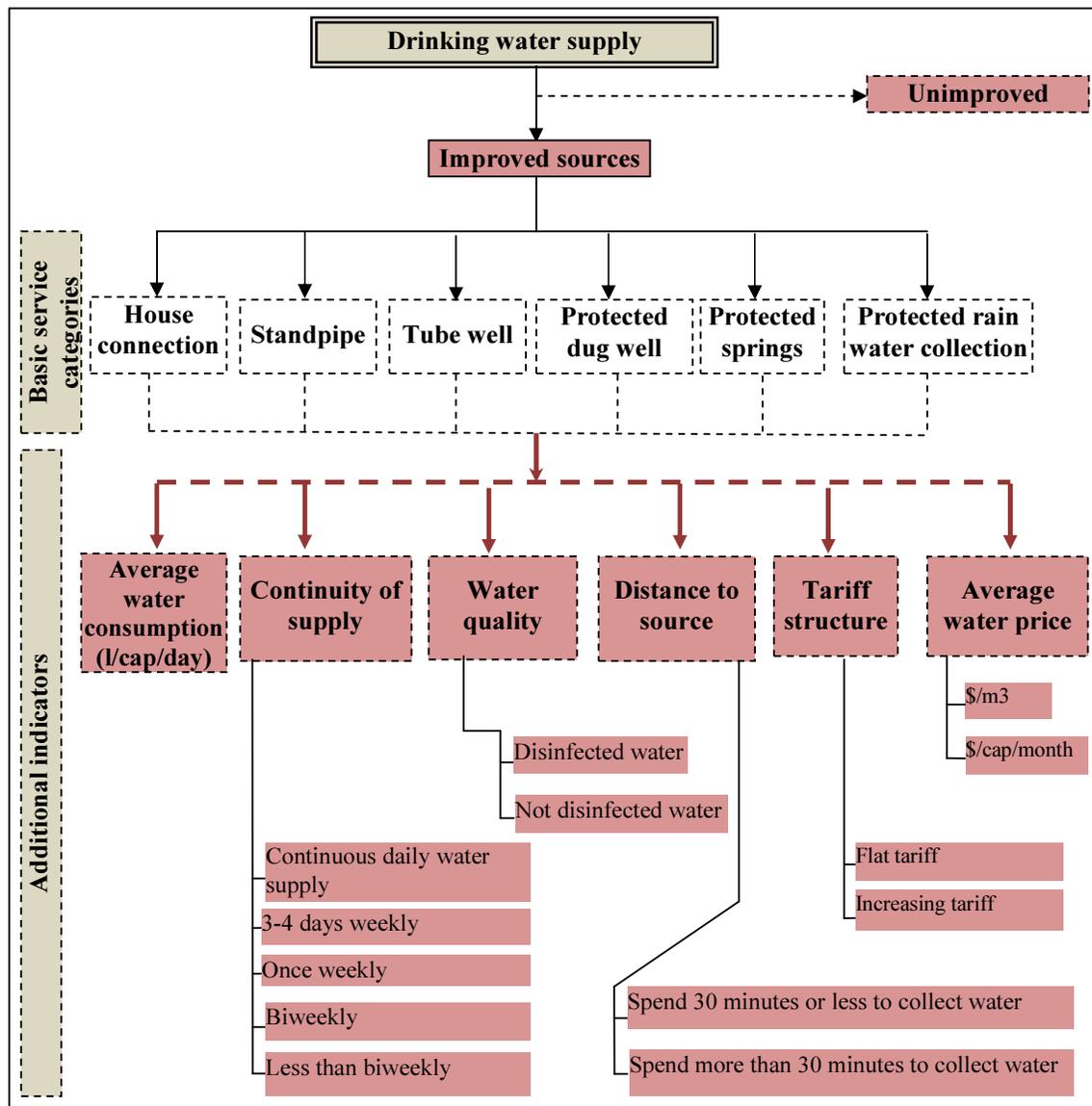
seeking to connect the poorer segments of society to sanitation services, while maintaining adequate levels of cost recovery.

3. Indicators by source of service typology

Based on the abovementioned definitions of the additional indicators, these need to be calculated and presented in accordance with the JMP service categories (as shown above in figure 3).

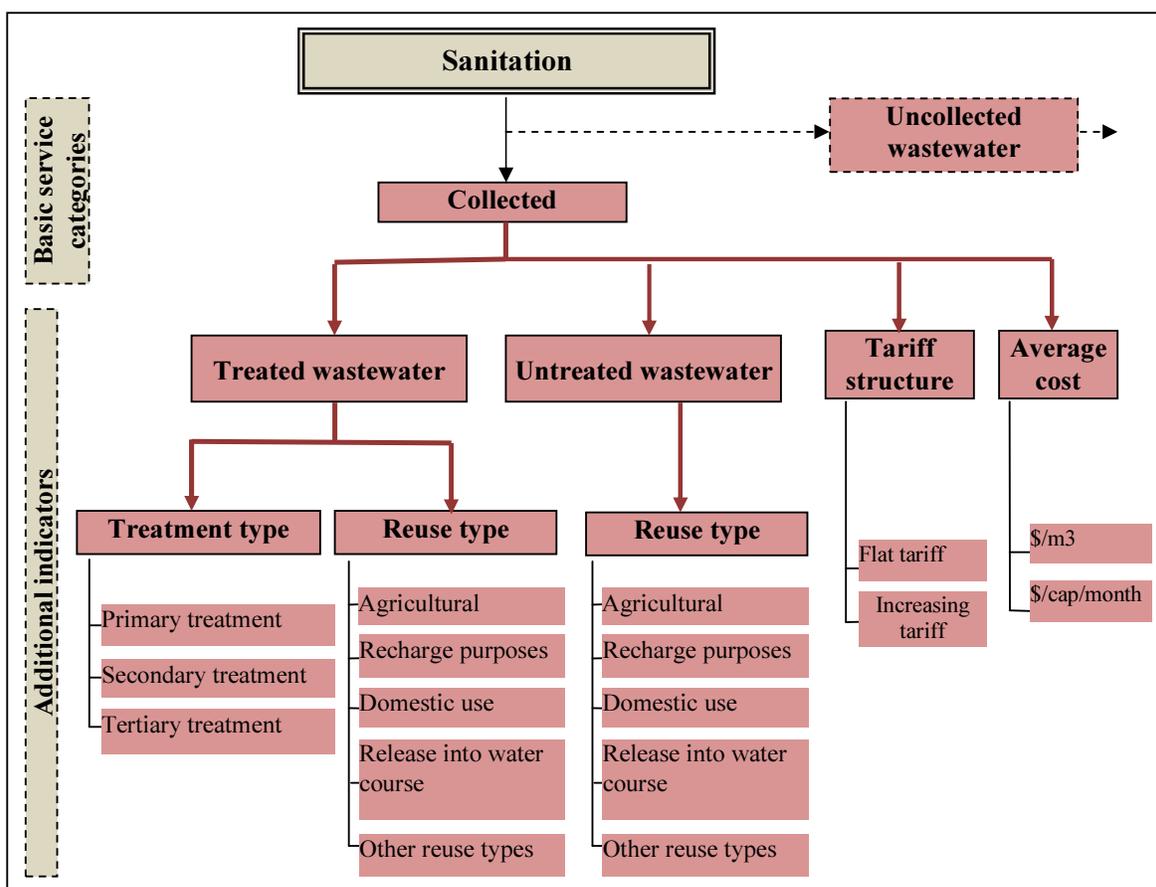
The wide range of service options demonstrates that the indicators are not unitary; rather, they are based on the aggregation of information compiled from different sources of service provision on each of the additional indicators. Figures 28 and 29 below illustrate the relationship between these indicators and their respective supply sources according to the abovementioned typology.

Figure 28. Structure of the additional water supply indicators in urban areas



Source: ESCWA.

Figure 29. Structure of the additional sanitation indicators in urban areas



Source: ESCWA.

E. ADDED VALUE OF THE MDG+ INITIATIVE

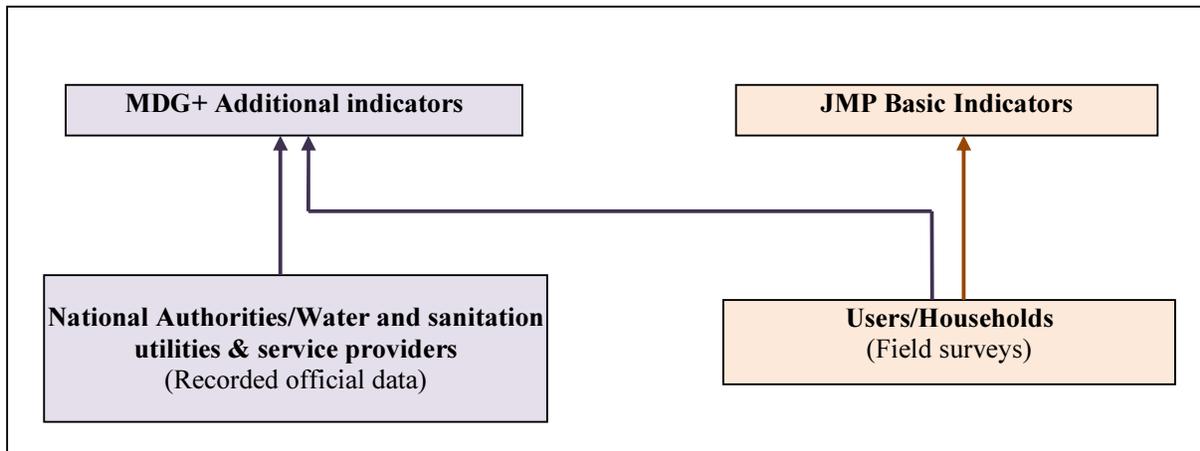
JMP adopts various service categories to differentiate between improved and unimproved water supply sources, and between improved and unimproved sanitation facilities (see figure 3).⁵⁰ The added value that the additional indicators offer is the ability to better monitor – and therefore the opportunity to improve on – the quality of services and the protection of the environment.

1. Sources of data and method of collection

As noted above, the method used by JMP to calculate the basic indicators is based on questionnaires and surveys addressed to the user and not to national authorities that manage drinking water supply and sanitation utilities. The methodology adopted by JMP is not sufficient to calculate all additional indicators identified in the MDG+ Initiative related to the quality and quantity of service provision. Consequently, additional data is needed from the national water and sanitation utilities and service providers (see figure 30).

⁵⁰ WHO/UNICEF, 2013b.

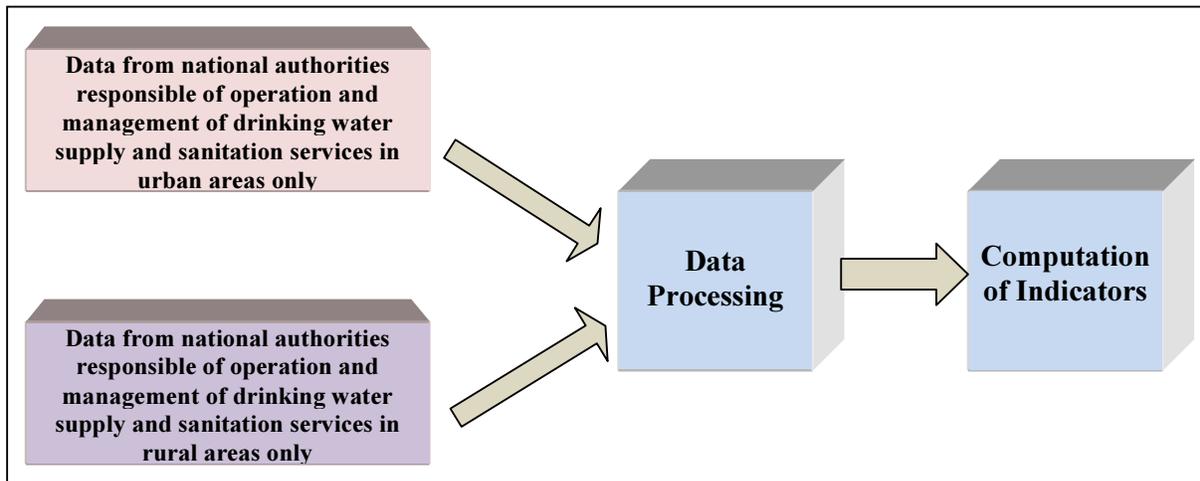
Figure 30. Sources of data for water supply and sanitation indicators



Source: ESCWA.

The method adopted for the collection of data rely directly on the official institutions, departments or utilities responsible for the management and operation of water supply and sanitation in urban areas, and those responsible for water supply and sanitation services in rural areas. By obtaining available data from these agencies, the additional indicators are calculated for urban and rural areas of all Arab countries, as illustrated in figure 31.

Figure 31. Proposed concept for the evaluation of MDG+ additional indicators



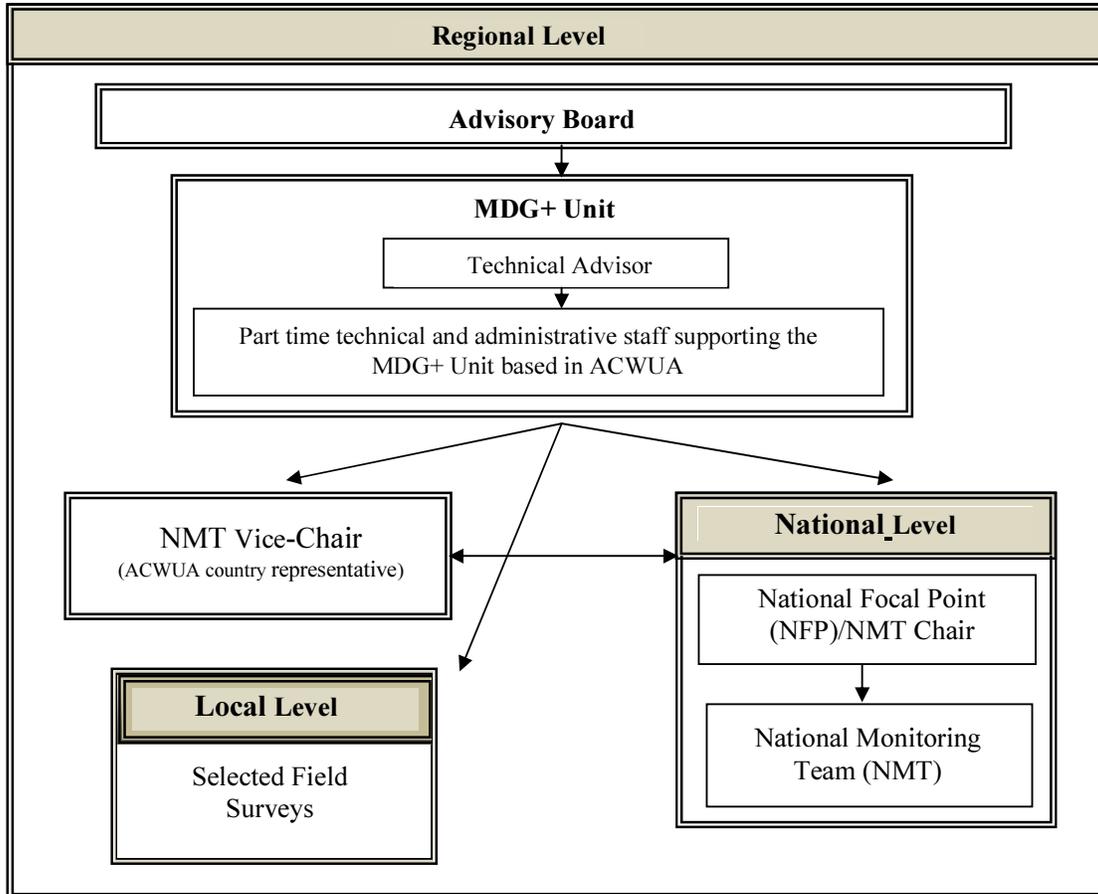
Source: ESCWA.

Annexes VII and VIII detail the proposed data that should be obtained from the official water supply and sanitation utilities and service providers to support the collection of data related to the MDG+ Initiative indicators. A user guide that presents methods of data processing and computation of indicators has been prepared by ESCWA. Moreover, in an effort to unify the data entry procedures for all the countries, an Excel worksheet for data entry and indicator computation has also been developed by ESCWA and disseminated to Arab countries through training and capacity-building activities implemented at the regional and national levels.

F. INSTITUTIONALIZING THE DATA MANAGEMENT SYSTEM

The data management system of the MDG+ Initiative operates at three levels, namely: the regional level, the national level and the local level. This system is supported by an institutional framework involving regional organizations, national ministries and authorities, and public/private utilities and services providers. The information collected through this institutional framework is then complemented through selective sample of field surveys to help validate or enhance information on water supply and sanitation services at the local level, primarily in rural areas that are not connected to public networks. Figure 32 illustrates the institutional framework of the initiative and the associated structure for the data management system.⁵¹

Figure 32. Institutional structure of the MDG+ Initiative for data management system



Source: ESCWA.

1. The regional level

The MDG+ Initiative Advisory Board comprises designated representatives from the institutions included in the AMWC resolutions related to the MDG+ Initiative, namely: ESCWA, ACWUA, CEDARE, AWC, RAED and WHO. The Advisory Board technically supports the implementation and dissemination of information and findings on the MDG+ Initiative. The Board also discusses strategic approaches for examining and raising awareness about the findings and lessons learned from the Initiative. Furthermore, the Board is expected to support the development of the local-level field surveys that will complement the

⁵¹ ESCWA, 2013b, p. 11.

information collected from official sources. The Advisory Board meets regularly and usually on the sidelines of sessions of the AMWC Technical Scientific and Advisory Committee.

An MDG+ unit was established at the ACWUA secretariat in Amman to support the implementation of the Initiative. The unit is responsible for coordinating with national and regional counterparts, providing technical assistance and guidance to national monitoring teams (NMTs), supporting data collection efforts and developing a regional knowledge management system. The unit, which will also be responsible for preparing and printing the regular reports on the implementation of the MDG+ Initiative for submission to AMWC, is part of the ACWUA organizational hierarchy and is staffed by the following:

(a) A technical advisor who reports to ACWUA and receives technical backstopping from ESCWA on substantive matters;

(b) Part-time technical and administrative staff, including a part-time information technology specialist, part-time secretary and part-time financial/procurement officer who report to the technical advisor and the ACWUA Secretary General.

More specifically, the MDG+ unit is responsible for the following:

(a) Coordinating and communicating with NMTs, including collection, compilation and analysis of questionnaire templates and field surveys, with technical backstopping provided by ESCWA;

(b) Providing technical assistance and backstopping to NMTs;

(c) Establishing, operating and managing the regional data management platform;

(d) Preparing and publishing the regular reports on the MDG+ indicators in electronic and hard copy in Arabic and English, on the basis of quantitative and qualitative information, with technical backstopping by ESCWA;

(e) Supporting the submission of the regular progress reports to AMWC and its associated bodies, and assisting in the dissemination of information on the Initiative and report findings to national, regional and global forums;

(f) Ensuring the sustainability of the MDG+ Initiative beyond the current project. In this regard the MDG+ unit will prepare a funding plan and associated proposals for ensuring the financial and operational sustainability of the MDG+ Initiative beyond 2015. This would include consulting with regional stakeholders and potential donors interested in supporting the continued use and collection of the MDG+ indicators within the context of development planning and the monitoring of region-specific development goals related to the water sector in a post-MDG environment beyond 2015. The project Advisory Board would assist the MDG+ unit in this effort.

2. The national level

Based on the AMWC resolution, each country nominates a national focal point (NFP) to coordinate and follow-up the implementation of the activities at the national level. The NFP serves as chairperson of each NMT, which is responsible for the collection of data related to the regional monitoring programme at the country-level and, subsequently, for compiling the necessary data and filling in the MDG+ questionnaire template. In this regard, national water ministries serving on AMWC will need to nominate a suitable NFP, who does not necessarily need to be from the same ministry.⁵²

⁵² Ministries serving on AMWC are those responsible for the management of water resources. In some countries the responsibility for water supply and sanitation services are mandated to different ministries, including, among others, housing and municipalities.

To assist NFPs in their duties as chairpersons of NMTs, vice-chairpersons are also assigned from among the water service providers. It was agreed that the country's representative on the ACWUA Board of Directors thus serves as the vice-chairperson of the individual NMTs of the 18 ACWUA member countries. For the four Arab countries that are not yet members of ACWUA, the MDG+ unit, in consultation with the respective NFPs, will facilitate the communications with the water authorities in the countries to identify suitable representatives of the water and sanitation service utilities to serve as NMT vice-chairpersons.

NMTs institutionalize the monitoring programme at the national level and ensure inter-agency coordination and cooperation through regular meetings and joint preparation of the data to support completion of the MDG+ questionnaire in order to calculate the indicators. Arab countries are making appropriate institutional arrangements and are expected to allocate suitable budgets for the monitoring teams, thereby creating the enabling environment for its success.

3. The local level: Validation field surveys

The official data gathered from the MDG+ questionnaire template to be completed by NMTs would be complemented by field surveys conducted in selected areas of some countries. Four to six countries only would be selected by the Advisory Board in consultation with NFPs for the implementation of these field surveys. The members/institutions of the Advisory Board would be invited to conduct these field surveys, based on their outreach in local institution and non-governmental organizations in targeted communities, or to identify suitable counterparts for conducting these surveys. The surveys will provide insights and qualitative narratives that are set to complement the official quantitative data collected through NMTs, and will be used to help inform and elaborate the two regional MDG+ monitoring reports that will be issued before the end of 2015.

G. IMPLEMENTATION MODALITIES

The MDG+ Initiative is supported by a project funded by the Swedish International Development Cooperation Agency (SIDA) that was launched in December 2011. Implementation of the project is led by ESCWA in partnership with ACWUA and in consultation with the members of the Advisory Board on the MDG+ Initiative. The project supports the Initiative by aiming to ensure that water and sanitation policy in the Arab region is informed by reliable data, information and analysis based on a set of region-specific indicators that are endorsed by Arab governments through regional inter-governmental processes.

1. Expected accomplishments

The project intends to achieve its objectives through the following expected accomplishments:

(a) Enhanced regional and national monitoring capacity in the area of data collection, management and monitoring on the MDG+ indicators on water supply and sanitation. This would be achieved through three complementary sub-components, namely:

- (i) An institutional component that includes:
 - a. Nomination of NFPs, who will also act as the chairs of NMTs;
 - b. Formation of NMTs;
 - c. Identification of vice-chairpersons for NMTs (country representative in ACWUA Board of Directors);
 - d. Establishment of the Advisory Board to follow up the implementation of the project.
- (ii) A training component that includes:

- a. Development of methodologies for data collection, management and analysis;
 - b. Preparation of training materials;
 - c. Holding several regional coordination, training and follow-up workshops.
- (iii) Technical assistance that includes:
- a. Advisory services and backstopping to NMTs;
 - b. On-the-job training through intraregional exchanges between NMTs.
- (b) Established regional data management platform to be used as a reliable tool to manage the collected data and support regular reporting on progress achieved on access, as well as on the level, quality and type of access to water supply and sanitation services in Arab countries;
- (c) Institutionalized regional monitoring programme that contributes to water and sanitation policymaking through a monitoring mechanism implemented at the regional and national levels and formalized through the submission of biennial progress reports to AMWC;
- (d) Strengthened regional dialogue through a series of meetings that engage a variety of stakeholders in debate regarding the formulation and findings of the MDG+ indicators within the Arab regional context, and which contributes to the global policy debate on the preparation and adoption of development objectives in a post-2015 environment. The following activities will be conducted:
- (i) Organize a regional seminar to discuss lessons learned and exchange experiences on MDG+ indicators and preliminary findings with selected members of NMTs and regional stakeholders involved in the collection and compilation of information related to the MDG+ indicators;
 - (ii) Prepare and disseminate project briefs and a brochure at national, regional and international forums about the MDG+ Initiative;
 - (iii) Organize an expert group meeting to discuss the MDG+ indicators, findings and lessons learned;
 - (iv) Organize a high-level meeting on the MDG+ indicators in a post-2015 environment. The meeting would involve high-level representatives of governments and civil society engaged in water as it relates to MDGs and the post-2015 development environment. The purpose would be to exchange and review lesson learned; to exchange policy recommendations and proposals for a post-2015 framework on water supply and sanitation based on the outcomes of the previous expert group meeting; and to solidify institutional mechanisms and processes for ensuring the sustainability of the regional mechanism for the implementation of the MDG+ Initiative beyond project completion.

2. Expected outputs and outcomes

The project will increase understanding of and the capacity to assess the state of access to water supply and sanitation in the Arab region based on a set of region-specific indicators. In doing so, the following outputs will be produced during or by the end of the project:

- (a) Issuing two regional monitoring reports on the MDG+ indicators under the auspices of AMWC in 2014 and 2015. The reports will be made available in Arabic and English and in hard copy and electronic formats. Similar to the approach adopted in JMP reports, the indicators – both basic and additional – will be presented for each country in the form of an aggregated national average in addition to separate figures for urban and rural areas;

(b) Submitting to AMWC and its associated bodies eight project progress reports on the MDG+ Initiative aimed at informing Arab governments on progress achieved in implementing the Initiative during the course of the project. Two of these progress reports will consist of the two regional monitoring reports noted above;

(c) Institutionalizing NMTs and a regional data management platform for compiling data, calculating indicators and contributing to the national and regional reports on the MDG+ indicators during the course of this project and beyond;

(d) Establishing an MDG+ unit at ACWUA, which will be responsible for providing technical assistance; coordinating with counterparts, operationalizing the regional data management platform; producing the biennial regional progress reports; and pursuing the sustainability of the initiative following project completion;

(e) Launching a website and preparing and disseminating promotional material for the Initiative in both Arabic and English;

(f) Formulating ministerial resolutions, which are issued by Arab governments, aimed at recognizing the project and its outputs.

Several of the activities and outputs outlined in the project document noted above have already been achieved by the Initiative. These are elaborated in the section below.

H. SUMMARY OF PROGRESS ACHIEVED

Following the adoption of the additional MDG+ indicators by AMWC in 2010, an MDG+ questionnaire template was prepared and finalized based on comments received from the countries and the Ministerial Council. The Arab heads of State at the Second Arab Economic Social and Development Summit (Sharm el-Sheikh, Egypt, 19 January 2011) subsequently recognized the preparation of the unified template, within the context of the efforts of Arab countries to achieve MDGs.

Consultations were undertaken among the regional partners to form the Advisory Board to support the MDG+ Initiative on the sidelines of regular sessions of the AMWC Technical Scientific and Advisory Committee. This was complemented by a roundtable meeting hosted by CEDARE in June 2010, a coordination meeting organized in September 2011 on the sidelines of a regional water meeting in Athens, and a formal meeting as a back-to-back to the launching workshop of the project in May 2013 held in Beirut.

A project agreement was signed between SIDA and ESCWA in December 2011 to support the implementation of the Initiative. A memorandum of understanding was signed between ESCWA and ACWUA in 2012 to implement the project; and, on that basis, ACWUA established the MDG+ unit at its secretariat and finalized the recruitment of the technical advisor in January 2013.

AMWC has continued to reaffirm the need for countries to name their NFPs to support the MDG+ Initiative, and has reiterated this call in two consecutive resolutions. High-level follow-up was also provided by ESCWA to solicit nominations from countries. As of end of May 2013, 18 out of 22 Arab countries had nominated their NFP. These countries are Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, the Sudan, Tunisia, United Arab Emirates and Yemen.

Training materials, including an e-tool, were developed by ESCWA to support the collection and calculation of information presented in the MDG+ questionnaire template. The e-tool can be used to collect and catalogue primary data from different utilities at the national level in order to generate aggregated national response for each of the additional indicators identified in the MDG+ Initiative. Selected members

of NMTs and the Advisory Board were invited to Beirut in May 2013 to receive training on the MDG+ indicators, calculation methodology and e-tool. This training is being followed up with national training and technical assistance activities requested by the national teams between July and October 2013.

Work is also underway to launch the pilot surveys that will complement the information collected from ministries and service providers overseeing or responsible for water supply and sanitation services.

IV. ACCESS TO WATER AND SANITATION: A CHANGE IN DIRECTION

A. THE SHIFT FROM VOLUNTARY TO MANDATORY MODALITIES FOR PURSUING ACCESS TO WATER AND SANITATION

This report has sought to demonstrate the progress achieved by the Arab region in meeting the target related to access to improved water sources and sanitation facilities established through the global process that was launched by the Millennium Declaration and operationalized by the targets and indicators subsequently articulated in MDGs. In doing so, it has revealed some of the shortcomings of the current system for monitoring water supply and sanitation in the Arab region – and potentially in other regions – that face serious water scarcity constraints or challenges in terms of ensuring that a sufficient quantity and quality of water services are provided through existing infrastructure networks and installations.

The ambition of the global community in launching global targets and pursuing a global monitoring programme has led to significant progress in several areas and even the early achievement of some targets. Indeed, the global community announced in March 2012 that the global target of reducing by half the number of people without access to drinking water had been achieved in 2010, five years before the target of 2015.⁵³ In making this announcement, there was also recognition that the global target on sanitation would not be reached and that more concerted work was needed to achieve that goal.

However, what this discourse on targets revealed is that the existing targets should only be interim measures given that they are insufficient to ensure universal access to basic water services. Indeed, a paradigm shift at the global level has since occurred in the way in which access to drinking water and sanitation should be pursued by development practitioners, namely, the determination that access to basic water services should be considered a human right. This has been iterated in United Nations forums since being adopted by the United Nations General Assembly in 2010, as stated in the following resolutions:

(a) United Nations General Assembly resolution 64/292 (July 2010): “Recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights.”

(b) United Nations Human Rights Council resolution 15/9 (October 2010): “Affirms that the human right to safe drinking water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity.”

This introduces two important challenges for governments, namely: (a) the challenge of pursuing universal service provision for all; and (b) the challenge of ensuring rights to those universal services for all within the context of a human rights-based approach to development.

If enshrined as a human right, access to these services should be universal. A goal-indicator approach that does not seek to achieve universal access to clean drinking water and sanitation services thus becomes politically complicated to pursue in face of governmental bodies and stakeholder organization calling for universal access. The adoption of a “human rights-based approach” to the provision of these services is thus a direct contradiction to a system based on “goals-indicators” that does not establish universal access as its end goal, noting that intermediate targets may be identified towards progressive achievement of such a goal within a human rights-based framework.

Secondly, the determination that access to these services should be viewed as a human right renders the provision of these services as a mandatory obligation to be ensured by governments. This is a radically

⁵³ WHO/UNICEF, 2012a.

different approach to the current framework that provides for a voluntary system for monitoring and reporting on a global target that is not differentiated between countries. This move from a voluntary reporting process to a mandatory development right thus demonstrates a significant change in the global arena.

These resolutions, adopted in 2010, focus on the advancing the principle of access to water supply and sanitation services as a human right without entering into the operational modalities or obligations of States to this end. Subsequent deliberations have thus been pursued within the United Nations General Assembly Third Committee, which is focused on social, humanitarian and cultural issues, to elaborate on this right. This has resulted in the adoption of a draft resolution aimed at the progressive realization of the human right to safe drinking water and sanitation in a non-discriminatory manner with associated monitoring and analysis measures as well as the inclusion of the human right within the post-2015 development agenda.⁵⁴

1. Operationalization through indicators and criteria

Through the inter-governmental and consultative processes that ensued following the adoption of this new human right, discussions turned to the process of operationalization and how accessibility to these basic services would be measured, reported upon and guaranteed. This resulting global debate has echoed the concerns articulated by AMWC at the regional level regarding the effectiveness of using the MDG target to monitor and report on the actual access to safe drinking water and sanitation. In the Arab region, this evaluation resulted in the development of the MDG+ Initiative starting in 2009 and the adoption of additional indicators. At the global level, these deliberations advanced with the establishment of access to drinking water and sanitation as a human right in 2010; and then the following resolution, adopted in 2011, which highlights the same criteria identified in the MDG+ Initiative for monitoring access to these services.

Specifically, the United Nations Human Rights Council resolution 18/1 (October 2011) “Calls upon States:

(a) To continuously monitor and regularly analyse the status of the realization of the right to safe drinking water and sanitation on the basis of the criteria of availability, quality, acceptability, accessibility and affordability;

(b) To assess existing policies, programmes and activities in the sectors of water and sanitation, giving due consideration to waste-water management, including treatment and reuse, and to monitor resources allocated to increase adequate access, as well as to identify actors and their capacity.”⁵⁵

As mentioned in the above Human Rights Council resolution, measuring access to water and sanitation facilities should be performed on the basis of the criteria of availability, quality, acceptability, accessibility, affordability, wastewater treatment and wastewater reuse. A quick comparison of these criteria with the present global indicators to measure progress on drinking water and sanitation, one could notice that the access to improved or unimproved water and sanitation services (accessibility) is the only criterion currently used, and the other criteria (availability, quality, acceptability, affordability, wastewater treatment and wastewater reuse) are not measured. In comparison, the MDG+ Initiative measures, in addition to JMP accessibility indicator, indicators related to the availability, water quality, affordability, wastewater treatment and wastewater reuse. The MDG+ Initiative indicators thus move in the same direction as the United Nations Human Rights Council recommendations.

⁵⁴ United Nations General Assembly. Third Committee draft resolution (A/C.3/68/L.34/Rev.1). Discussed on 21 November 2013 at its 49th meeting of the 68th session on 21 November 2013. Available at <https://papersmart.unmeetings.org/ga/third/68th-session/programme/49th-meeting>, and as summarized in International Institute for Sustainable Development, 2013.

⁵⁵ United Nations, 2011.

B. CHALLENGE OF SHIFTING TO A RIGHT-BASED APPROACH FOR PURSUING ACCESS TO SAFE WATER AND SANITATION SERVICES

When the process of developing drinking water and sanitation services is based on the principles of human rights, a change in the current approach of these services is expected. Thus, the standards and the principles of equity, accountability, empowerment, participation, non-discrimination and attention to vulnerable groups will need to be incorporated into the plans and policies of these services.

Accepting the legal implication of the human right to drinking water and sanitation gives everyone the right to access sufficient, safe, acceptable, and affordable water and sanitation services inside the house or in its immediate vicinity, as well as, in hospitals, schools and workplaces. Accordingly, the recognition of this right will lead to the following results:

(a) Drinking water and sanitation services become a legal entitlement, rather than a commodity or service provided on a voluntary basis;

(b) Confirms the responsibility of governments to ensure the development and provision of these services to all citizens without discrimination, especially the needs of poor and marginalized communities;

(c) Empowers communities and vulnerable groups to participate in decision-making processes;

(d) Enables people to claim their rights and stimulate responsible parties to fulfil their obligations.

As a human right, access to water supply and sanitation services thus necessitates reconsidering the current indicators and modalities for monitoring access to these services and, consequently, they should be expanded to include additional criteria in line with the adoption of this new human right.

C. CONSTRAINTS OF THE CURRENT MONITORING SYSTEMS TO SHIFT FROM VOLUNTARY MODALITIES TO A RIGHTS-BASED APPROACH

The current monitoring system is embedded in the aim of formulating simplified, time-bound targets and indicators that were measurable and practical for data collection based on pre-existing monitoring programmes. The constraints this poses for moving to a human rights-based approach thus become clear; as such, an approach requires support for universal, non-discriminatory access to water and sanitation for all. Lessons learned from the current monitoring system play an important role in defining the way to integrate the water sector and a new water and sanitation monitoring system in the post-2015 development agenda.

The lessons learned from the implementation of the current global monitoring system should thus be considered when pursuing a human rights-based approach, as follows:⁵⁶

(a) *Comprehensiveness*: The stated present target for water and sanitation is “to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”. In human rights terms, this target should be expanded to include reliable access to safe drinking water and sanitation for all within a determine timeframe;

(b) *Reliability of water supply and sanitation services*: As a human right, access to water supply and sanitation services should be reliable. The reliability of water supply system should be measured in accordance with the accessibility, quantity of supply, quality of supplied water and continuity of supply. Reliability of sanitation system should be measured in accordance with the accessibility, wastewater treatment and reuse;

⁵⁶ UN-Habitat, 2007.

(c) *Serving the most deprived groups with water and sanitation services:* A particularly important aspect of the water and sanitation human rights principles is the universal access to water and sanitation without discrimination, including the most vulnerable or marginalized groups. According to United Nations Economic and Social Council, General Comment No. 15:⁵⁷ “States parties should ensure that investments should not disproportionately favour expensive water supply services and facilities that are often accessible only to a small, privileged fraction of the population, rather than investing in services and facilities that benefit a far larger part of the population”. Poor and disadvantaged groups should be connected to the main water supply and sewerage systems with affordable connection cost. It is important to set up goals to ensure that public water and sanitation infrastructure plans address the needs of vulnerable and marginalized groups, including schools, hospitals, prisons and those living in informal settlements and refugee camps;

(d) *Access to information and participation:* As a human right, access to water and sanitation services should be universal. Thus, all people should have complete and equal access to information regarding water and sanitation. In this regard, international monitoring and reporting system should take the necessary measures to ensure access to information and equitable representation in decision-making for all people, and particularly the marginalized groups.

These issues must be taken into account during deliberations on a new international monitoring programme and post-2015 development agenda increasingly focused on the formulation on a set of SDGs.

D. SOME KEY CONCEPTUAL ISSUES ON THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Efforts to advance the global development agenda will need to be based on the RioPrinciples, the Millennium Declaration and the vision outlined in the Rio+20 outcome document “The future we want”, as well as on the various ongoing discussions and consultations to pursue a new holistic vision and approach that shapes the global development agenda beyond 2015. These various processes are informing global dialogue on a new set of SDGs that will structure the post-2015 development agenda.

The principles adopted at Rio in 1992 are guiding the ongoing discussions and consultation process at the national, regional and global levels to shape SDGs, most prominently the principles that aim at intergenerational equity (Principle 3); sovereignty (Principle 2); poverty eradication (Principle 5); common, but differentiated responsibility (Principle 7); public participation, inclusion of women, youth and indigenous peoples (Principles 10, 20 and 22); the precautionary approach (Principle 15); and the protection of the environment and natural resources of people under oppression, domination and occupation (Principle 23). The principles of prior notification and international consensus to address transboundary environmental problems are also firmly embedded in the RioDeclaration.

In 2000, the Millennium Declaration gave the political momentum needed for advancing a collective development agenda, which was subsequently articulated as MDGs. Generally, progress towards achieving these Goals has been mixed in the Arab region. While access to primary education has improved, maternal and child mortality is lagging compared to other regions.⁵⁸ Experts and stakeholders have also criticized that MDGs are limited in scope relative to the Millennium Declaration and do not adequately reflect such important issues as social exclusion, environmental sustainability, inequity, human rights or governance. While progress on MDGs has been made during the past decade, it has not been sustainable, thereby posing, among others, a key challenge for the post-2015 development agenda to “decouple” socio-economic development from the overuse of resources and environmental degradation.

Certain MDG targets and indicators were also considered insufficient for measuring progress. For example, as described in Chapter III, AMWC at its first session in Algiers in 2009 criticized the high

⁵⁷ United Nations Economic and Social Council, 2002.

⁵⁸ Ibid.

progress reported on access to water supply and sanitation in MDGs as being unrealistic in the light of water scarcity and intermittent service delivery prevalent in many Arab countries, and called on ESCWA to lead the establishment of a regional monitoring mechanism based on regional specificities. The resulting MDG+ Initiative now monitors access to water supply and sanitation based on a number of additional indicators measuring continuity of service provision, affordability and sustainability; and is under implementation with national monitoring teams and in partnership with ACWUA, RAED, AWC and CEDARE with the financial support of SIDA.

In implementing MDGs, the concept of “partnership”, used to describe the state of promoting development through various implementation modalities, has faltered owing to a lack of appropriate mechanisms for evaluation and review, as well as its emphasis on “donor-recipient” types of relationships and the resulting low level of attention to development financing and cooperation beyond aid. The concept of “global partnership” within the context of the post-2015 development agenda will thus need to be redefined and reshaped in order to benefit from the lessons learned during the past decade. To this end, the High-Level Panel of Eminent Persons recommends dynamic, multi-stakeholder partnerships to be included in each thematic area or sector, which can be organized at national, regional and global levels.

Besides stressing on the need for partnerships and financing, the Arab Development Forum, convened in the United Nations Development Group in Amman in April 2013, identified regional cooperation as a key driver of development that should be emphasized in the future development framework. The meeting also highlighted five principles of particular importance for the Arab region to be considered in the post-2015 agenda, namely: equity, resilience, sustainability, accountability and participation.⁵⁹ Within the regional consultation activities, a draft proposal of an Arab approach for SDGs has been prepared by ESCWA and presented for discussion during the regional consultation meeting held in Tunis on 18-19 November 2013.⁶⁰ The outcome of the meeting and the revised document on the approach will feed into the broader global consultation process of the Open Working Group (OWG) tasked by the United Nations General Assembly to prepare a proposal for SDGs by September 2014.

In order to move forward on the preparation of SDGs, several issues need to be considered. On the one hand, the concept of “global goals and national targets”, which is inspired by the principle of “common, but differentiated responsibility”, would in principle strengthen the sense of ownership and allow countries to set targets most relevant to them and possibly the pace of implementation by adopting different target dates for their achievement at the national level. In the current global discussions this is referred to as a “dashboard approach”. On the other hand, greater global consistency between targets (or a top-down approach) would create greater coherence across countries and facilitate easier aggregation and measurement of progress towards sustainable development. This discrepancy emphasizes the need to consider the tradeoffs between universality and flexibility in formulating SDGs, noting that, indeed, one of the key successes of the MDG framework was that it was simple to understand and implement.

Another point of discussion is whether such development issues as water, governance, poverty or environment should be addressed through stand-alone targets, dedicated targets (combining two or more sector targets) or integrated targets mainstreamed into all the targets of the adopted goals. Given the nature of some of these development issues, some feel that the integrated sustainable development approach should, by default, pursue integrated targets that mainstream these development issues, such as governance and environment, into cross-cutting goals. Integrating the three dimensions of sustainable development into cross-cutting goals and targets will, for example, need to recognize the importance of securing human well-being outcomes while at the same time maintaining the drivers of healthy environment. It was agreed at

⁵⁹ For more information, see report at http://www.undg.org/docs/13095/ADF%20short-web_1406.pdf.

⁶⁰ The presentation, entitled “SDG priority conceptual issues: Towards an Arab approach for the sustainable development goals”, is available at <http://www.escwa.un.org/information/meetingdetails.asp?referenceNum=3248E> (last accessed December 2013).

Rio+20 that SDGs need to be inspirational, concise and action-oriented, easy-to-communicate and monitor, limited in number as well as global in nature and universally applicable.

In identifying the implementation mechanism for SDGs, the High Level Political Forum on Sustainable Development (HLPF) would probably play the lead role in monitoring progress on the SDGs at the global level.⁶¹ At the regional level, inter-governmental bodies, including the Arab Economic and Social Council of LAS, might take the lead role. At the national level, follow-up on SDGs and cross-sectoral coordination mechanisms would involve and need the support of different line ministries (led by a central planning ministry/organization), as well as members of parliament and civil society.

E. ACCESS TO WATER AND SANITATION WITHIN THE GLOBAL DELIBERATIONS ON SDGs

The United Nations Conference on Sustainable Development (Rio+20), held in Riode Janeiro in June 2012, emphasized the centrality of water, energy and other sectors in a post-2015 development framework, calling for the formulation and adoption of SDGs as the means to build upon and move beyond the current MDG framework. With regard to water and sanitation, the common vision of participants at Rio+20 reflect four main directions, namely: (a) acknowledging the centrality of water and sanitation to sustainable development; (b) the commitment to the progressive realization of universal access to safe drinking water and sanitation and the recognition of the positive impacts of achieving such a goal on poverty eradication, women's empowerment and public health protection; (c) the need to manage water using a holistic approach with due considerations to maintaining the integrity and sustainability of the ecosystem; and (d) the recognition of the important role of non-conventional water resources in facing water scarcity and the need to protect the quality of water resources and reduce pollution. This common vision was translated into a global vision and commitment as articulated in United Nations General Assembly resolution 66/288 (September 2012), as follows:

“(119) We recognize that water is at the core of sustainable development as it is closely linked to a number of key global challenges. We therefore reiterate the importance of integrating water into sustainable development, and underline the critical importance of water and sanitation within the three dimensions of sustainable development;

“(120) We reaffirm the commitments made in the Johannesburg Plan of Implementation and the Millennium Declaration regarding halving by 2015 the proportion of people without access to safe drinking water and basic sanitation and the development of integrated water resource management and water efficiency plans, ensuring sustainable water use. We commit to the progressive realization of access to safe and affordable drinking water and basic sanitation for all, as necessary for poverty eradication, women's empowerment and to protect human health, and to significantly improve the implementation of integrated water resource management at all levels as appropriate. In this regard, we reiterate the commitments to support these efforts, in particular for developing countries, through the mobilization of resources from all sources, capacity-building and technology transfer;

“(121) We reaffirm our commitments regarding the human right to safe drinking water and sanitation, to be progressively realized for our populations, with full respect for national sovereignty. We also highlight our commitment to the International Decade for Action, ‘Water for Life’, 2005-2015;

“(122) We recognize the key role that ecosystems play in maintaining water quantity and quality, and support actions within respective national boundaries to protect and sustainably manage these ecosystems;

⁶¹ The High Level Political Forum on Sustainable Development (HLPF) was established by General Assembly resolution 67/290 of June 2013.

“(123) We underline the need to adopt measures to address floods, droughts and water scarcity, addressing the balance between water supply and demand, including, where appropriate, non-conventional water resources, and to mobilize financial resources and investment in infrastructure for water and sanitation services, in accordance with national priorities;

“(124) We stress the need to adopt measures to significantly reduce water pollution and increase water quality, significantly improve wastewater treatment and water efficiency and reduce water losses. In order to achieve this, we stress the need for international assistance and cooperation.”

It can thus be concluded that the international community has reaffirmed its commitment to the following issues:

- (a) Develop and implement integrated water resource management plans;
- (b) Ensure sustainable water use;
- (c) Realize progressively access to safe and affordable drinking water, and basic sanitation for all;
- (d) Protect and sustainably manage ecosystems;
- (e) Reduce water pollution and protect water quality;
- (f) Improve wastewater treatment;
- (g) Improve water efficiency and reduce losses.

As a follow up to Rio+20, regional implementation meetings (RIMs) were organized in each region as a mechanism to promote engagement and participation of countries at the regional level. In this regard, the Arab RIM was held in Dubai, United Arab Emirates, 29-30 May 2013. The meeting was convened by ESCWA, UNEP and LAS. On water-related issues, many delegates acknowledged the importance of the water-energy-food nexus and wastewater reuse. The “Dubai document for the Arab regional implementation of Rio+20” stresses the holistic approach towards sustainable development, with emphasis on the linkage between water, food and energy. It expresses the region’s position on water issues as follows:

“Participants affirm that the sustainable development goals which will be agreed upon should take into account capacities, policies and national priorities of the States, with due consideration given to international peace and security, poverty eradication, and the sectors of food, energy, water, transportation, the reduction of land degradation, drought and desertification, the maintenance of biodiversity, disaster reduction and emergency preparedness, and waste management which together represent the basic framework for achieving sustainable development, and to give special attention to the development of techniques and systems for water desalination and wastewater treatment, including sanitation and re-use, to bridge the gap between water availability and its use for the purpose of development.”⁶²

The above statement was also endorsed by AWMC at its fifth session that was held in Cairo on 6 June 2013. Thus, it illustrates and broadly reflects the concerns of the Arab region with regard to the upcoming SDGs related to water and sanitation.

One could notice that sustainable development of water and sanitation is a crucial issue to the Arab region, especially, the development of sustainable water desalination systems and wastewater treatment and reuse, which help preserve the environment and improve water availability. The water-energy-food nexus appears also as an important concern for Arab countries, which to a large extent reflect the availability of natural resources (land water and oil) and the physical characteristics of the region. Water scarcity and climate change concerns are also reflected as cross-cutting issues that affect other sectors, including land

⁶² Dubai document for the Arab regional implementation of Rio+20. Available at <http://www.escwa.un.org/information/meetingdetails.asp?referenceNum=2044E> (accessed December 2013).

management, environment protection and disaster reduction. Figure 33 summarizes chronologically the process towards the development of a water goal within the post 2015 development agenda.

Figure 33. Evolution of global and regional deliberations on water-related targets and indicators



Sources: ESCWA, based on information in Dubai document for the Arab regional implementation of Rio+20, available at <http://www.escwa.un.org/information/meetingdetails.asp?referenceNum=2044E>; United Nations General Assembly, 2012; United Nations Department of Economic and Social Affairs, 2013; and League of Arab States, 2013.

Note: ^{a/} The UNTT comprises over 60 United Nations entities and international organizations responsible for coordinating the efforts of the United Nations system and proposing a unified vision for the post-2015 development agenda.

Figure 33 highlights some of the milestones of the water agenda since the Millennium Summit of 2000. There has been a growing understanding and appreciation of the complexity of ensuring access to water supply and sanitation services. These deliberations offer an indication of what the future may include

in a post-2015 development framework at the global level. Three main tenants should thus be considered within this context, namely:

(a) The inter-governmental decision that access to drinking water and sanitation be considered a basic “human right” would represent a dramatic shift in the global development agenda that would need to adopt a progressive approach towards universal access, while taking into consideration constraints facing developing countries;

(b) A human rights-based approach requires universal access and should be pursued in a non-discriminatory manner. Consequently, a minimum water and sanitation service level would need to be provided to all irrespective of such operational challenges as financial constraints of consumers or service providers. Service provision could be influenced by the ability of consumer to pay or the ability of governments or local water operators to invest in infrastructure in the lower-income communities. This debate is already well articulated in the literature related to the privatization of water services and the need to have regulatory bodies to ensure that the provision of basic services is not simply based on cost-recovery principles and profitability. Under a human rights-based approach, the services should be provided irrespective of gender, religion, political affiliation or citizenship. Consequently, formal and informal settlements would need to be provided with such services if universal access is to be pursued, including refugee camps and marginalized communities;

(c) Within a human rights framework, the provision of these services becomes a mandatory commitment by States, and not a voluntary pursuit involving monitoring and reporting by the international community. Consequently, governments would need to comply with this obligation by actively mainstreaming water in policymaking at the national level. This has budgetary implications and may require efforts to find win-win policy options to avoid trade-offs between investments in basic services within and outside the water sector to achieve sustainable development. The donor community can play a big role to partner with developing countries in their endeavour for universal access.

Governments and civil society are thus encouraged to reflect on these considerations and play an active role in the ongoing global deliberations on shape and content of the post-2015 development framework. The following recommendations are proposed for consideration:

(a) The need to synchronize national and regional development agendas and plans within the global development directions;

(b) Implications of the shift towards a water and sanitation development agenda that is rights-based, and the need for additional indicators;

(c) Adaptation of the current JMP global monitoring system on access to water and sanitation towards a new direction;

(d) The need to synchronize national monitoring systems with the global mechanism, with a view on the role of regionally based monitoring efforts.

V. WATER IN THE POST-2015 DEVELOPMENT AGENDA

A. THE BASIC ELEMENTS

The lessons learned from formulating the MDG targets and indicators, and supporting reporting and monitoring of those indicators over the past decade is informing global, regional and local deliberations on how a post-2015 development agenda should look. Iterative debates are underway on structure and approach that will be applied in a post-2015 landscape. Among the major issues of discussion are the following: (a) whether a sectoral or cross-sectoral approach should be pursued related to the formulation of development goals; (b) whether global goals are preferable to regional and/or national goals that respond to different development needs and priorities; and (c) whether visionary goals or more practical, measurable goals should be adopted for guiding or inspiring greater progress over the coming decades. There is also discussion as to whether the post-2015 agenda should articulate SDGs or whether sustainable development is the overarching framework through which a new set of goals, targets and indicators will be formulated.

With regards to the water sector, a review of the current positions influencing the formulation of water targets in a post-2015 development agenda reveals wide consensus that the water agenda needs to incorporate three elements, namely:

- (a) Water resources management;
- (b) Access to water, sanitation and hygiene;
- (c) Wastewater management.

However, stakeholders differ in the way they position these water elements within the post-2015 development agenda.

A first group calls for incorporating all the three elements within a single goal, justifying this direction by the need for integrated water resources management and that access to drinking water and sanitation and wastewater management are merely components within that management approach.

By contrast, a second group sees water as a cross-cutting issue and calls for integrating its different components (access to drinking water and sanitation, wastewater management and water use efficiency, among others) within the respective sectors or themes articulated in the new goals that are dependent upon water.

The implications of choosing one of the two directions will have profound impacts on the monitoring modality that will be adopted over the coming decades.

This chapter seeks to review the positions of the main actors playing a role in defining the post-2015 global water agenda, and is divided into the following two main sections: (a) the first that focuses on the different positions on water resources management; and (b) the second that delves into the positions on the issue of access to drinking water and sanitation and wastewater management.

B. PROPOSALS FOR WATER RESOURCES MANAGEMENT IN THE POST-2015 DEVELOPMENT AGENDA

With the target date of 2015 approaching, the international community is keen to reach consensus on a follow-up to the current global development agenda represented by MDGs. This process was initiated at the United Nations Conference on Sustainable Development (Rio+20) with the issuance of the “Future we want” outcome document as the main guidance for the post-2015 development agenda.⁶³ On water, the document

⁶³ More information is available at <http://www.un.org/en/sustainablefuture> (accessed December 2013).

reflects on the main principles of integrated water resources management within the different sections, notably the need for water conservation, efficient irrigation and enhanced sustainable water management systems under the “food security and nutrition and sustainable agriculture” section. The document, however, devotes a special section to “water and sanitation”. Moreover, Rio+20 introduced SDGs as a follow-up to the current MDGs, and has devised a multi-level consultative process to formulate these goals.

Along similar lines, the European Commission (EC) has identified an overarching framework for the post-2015 development agenda, which addresses the three overarching objectives of sustainable development, namely: (a) poverty eradication; (b) changing unsustainable consumption and production patterns; and (c) protecting and managing the natural resource base of economic and social development. In the proposal, the sustainability elements of water resources are identified as key factors to their management. To this end, the EC approach states that this “requires each country to ensure that resources are used in an environmentally responsible manner and, with respect to resources such as land, forests, rivers and oceans, so that they will also benefit future generations. Equally, exploitation of finite resources, such as minerals and groundwater, must be done in an inclusive and responsible manner that guarantees maximum societal benefit, in terms of the way that they are commercialised, the rate of their depletion and the use of the income generated.”⁶⁴ While the framework provides a clear theoretical context of the post-2015 vision as seen by the European Commission, it does not, at this stage, incorporate definite targets and indicators.

The United Nations Secretary-General Advisory Board on Water and Sanitation (UNSGAB) argues for a “dedicated and comprehensive global goal on water that reflects water’s comprehensive contribution to development needs”. The Board identified three objectives, namely: (a) universal access to sustainable sanitation and to drinking water that is “really” safe; (b) increased wastewater management and pollution prevention; and (c) improved integrated water resources management and water-use efficiency.⁶⁵ In principle, the third objective goes in line with the general direction calling for the need to sustainably manage water resources in an integrated manner that contributes to social and economic development. It is noted, however, that the Board does not propose to encompass the other two components of access to sanitation and drinking water, and wastewater management within integrated water resources management. At least from the theoretical viewpoint, this seems to prioritize access to sanitation and drinking water as well as wastewater management over other aspects of water resources management. Moreover, although the Board makes a strong link between water, disaster and climate variability and indicates that improved water resources management is the first line of defence to cope with climate variability, it still proposes to include the water resources management and efficiency targets within other post-2015 goals, namely, on food security. Accordingly, it seems that the Board is convinced of the importance to include a target, or targets, on water resources management and particularly on water use efficiency in other goals or such sectors as agriculture, and prefers the “water goal” to deal mainly with access to water and sanitation services, and incorporate a wastewater management target within such a stand-alone water goal.

The position of the African Ministers’ Council on Water (AMCOW) seems to try and encompass all water-related issues within a single visionary goal, under the title “Ensure a Water Secure World for All” that branches into the following three targets: (a) target 1 on water, sanitation and hygiene; (b) target 2 on water resources management; and (c) target 3 on wastewater and water quality management.⁶⁶ On water resources management, AMCOW has formulated target dates and quantitative percentages for five elements that relate to: (a) the preparation of universal national and regional level water resources assessments by 2020; (b) an increase of investment in water management by a certain amount annually per capita between 2020 and 2030; (c) an increase of water storage capacity by a certain percentage by 2030; (d) an increase of per capita water availability and water use efficiency by a certain percentage by 2030; and

⁶⁴ European Commission, 2013.

⁶⁵ United Nations Secretary-General’s Advisory Board on Water and Sanitation, 2013.

⁶⁶ African Ministers’ Council on Water, 2013.

(e) enhanced water-related risk management capacity by 2030. The move towards defining quantitative targets and incorporating water use efficiency, storage capacity, resources assessment and investment indicators can be seen as a step towards fixing water resources management targets in the global development agenda. However, establishing a baseline year and monitoring progress towards these targets would be challenging to implement, and this may require compromise that may dilute the ambitious position taken by AMCOW.

The Sustainable Development Solutions Network of eminent experts from around the globe concludes that under the business-as-usual scenario, “some parts of the world may be rendered virtually uninhabitable as a result of climate change and water stress”.⁶⁷ In its report on the post-2015 sustainable development agenda to the United Nations Secretary General, the Network proposed 10 priority challenges/SDGs disaggregated into 30 targets. Water issues are distributed between three main goals, namely: goal 6, to improve agriculture systems and raise rural prosperity; goal 7, on empower inclusive, productive, and resilient cities; and goal 9, to secure ecosystem services and biodiversity, and ensure good management of water and other natural resources.

It seems that elements of integrated water resources management are more apparent in the development of the rationale of this approach, where target 6a focuses on sustainable food production systems through high use efficiency of water, soil nutrients and energy; while target 6b stresses the need to conserve forests and wetlands and ensure farming systems that are resilient to climate change and disasters. Target 6c relates to the need for universal access to basic resources and infrastructure services, including water and sanitation, agricultural input, modern energy, transport, mobile and broadband communication, and advisory services. Target 7b stresses the need for universal access to basic urban services, including water and sanitation, waste management, housing, low-carbon energy and transport, and mobile and broadband communication. Target 7c relates to the need to ensure safe air and water quality for all. Target 9a highlights the importance for individuals, businesses and governments to pay for the social cost of pollution and use of environmental services. Target 9c requires governments and businesses to commit to the sustainable, integrated and transparent management of water, agricultural land forests, fisheries, and mining and hydrocarbon resources to support inclusive economic development. The last of these also point towards linkages raised by the water-energy-food nexus, which is also a cluster of issues being discussed for inclusion in the post-2015 development agenda.

From the above discussion, it becomes clear that the approach followed by the Sustainable Development Solutions Network to derive the proposed SDGs is comprehensive and integrated. Unlike the calls from some organizations to develop a stand-alone goal on water that encompasses all aspects of water-related issues, such as access to water and sanitation and water resources management (resources use, allocation and use efficiency), the Network deals with water resources and water services as a cross-cutting issue, thereby placing water targets and indicators within the context of their respective sectors and uses. The challenge, however, remains in translating these general targets into realistic quantitative targets with appropriate indicators and in providing the incentive system to promote and monitor their achievement.

The High-Level Panel of Eminent Persons on the Post-2015 Development Agenda submitted their report to the United Nations Secretary-General and has proposed 12 goals disaggregated into 54 targets.⁶⁸ Unlike the Sustainable Development Solutions Network, the High-Level Panel proposes a stand-alone water goal that includes aspects of access to water and sanitation and elements of water and wastewater management. On water management, target 6c proposes, by 2030, to bring freshwater withdrawals in line with supply and increase water efficiency in agriculture by x per cent, industry by y per cent, and urban areas by z per cent. Target 6d proposes to recycle or treat all municipal and industrial wastewater prior to discharge. While it is not stated in the targets themselves, the report highlights the importance of fair and

⁶⁷ Sustainable Development Solution Network, 2013.

⁶⁸ High-Level Panel of Eminent persons on the Post-2015 Development Agenda, 2013.

efficient water allocation mechanisms to ensure their future sustainability, and proposes the establishment of good management practices, responsible regulation and proper pricing.⁶⁹ It seems that the proposed target on water management adds to the current MDG indicator 7.5, the element of quantitative increase of water use efficiency in the different sectors.

While there are other local, regional and international organizations that have voiced their position on the shape and content of the water goal in the post-2015 development agenda, the positions presented above are probably the most prominent and are considered representative and encompass the broad range of views and positions. It is important to remember that the aim here is not to prescribe to, evaluate those positions, or judge the merits upon which they are based, but rather to try and map the process of development from the current situation where water management is not embedded within the core of the current MDGs, or present in a manner that does not reflect the true impact of water in sustainable development, towards an era where water is recognized as cross-cutting and a determinant factor for sustainable development.

C. WATER AND SANITATION IN MDGS

Unlike water resources management, access to drinking water and sanitation is highly visible in MDGs. While covered only by one target, 7c, and two indicators 7.8 and 7.9, the Goal is considered cross-cutting to the extent that it is monitored by health-oriented organizations, namely, WHO and UNICEF through the Joint Monitoring Programme (JMP). The direct impact of access to water and sanitation to the health and education sectors, particularly in developing countries, justifies the direct involvement of WHO and UNICEF in the development and monitoring of the water and sanitation target, rather than the actual providers and consumers of water supply and sanitation services.

The MDG 7c indicators, as they stand, are more of a public health measure than a water service indicator. This has thus resulted in the indicators and JMP neglecting essential elements associated with the delivery of these services, such as supply continuity, water quality, affordability and wastewater management (treatment and reuse).

Additionally, although the current water and sanitation target aims to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”, the indicators officially adopted by JMP do not fully reflect the defined aim, as they do not directly measure safety of the drinking water nor do they measure sustainability of the accessibility to drinking water and sanitation. In fact, a methodology was developed by JMP whereby proxy indicators were introduced to measure indirectly safe and sustainable access to drinking water and basic sanitation (see figure 3). Access to drinking water was redefined by access to water sources categorized as either improved or unimproved, where the segment of the population gaining access to improved water sources would be counted towards achieving the target.

Similarly, access to basic sanitation was also redefined by access to sanitation facilities categorized as either improved or unimproved, where the segment of the population gaining access to improved sanitation facilities would be counted towards achieving the target. While this methodology seems logical and simple, at the same time it introduces many assumptions that have raised criticism. The use of access to an improved water source as a proxy assumes that such sources are likely to provide a sufficient quantity of safe quality water within the dwelling or at a convenient distance from it and that it is affordable. There is no measurement of water quality; still, it is assumed that improved sources are likely to provide safe water. However, this is not always the case and drinking water obtained from many improved sources in many developing countries is in fact unsafe.

⁶⁹ Pricing policies of domestic water supply and sanitation services differ widely between countries of the region. While Yemen, driven by a growing level of water scarcity, adopted a cost recovery approach for tariff setting, other countries, including Egypt, still subsidize water and sanitation tariffs.

1. *Factors influencing mechanisms for monitoring access to water and sanitation services*

No doubt that MDGs and in particular the water and sanitation target has been a driving force behind much of the progress achieved. According to JMP, the drinking water target was already achieved in 2010, five years ahead of the target deadline of 2015, with 2.1 billion people gaining access to improved water sources between 1990 and 2011. It is reported that while almost 1.9 billion people have gained access to improved sanitation facilities between 1990 and 2011, the world remains off track to meet the sanitation target by 2015 (see chapter II for the progress achieved in Arab countries). With 2015 approaching, many organizations have been engaged in the process of re-evaluating the shortcomings of the current target and indicator system and making proposals to improving on it, provided there is general consensus on the need to continue with access to water and sanitation as part of the global development agenda after 2015.

One of the most determinant factors that will probably impact the shape and content of the coming modified access to water and sanitation target and indicator system is the declaration of access to water and sanitation as a human right through resolutions by the United Nations General Assembly and the Human Rights Council. Of all the resolutions, General Assembly resolution 64/292, which was adopted on 28 July 2010, is a distinctive milestone not only because it was the first resolution that recognizes “the right to safe clean drinking water and sanitation as a human right”, but also because it makes that right “essential for the enjoyment of life and all human rights”, which anchors it with solid grounds and makes it widely cross-cutting. Another lasting impact of this resolution is the explicit criteria that it declares for accessibility to drinking water and sanitation, noting that it needs to be “safe, clean, accessible and affordable”. It thus can be argued that this resolution introduced criteria that will need to be considered in shaping access to water and sanitation beyond 2015, including universal coverage, water quality and affordability. The other resolutions introduce such additional criteria as “availability and acceptability”, include the need to consider wastewater management (collection, treatment and reuse), indicate the need to prioritize “a basic level of service for everyone before improving service levels for those already served”, and puts emphasis on the un-served poor and most marginalized population segments of society.⁷⁰ It becomes clear that most of the content of the resolutions have and will dictate the direction to redefine the target on access to water and sanitation as well as defining the indicators that will be set to monitor the progress towards achieving that defined target.

Before highlighting the proposed directions of JMP for the access to water and sanitation target for post-2015, positions and perspectives of some organizations on the access to water and sanitation target are briefly summarized below.

D. PROPOSALS FOR ACCESS TO WATER AND SANITATION IN THE POST-2015 DEVELOPMENT AGENDA

The outcome of the Rio+20 conference, reflected in the “Future we want” outcome document, acknowledges progressive realization of access to safe and affordable drinking water and basic sanitation for all to be necessary for poverty eradication and the protection of human health. Additionally, wastewater treatment is highlighted within the scope of water quality protection and the reuse of treated wastewater is referenced within the scope of rural development and agricultural production. The introduction of wastewater management can be viewed to serve a dual purpose. The first is related to pollution control, which serves a cleaner environment; while the second is connected to reducing the pressure on freshwater resources through the reuse of treated wastewater, notably for irrigation and especially when treated wastewater can be considered a reliable and potentially growing source of water.

⁷⁰ United Nations Human Rights Council, 2010a, 2011 and 2012.

Adopting a framework that clusters goals in accordance with their development dimension, the European Commission proposes a framework that includes four dimensions, namely, ensuring basic living standards; drivers for inclusive and sustainable growth; sustainable management of natural resources; and equality, equity and justice. While the issue of water resources management falls within the third dimension of sustainable management of natural resources, and has been briefly discussed above, access to water and sanitation falls in the first dimension of ensuring basic living standards. The framework, at this stage, does not propose any targets and indicators, but sets a theoretical framework for SDGs.

While UNSGAB calls for a “dedicated and comprehensive global goal on water”, as was discussed above, the Advisory Board proposes to incorporate the targets related to water resources management and water use efficiency within other goals, that is, under food security. There seems to be some contradiction whereby, on one hand, there is a call for a dedicated goal on water, while water resources management related targets are proposed to be incorporated under other (more relevant) goals. It can thus be concluded that the proposal of UNSGAB is not as strict as it appears at first glance and in fact may have shown flexibility that allows for more streamlining the water targets under different, more relevant goals.

The proposed UNSGAB target on access to water and sanitation indicates the need to “achieve universal access to sustainable sanitation and to drinking water that is really safe”. In this proposal there is stress on three issues, namely, universal access,⁷¹ giving priority to access to sanitation followed by access to drinking water, and emphasis on the safety of drinking water. On the last issue, the report makes a marked distinction between the currently used proxy indicator of improved water sources and potable water. The challenge that will arise from this distinction is the need to develop an appropriate and inexpensive indicator to measure water potability. A distinct proposed target by UNSGAB is “increasing wastewater management and pollution prevention”. While no indicators have been proposed, they may probably reflect wastewater collection, treatment and reuse. In fact UNSGAB “believes that sanitation does not stop at the toilet and thus for citizens and countries to enjoy the health benefits, economic growth and human dignity that comes with safe sanitation and clean water a holistic approach, incorporating wastewater collection, treatment and reuse is necessary”. Increased wastewater management will provide environmental benefits in the form of pollution control, and will also provide additional non-conventional water resources that could, in principle, reduce the pressure on valuable freshwater resources especially in water scarce regions.

Along similar lines to UNSGAB, AMCOW also identified one target on universal access to safe water, namely, improved sanitation and hygiene by 2030; and another target on water quality that aims to ensure and safeguard water quality for all uses by 2030. The proposal incorporates indicators, which, in terms of access to safe water, adequate sanitation and the practice of effective hygiene behaviour, introduces elements of universal coverage of households by 2030 and of schools and health centres by 2025. The indicators also make reference to the UNICEF Water, Sanitation and Hygiene (WASH) services proposing that all users of public spaces (markets, barracks, religion places, prisons and motor parks) be served by WASH by 2030. Inequalities in access on the basis of gender, disabilities, age or poverty is included as an indicator and proposed to be eliminated by 2030. While the proposed targets and indicators represent a viewpoint that is influenced by JMP discussions of the post-2015 water and sanitation global development agenda, they reflect a strong political stand towards greater access to water and sanitation. The strong political commitment can be seen as a reflection of the need to step up efforts to improve the situation in Africa, particularly given that, according to the 2013 JMP report, sub-Saharan Africa still has the lowest drinking water and sanitation coverage. It needs to be noted that the terms used in the proposed indicators, such as safe water, adequate sanitation and effective hygiene behaviour, are not defined in the proposal, which could open the door for multiple interpretations.

On wastewater management, AMCOW proposes several indicators, among which is the adoption of a regional level policy, legal and institutional frameworks on the collection, treatment and reuse of wastewater.

⁷¹ This is a reflection of the human right to access water and sanitation.

Another indicator proposes to reuse a certain percentage of all treated wastewater and sludge for agriculture and other beneficial uses, and stresses on cost recovery for treatment through appropriate tariffs. An interesting element that reflects the political desire to strengthen cooperation on shared water resources management is evident through another indicator, which specifies that all countries treat their wastewater to a minimum standard quality level before disposal to transboundary watercourses and aquifers. While the details of the minimum quality level was not identified, the concept of incorporating elements of transboundary cooperation on water management at the global development agenda is a breakthrough; and although this issue has been discussed in some forums during the past few years, no concrete proposals have yet materialized.

On access to water and sanitation, the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda proposes two targets and recommends a third target on wastewater management. Target 6a suggests universal access to safe drinking water at home and in schools, health centres and refugee camps, without a clear definition of safe. Target 6b proposes to end open defecation and ensure universal access to sanitation at school and work, and increase access to sanitation at home by a certain percentage. Evidence that adequate sanitation in schools allows girls to continue to attend school and reduce the likelihood that children leave school seem to convince the High-Level Panel on giving priority to sanitation coverage at schools over homes. While this justification may be strong and serves towards the elimination of inequalities, universal access to sanitation at home, with all the difficulties it faces for full realization, remains a valid aim that goes in line with the access to sanitation as a human right. It seems that the two targets are influenced by the global discussions taking place, particularly those led by JMP. Target 6d recommends recycling or treating all municipal and industrial wastewater prior to discharge. While this target aims primarily to reduce the detrimental impacts not only on human health, but also on the ecosystem, it seems that it leaves some loose ends given that it does not define a minimum treatment level nor does it reference the huge financial burden associated with the treatment of all domestic wastewater at the global scale.

E. WHO/UNICEF CONSULTATIONS ON THE POST-2015 TARGETS ON ACCESS TO WATER, SANITATION AND HYGIENE

Using JMP as a platform, an initiative has been launched jointly by WHO and UNICEF with the aim to “formulate a technical proposal for evidence-based targets and indicators to support the monitoring of progress towards a global water, sanitation and hygiene (WASH) goal on the post-2015 development agenda”.⁷² The development of targets and indicators have progressed through a consultation process that started in 2011 and adopted a methodology that involved the formation of four working groups that addressed drinking water, sanitation, hygiene, and equity and non-discrimination thematic issues.

The working group on equity was tasked to provide guidance and criteria to ensure that the targets and indicators developed by the other working groups aligned with equity principles. Several refinements of the targets and indicators initially proposed by the working groups will lead to a final list of targets supported by WHO and UNICEF. As of June 2013, the proposed list of targets is not in its final form, but has gone through several rounds of revisions. It should be noted that the vast experience of JMP has played a role in the development process of the new targets and indicators, taking into consideration the shortcomings and criticisms of the current target and indicator system. In order to effectively reduce or eliminate inequalities it has been proposed to disaggregate the data by four population groups (rich and poor, urban and rural, informal and formal urban settlements, disadvantaged groups and the general population). The ongoing consultation is also raising important and valid questions related to, for example, data sources, reliability, national capacities and associated cost to monitor. As can be concluded, the disparity in the data sources from one country to another and the vast amount of data required will constitute a major challenge to overcome. Table 7 summarizes the proposed targets as per the last consultation meeting that was held in

⁷² WHO/UNICEF, 2012c.

December 2012 in the Hague, the Netherlands, and lists the definitions of the terms used to identify the different levels of services.

After a quick review of the proposed targets and indicators, some general observations can be drawn as follows:

(a) The targets reinforce the human right approach towards access to water and sanitation through the adoption of universal coverage for basic drinking water service and adequate sanitation;

(b) The target on basic drinking water service aligns with resolution 18/1 of the Human Rights Council by giving priority to realizing a basic level of service for everyone before improving service levels for those already served;

(c) There is a noted focus on access to water, sanitation and hygiene in schools and health centres, thereby strengthening further the cross-cutting nature of water and sanitation services, particularly on issues related to gender imbalance in basic and secondary education enrolment, and the need to reduce inequalities of adequate health services to the poor and marginalized segments of population;

(d) The targets still rely, to a large extent, on the current MDG monitoring approach that uses the “improved” water sources as a proxy indicator, but adds another dimension of measuring accessibility by adding “the distance to the water source” as a criterion that defines the basic drinking water service level;

(e) The targets do not introduce additional criteria to define water quality for the basic drinking water service level. As such, the proposed target still uses the assumptions of the proxy indicator, which assumes that “improved” water sources are of safe water quality, suited for drinking. This assumption has been contested in many forums;

(f) The targets do not incorporate adequate provisions for setting water quantity for use at home in the basic drinking water service level. This may lead to situations of house connections or standpipes service levels considered acceptable according to the target, but that deliver water quantities less than adequate for household and hygiene use;

(g) The targets do not aim for universal coverage of the intermediate drinking water service level;

(h) It is only at the intermediate drinking water service level that criteria for provisions of water quality and continuity of service are introduced as determinants of the target;

(i) The targets indicate a clear commitment to end open defecation by 2025. The latest JMP figures indicate that open defecation has declined by 244 million people between 1990 and 2011. It seems overly ambitious to assume the complete elimination of open defecation, which stands at over one billion people between 2015 and 2025;

(j) With the provision of universal water and sanitation services, the introduction of a target on universal adequate hand-washing may, in practical terms, translate on the ground into accessibility to soap;

(k) A comprehensive approach towards wastewater management (collection, treatment and reuse) is absent in the proposed targets, where the proposed measures are still driven by public health and disease prevention, with little environmental and holistic water management considerations.

TABLE 7. PROPOSED TARGETS ON ACCESS TO WATER, SANITATION AND HYGIENE BY WHO AND UNICEF

Target dates			
	Water	Sanitation	Hygiene
2025		- No open defecation	
2030	- Universal basic drinking water in schools and health centres. - Universal basic drinking water at home	- Universal adequate sanitation in schools and health centres.	- Universal adequate hand-washing and Menstrual Hygiene Management (MHM) in schools and health centres - Universal adequate hand-washing at home
2040	- Progress towards intermediate drinking water at home	- Universal adequate sanitation at home - Progress towards safe management of excreta	

Definition of terms:

Adequate hand-washing facilities at homes, in schools and health centres: Hand-washing facilities, with soap and water, available inside or immediately outside sanitation facilities, where food is prepared or consumed, and in patient care areas.

Adequate menstrual hygiene management facilities in schools and health centres: Provide privacy for changing materials and for washing hands, private parts and clothes with soap and water.

Adequate sanitation at home: Each of the following sanitation facility types is considered as adequate sanitation, if the facility is shared among no more than five families or 30 persons:

- A pit latrine with a superstructure, and a platform or squatting slab constructed of durable material.
- A toilet connected to a septic tank.
- A toilet connected to a sewer.

Adequate sanitation facilities in schools and health centres: Those that effectively separate excreta from human contact, and ensure that excreta do not re-enter the immediate environment. An adequate school or health centre sanitation facility:

- Is located in close proximity [specific distance to be added] to the school or health centre;
- Is accessible to all users, including adults and children, the elderly, and those with physical disabilities;
- Provides separate facilities for males and females (boys and girls at school), and for adults and children;
- Is equipped with hand washing stations that include soap and water and are inside or immediately outside the sanitation facility;
- Provides adequate menstrual management facilities in sanitation facilities that are used by women and by girls of menstruating age;
 - At schools, provides at least one toilet per 25 girls and at least one toilet for female school staff, as well as a minimum of one toilet plus one urinal (or 50 centimetres of urinal wall) per 50 boys, and at least one toilet for male school staff.
 - At in-patient health centres, includes at least one toilet per 20 users.
 - At outpatient health centres, includes at least four toilets - one each for staff, female patients, male patients, and child patients.

Safe management of household excreta is defined as the containment, extraction, and transport of excreta to a designated disposal or treatment site, or the safe re-use of excreta at the household or community level, as appropriate to the local context.

TABLE 7 (continued)

Basic drinking water service in schools: water from an “improved” source on premises (in rural, pre-2015 JMP definitions; in urban, piped water into school, yard or plot or a standpipe/public tap or a tube well/borehole) capable of delivering sufficient water at all times for drinking, personal hygiene and, where appropriate, food preparation, cleaning and laundry. Five litres per capita per day (lpcpd) are available for non-residential schoolchildren and staff in non-residential and day schools; and 20 lpcpd are available for all residential schoolchildren and staff in boarding schools. Additional quantities of water may be required depending on sanitation facilities (including, for example, pour flush or flush toilets).

Basic drinking water service in health centres: water from an “improved” source on premises (in rural, pre-2015 JMP definitions; in urban, piped water into health centre yard or plot or a standpipe/public tap or a tube well/borehole) capable of delivering the minimum quantity of water that is required for different situations in the health care setting as defined by WHO.

Basic drinking water at home: Households are considered to have a basic drinking water service when they use water from an “improved” source (pre-2015 JMP definitions in rural areas; piped water into dwelling, yard or plot, or a standpipe/public tap or a tube well/borehole in urban areas) with a total collection time of 30 minutes or less for a roundtrip, including queuing.

Intermediate drinking water at home: Households are considered to have intermediate drinking water service when they use water from an “improved” source (pre-2015 JMP definitions in rural areas; piped water into dwelling, yard or plot, or a tube well/borehole in urban areas) located on their premises, which delivers an acceptable quantity of water with only moderate levels of discontinuity (non-functional for no more than two days in the last two weeks), water quality at source meets a threshold of less than 10 cfu *E. coli*/100ml year-round, and the water point is accessible to all household members at the times they need it.

Source: WHO/UNICEF, 2012d.

Of all the proposals for the post-2015 global development agenda on access to water and sanitation, the one under development by JMP represents the views and experiences of the two international organizations, WHO and UNICEF, that have been involved in the field of monitoring and reporting on water and sanitation for the past three decades, in addition to the contributions of experts and academics involved in the consultation process. While the proposal tackles some of the shortcomings faced by the current monitoring and proposes solutions to overcome some of the criticism of the current water and sanitation MDG target, the proposal is still in need for further refinement.

From an oversimplified two-indicator system of the current MDG water and sanitation monitoring programme, the new JMP proposal introduces 14 main indicators, divided into a total of 28 sub-indicators. It thus becomes clear that the post-2015 development agenda when it comes to access to water, sanitation and hygiene will reflect definite change in direction from that of the pre-2015 era. If the enthusiasm reflected in JMP proposal is attributed to practitioners and experts, there is a chance that politicians may add to these aspirations, for political and funding reasons, and include even more ambitious targets. While visionary in nature, this also presents the risk of approving an “ideal” goal/target-indicator system that does not provide for intermediate milestones, and is thus costly to monitor and difficult to attain in the near turn. Focusing on the year 2015 and beyond should therefore not be viewed as the ultimate opportunity, but rather a progress in the right direction for achieving sustainable development.

VI. CONCLUSIONS

The global community was proud to announce in 2012 that the global drinking water target articulated in MDGs had been met five years ahead of schedule. However, the countries of the water-scarce Arab region face the continuing challenge of providing safe and sufficient water, and improved sanitation to its growing population. There is high variability in access to drinking water and sanitation services among Arab countries, with some countries nearly fully reliant on desalination, such as GCC countries, while others are not able to secure sufficient investments to meet basic needs, such as LDCs and countries emerging from or existing in a state of conflict.

The water supply and sanitation target supported by the MDG indicators are health-based and do not reflect the level or quality of services provided in countries that may otherwise appear to have achieved full or near full access to water supply services and/or sanitation services. Consideration of these other aspects related to water resource management and the delivery of basic water supply and sanitation services is necessary to ensure the provision of these services in water-scarce environments.

A regional monitoring initiative has been launched under the auspices of the Arab Ministerial Water Council to build upon the basic MDG indicators by incorporating additional indicators that reflect the level and quality of services as well as environmental protection based on regional specificities that reflect concerns and constraints manifest in the Arab region. These additional indicators were selected not only to measure accessibility to improved infrastructure, but also to assess reliability, regularity, affordability, sustainability and quality of service provided.

The collection, monitoring and reporting of these indicators is pursued under a new regional coordination mechanism, namely, the MDG+ Initiative. The operationalization of the Initiative included the preparation of a questionnaire template that was developed through a collaborative, inter-agency process that incorporated comments and feedback from Arab countries. The resulting template contains definitions, explanations and directions on how to obtain the required data. It has been complemented by a training manual and software tool to support national monitoring teams to collect information on the additional MDG+ indicators based on a common, harmonized methodology.

In this initial stage, the additional indicators focus on services provided by public or privately managed networks and do not apply to all water sources and sanitation facilities options, such as on-site water sources and sanitation facilities in rural areas. However, the collection of information on the indicators can be expanded once the data management system is operational and adequate capacity and resources become available.

It is expected that this regional initiative will help to strengthen the capacity of Arab countries and counterparts in the area of water supply and sanitation monitoring and help to increase understanding about access and availability of these services at the national level through a regionally appropriate approach. It is also expected that these additional indicators can help to inform the regional and global debate as the formulation of a sustainable development goal related to the water sector is pursued during the preparation of a post-2015 development framework, and within a global framework that considers access to clean water and sanitation services a universal human right

The current discussions aimed at defining the directions, scope and content of the post-2015 global development agenda seem to have reached consensus on the principal role of water in sustainable development. Consequently, it is expected that the global development agenda beyond 2015 will incorporate water in a manner that shows this link more strongly than it is at present in MDGs. Whether water is included in the upcoming goals through a single comprehensive goal that covers the different elements of water resources management, access to drinking water and sanitation, and wastewater management or embedded within the sectoral goals as water related targets, the corresponding monitoring system will have to adapt and accommodate for the conditions of the selected modality. Water practitioners and experts have

been active for the past two years and will continue until their mission is accomplished; the risk however is to become, in good faith, overly ambitious with ideal targets that prove later unattainable and costly to monitor. Practical and measureable goals and targets can enforce confidence and secure commitment for continued progress by governments, the private sector and civil society alike. The agenda to be adopted in the year 2015 should thus not be viewed as the only opportunity to achieve sustainable development, but rather it should be understood as a progressive and positive step forward towards achieving sustainable development for all.

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Annex I

Percentages of the population that use public standpipe as water source in urban areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	6.0	6.0	6.4	6.1	5.8	5.5	5.2	4.9	4.6	4.3	4.0	3.6	3.3	3.0	2.7	2.4	2.1	1.8	1.5	1.2	0.9	0.5
Bahrain																						
Comoros	33.8	33.8	33.8	33.8	33.8	33.5	33.2	32.9	32.7	32.4	32.1	31.8	31.5	31.3	31.0	30.7	30.7	30.7	30.7	30.7		
Djibouti	10.3	10.3	10.3	10.3	10.3	10.6	11.0	11.3	11.7	12.0	12.4	12.7	13.1	13.5	13.8	14.2	14.5	14.9	15.2	15.2	15.2	15.2
Egypt	5.1	4.9	4.6	4.3	4.0	3.8	3.5	3.2	2.9	2.6	2.4	2.1	1.8	1.5	1.2	1.0	0.7	0.4	0.1	0.0	0.0	0.0
Iraq					2.5	2.5	2.5	2.5	2.5	2.3	2.1	1.9	1.7	1.6	1.4	1.2	1.0	0.8	0.6	0.4	0.4	0.4
Jordan									0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kuwait																						
Lebanon																						
Libya																						
Mauritania	18.8	18.8	18.7	18.5	18.4	18.2	18.1	18.0	17.8	17.7	17.5	17.4	17.2	17.1	17.0	16.8	16.7	16.5	16.4	16.2	16.2	16.2
Morocco	15.7	15.2	14.7	14.2	13.7	13.2	12.6	12.1	11.6	11.1	10.6	10.1	9.5	9.0	8.5	8.0	7.5	7.0	6.4	5.9	5.9	5.9
Oman	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Palestine							1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Qatar																						
Saudi Arabia																						
Somalia				12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
The Sudan	5.5	5.4	5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0	4.0	3.9	3.8	3.8	3.8
Syrian Arab Republic							0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Tunisia					0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
United Arab Emirates							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yemen	6.0	5.7	5.4	5.1	4.7	4.4	4.1	3.7	3.4	3.1	2.7	2.4	2.1	1.7	1.4	1.1	0.7	0.4	0.1	0.1	0.1	0.1

No available data.

Annex II

Percentages of the population that use public standpipe as water source in rural areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	18.0	18.0	18.0	17.8	17.0	16.3	15.5	14.7	14.0	13.2	12.4	11.7	10.9	10.1	9.3	8.6	7.8	7.0	6.3	5.0	5.0	5.0
Bahrain																						
Comoros	24.0	24.0	24.0	24.0	24.0	24.1	24.3	24.5	24.6	24.8	25.0	25.2	25.3	25.5	25.7	25.9	25.9	25.9	25.9	25.9		
Djibouti	28.4	28.4	28.4	28.4	28.4	27.7	27.0	26.3	25.6	24.8	24.1	23.4	22.7	22.0	21.3	20.5	19.8	19.1	18.4	18.4	18.4	18.4
Egypt	18.3	17.5	16.7	15.8	15.0	14.2	13.4	12.6	11.8	11.0	10.1	9.3	8.5	7.7	6.9	6.1	5.3	4.4	3.6	2.8	2.0	2.0
Iraq					3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.3
Jordan									0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kuwait																						
Lebanon																						
Libya																						
Mauritania	4.8	4.8	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	6.3	6.4	6.5	6.6	6.7	6.8	6.8	6.8
Morocco	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.2	13.2
Oman	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Palestine							0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Qatar																						
Saudi Arabia																						
Somalia				6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
The Sudan	18.8	18.1	17.5	16.8	16.2	15.6	14.9	14.3	13.6	13.0	12.3	11.7	11.1	10.4	9.8	9.1	8.5	7.9	7.2	7.2	7.2	7.2
Syrian Arab Republic							1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	
Tunisia					16.6	16.6	16.6	16.6	16.6	18.3	19.9	21.5	23.2	24.8	26.4	28.1	28.1	28.1	28.1	28.1		
United Arab Emirates								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yemen	12.4	11.9	11.4	10.9	10.4	9.9	9.4	8.9	8.4	7.9	7.4	7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.5	3.5	3.5

 No available data.

Annex III

Percentages of the population that use tanker truck as water source in urban areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	0.0	0.0	0.0	0.0	0.8	1.6	2.3	3.1	3.9	4.6	5.4	6.2	6.9	7.7	8.5	9.2	10.0	10.8	11.6	12.0	12.0	12.0
Bahrain																						
Comoros	14.5	14.5	14.5	14.5	14.5	13.0	11.5	10.0	8.5	7.0	5.4	3.9	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0		
Djibouti	14.5	14.5	14.5	14.5	14.5	13.5	12.5	11.5	10.4	9.4	8.4	7.3	6.3	5.3	4.2	3.2	2.2	1.1	0.1	0.1	0.1	0.1
Egypt	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Iraq					1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.2
Jordan	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4
Kuwait																						
Lebanon																						
Libya						7																
Mauritania	47.0	47.0	46.6	46.1	45.7	45.3	44.9	44.5	44.1	43.7	43.3	42.9	42.5	42.1	41.7	41.3	40.9	40.5	40.0	39.6	39.6	39.6
Morocco	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	
Oman							39															
Palestine					4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Qatar																						
Saudi Arabia																						
Somalia				22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
The Sudan	9.0	9.5	9.9	10.4	10.9	11.4	11.9	12.3	12.8	13.3	13.8	14.3	14.7	15.2	15.7	16.2	16.7	17.1	17.6	18.1	18.6	18.6
Syrian Arab Republic	2.8	2.8	2.8	2.8	2.8	3.0	3.3	3.5	3.8	4.0	4.3	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.2	6.5	6.7	
Tunisia														0.6								
United Arab Emirates														18.7								
Yemen		5.2	5.2	5.2	5.2	5.2	6.1	7.1	8.0	8.9	9.9	10.8	11.8	12.7	13.6	14.6	15.5	16.4	17.4	17.4	17.4	17.4

 No available data.

Annex IV

Percentages of the population that use tanker truck as water source in rural areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	5.0	5.0	5.0	5.0	5.5	6.1	6.7	7.3	7.9	8.5	9.1	9.7	10.3	10.9	11.4	12.0	12.6	13.2	13.8	14.0	14.0	14.0
Bahrain																						
Comoros	30.7	30.7	30.7	30.7	30.7	27.7	24.6	21.5	18.4	15.3	12.2	9.1	6.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0		
Djibouti	10.6	10.6	10.6	10.6	10.6	10.1	9.6	9.1	8.6	8.1	7.6	7.2	6.7	6.2	5.7	5.2	4.7	4.2	3.8	3.8	3.8	3.8
Egypt	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.7
Iraq					9.0	9.0	9.0	9.0	9.0	9.2	9.4	9.6	9.7	9.9	10.1	10.2	10.4	10.6	10.8	10.9	10.9	10.9
Jordan	0.0	0.0	0.0	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	6.0
Kuwait																						
Lebanon																						
Libya						13.9																
Mauritania	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.0
Morocco	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	
Oman							42															
Palestine					12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Qatar																						
Saudi Arabia																						
Somalia				3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
The Sudan	7.0	7.1	7.2	7.2	7.3	7.4	7.5	7.5	7.6	7.7	7.8	7.9	7.9	8.0	8.1	8.2	8.2	8.3	8.4	8.5	8.6	8.6
Syrian Arab Republic	11.1	11.1	11.1	11.1	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	12.0	12.2	12.3	12.4	12.5	12.6	12.7	12.8	
Tunisia														6.5								
United Arab Emirates														29.2								
Yemen	1.0	3.2	3.2	3.2	3.2	3.2	3.7	4.1	4.6	5.0	5.5	5.9	6.4	6.8	7.3	7.7	8.2	8.6	9.1	9.1	9.1	9.1

 No available data.

Annex V

Percentages of the population using toilets connected to piped sewer systems in urban areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	62.2	62.2	62.2	62.2	63.3	64.4	65.6	66.7	67.8	68.9	70.0	71.1	72.2	73.3	74.4	75.5	76.6	77.7	78.8	78.8	78.8	78.8
Bahrain																						
Comoros	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Djibouti	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Egypt	37.8	39.9	42.0	44.2	46.3	48.4	50.5	52.6	54.7	56.8	58.9	61.0	63.1	65.3	67.4	69.5	71.6	73.7	75.8	77.9	80.0	80.0
Iraq					26.4	26.4	26.4	26.4	26.4	26.7	27.0	27.3	27.6	27.9	28.2	28.5	28.8	29.1	29.4	29.7	29.7	29.7
Jordan									66.6	66.6	66.6	66.6	66.6	66.4	66.3	66.2	66.0	65.9	65.8	65.6	65.5	65.4
Kuwait																						
Lebanon																						
Libya																						
Mauritania						4.1	4.1	4.1	4.1	4.1	3.9	3.7	3.5	3.3	3.1	3.0	2.8	2.6	2.4	2.2	2.2	2.2
Morocco	76.2	76.2	76.2	76.2	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.4	76.4	76.4	76.4	76.4
Oman	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2
Palestine		47.5	47.5	47.5	47.5	47.5	48.5	49.5	50.5	51.6	52.6	53.6	54.6	55.6	56.6	57.7	58.7	59.7	60.7	60.7	60.7	60.7
Qatar																						
Saudi Arabia																						
Somalia				0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.5	5.9	8.2	10.5	12.8	15.1	17.4	19.7	19.7	19.7	19.7	19.7
The Sudan	5.7	5.5	5.2	5.0	4.7	4.5	4.2	4.0	3.7	3.5	3.2	3.0	2.7	2.5	2.3	2.0	1.8	1.5	1.3	1.3	1.3	1.3
Syrian Arab Republic	92.6	92.6	92.6	92.6	92.5	92.5	92.4	92.4	92.3	92.3	92.2	92.2	92.1	92.1	92.0	92.0	91.9	91.9	91.8	91.8	91.8	
Tunisia					55.8	55.8	55.8	55.8	55.8	60.4	65.0	69.7	74.3	78.9	83.5	88.2	88.2	88.2	88.2	88.2		
United Arab Emirates														90.6								
Yemen	40.7	40.7	40.8	40.8	40.9	40.9	40.9	41.0	41.0	41.0	41.1	41.1	41.2	41.2	41.2	41.3	41.3	41.3	41.3	41.4	41.4	41.4

 No available data.

Annex VI

Percentages of the population using toilets connected to piped sewer systems in rural areas in Arab countries

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Algeria	33.6	33.6	33.6	33.6	35.0	36.3	37.7	39.1	40.5	41.8	43.2	44.6	46.0	47.3	48.7	50.1	51.5	52.8	54.2	54.2	54.2	54.2
Bahrain																						
Comoros	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3		
Djibouti		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Egypt	3.0	3.8	4.5	5.3	6.1	6.8	7.6	8.4	9.1	9.9	10.7	11.4	12.2	13.0	13.7	14.5	15.3	16.1	16.8	17.6	18.4	18.4
Iraq					0.6	0.6	0.6	0.6	0.6	0.7	0.9	1.0	1.2	1.4	1.5	1.7	1.8	2.0	2.2	2.3	2.3	2.3
Jordan									2.8	2.8	2.8	2.8	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.5
Kuwait																						
Lebanon																						
Libya																						
Mauritania						0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Morocco																						
Oman	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3	70.3
Palestine		3.8	3.8	3.8	3.8	3.8	4.2	4.7	5.1	5.5	6.0	6.4	6.9	7.3	7.8	8.2	8.7	9.1	9.6	9.6	9.6	9.6
Qatar																						
Saudi Arabia																						
Somalia				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
The Sudan	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Syrian Arab Republic	28.9	28.9	28.9	28.9	28.9	30.2	31.5	32.8	34.1	35.4	36.7	38.0	39.4	40.7	42.0	43.3	44.6	45.9	47.2	47.2	47.2	
Tunisia							5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1		
United Arab Emirates														60.1								
Yemen	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0

No available data.

Annex VII

Proposed data that should be obtained from the official water supply – Part 1

The required data to compute the drinking water supply indicators according to the unified Template of MDG+ Initiative - Part 1									
Data from authorities in charge of water management and operation of water services in <u>urban/rural areas</u>								Date:	
Name of the water authority	Date of filling in the data	Volume of produced water per year	Unaccounted for water	Volume of water consumed from Standpipes	Volume of consumed quantity of water	Volume of metered (billed) quantity of water	Number of subscribers (water meters)	Average nbr. of people served by each subscription	Percentage of disinfected water volume from produced water
		(m ³ /year) (1000x)	(%)	(m ³ /year) (1000x)	(m ³ /year) (1000x)	(m ³ /year) (1000x)	(1000x)		
		(A)	(B)	(SP)	(C)	(D)	(E)			(F)	(M %)
Total									
		(H)		(TSP)	(I)	(J)	(K)		

The required data to compute the drinking water supply indicators according to the unified Template of MGG+ Initiative-Part 2										
Data from authorities in charge of water management and operation of water services in <u>urban/rural areas</u>								Date:		
Name of the water authority	Date of filling in the data	Percentage of population (from total served population) receiving who receive their water supply according the following categories (%)					Type and value of water supply tariffs - House connection		Type and value of water supply tariffs - Standpipe	
		Continued daily water supply	3-4 days weekly	once weekly	biweekly	less than biweekly	Flat tariff	Increasing tariff	Flat tariff	Increasing tariff
		(NA)	(NB)	(NC)	(ND)	(NE)	(W)	(WA)	(ASP)	(WSP)
Total										
							(WA)	(AE)	(TSP)	(DSP)

Annex VIII

Proposed data that should be obtained from the official water supply – Part 2

The required data to compute the sanitation indicators according to the unified Template of MDG+ Initiative - Part 1												
Data from authorities in charge of management and operation of sanitation services in <u>urban/rural areas</u>										Date:		
Name of Water Authority	Date of filling in the data	Volume of treated Wastewater			Total volume of treated WW (m ³ /year) (x 1000)	Percentage of treated WW volume that is reused in the following domains					Number of subscribers to wastewater drainage network	Average nbr. of people served by each subscription
		(x 1000) (m ³ /year)				(%)						
		Primary treatment	Secondary treatment	Tertiary treatment		Agricultural	Recharge purposes	Domestic	Other reuse types	Release into water course			(x 1000)
		(BA)	(BB)	(BC)		(BD)	(BE)	(BF)	(BG)	(BI)	(BH)	(BM)	(BN)
Total												
		(BP)	(BQ)	(BR)	(BS)						(BT)	

The required data to compute the sanitation indicators according to the unified Template of MGG+ Initiative - Part 2

Data from authorities in charge of management and operation of sanitation services in urban/rural areas

Name of Water Authority	Date of filling in the data	Volume of collected and untreated WW (if it is available) (m ³ /year) (x 1000)	Percentage of untreated WW volume that is reused in the following domains (per cent)					Type and value of sanitation tariffs	
			Agricultural	Recharge purposes	Domestic	Other reuse types	Release into water course	Flat tariff	Increasing tariff
			(DA)	(DB)	(DC)	(DD)	(DE)	(\$/year)	(\$/m3)
Total									
		(DJ)						(DK)	(DZ)

