Web: water.cedare.int
E-mail: water@cedare.int

برنامج إدارة الموارد المائية
Water Resources Management Programme

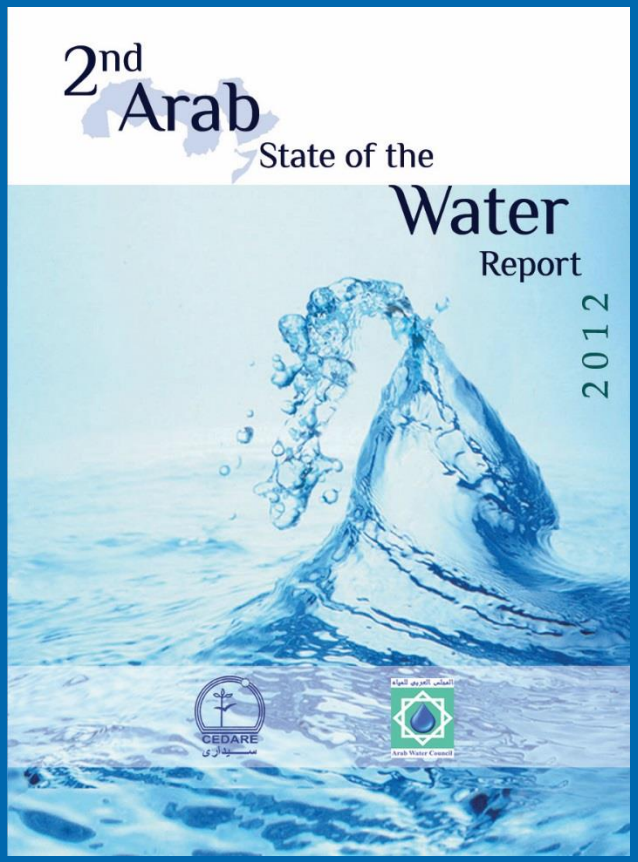
Regional Preparatory Meeting on Water Issues for the 2018 Arab Forum on Sustainable Development and High Level Political Forum

Beirut, Lebanon, March 28-29, 2018

Arab State of the Water Report & SDG 6

Khaled M. AbuZeid, PhD, PE.
Regional Water Director, CEDARE
Member, Executive Committee, Arab Water Council

State of the Water in the Arab Region



3rd Arab
State of the Water
Report
(2015)

Web: water.cedare.int
E-mail: water@cedare.int

CEDARE
سـيداري

برنامج إدارة الموارد المائية
Water Resources Management Programme

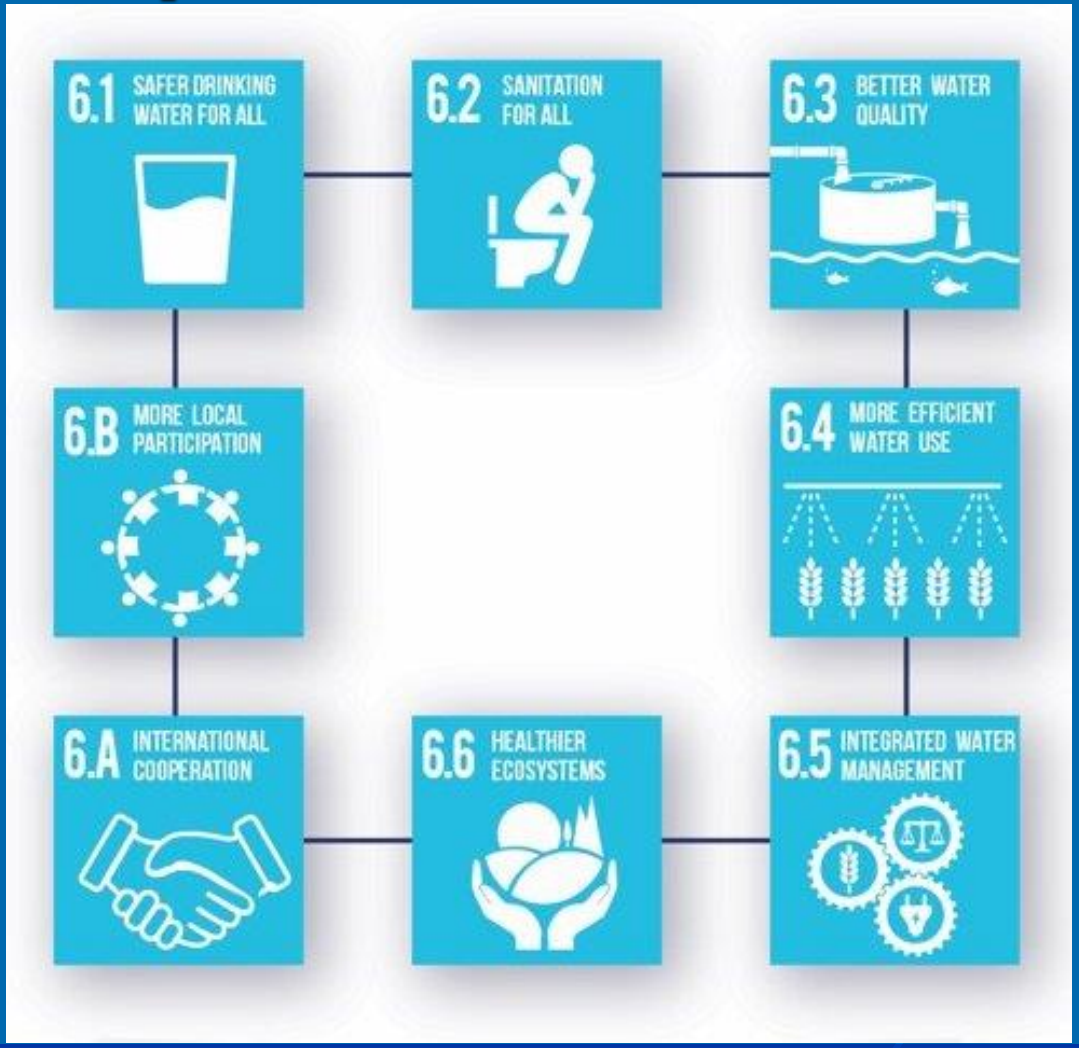
Arab State of the Water (SoW) Report
(15 Categories of indicators, 150 Indicators, 80 Parameters)

Web: water.cedare.int
E-mail: water@cedare.int

CEDARE
سـيداري

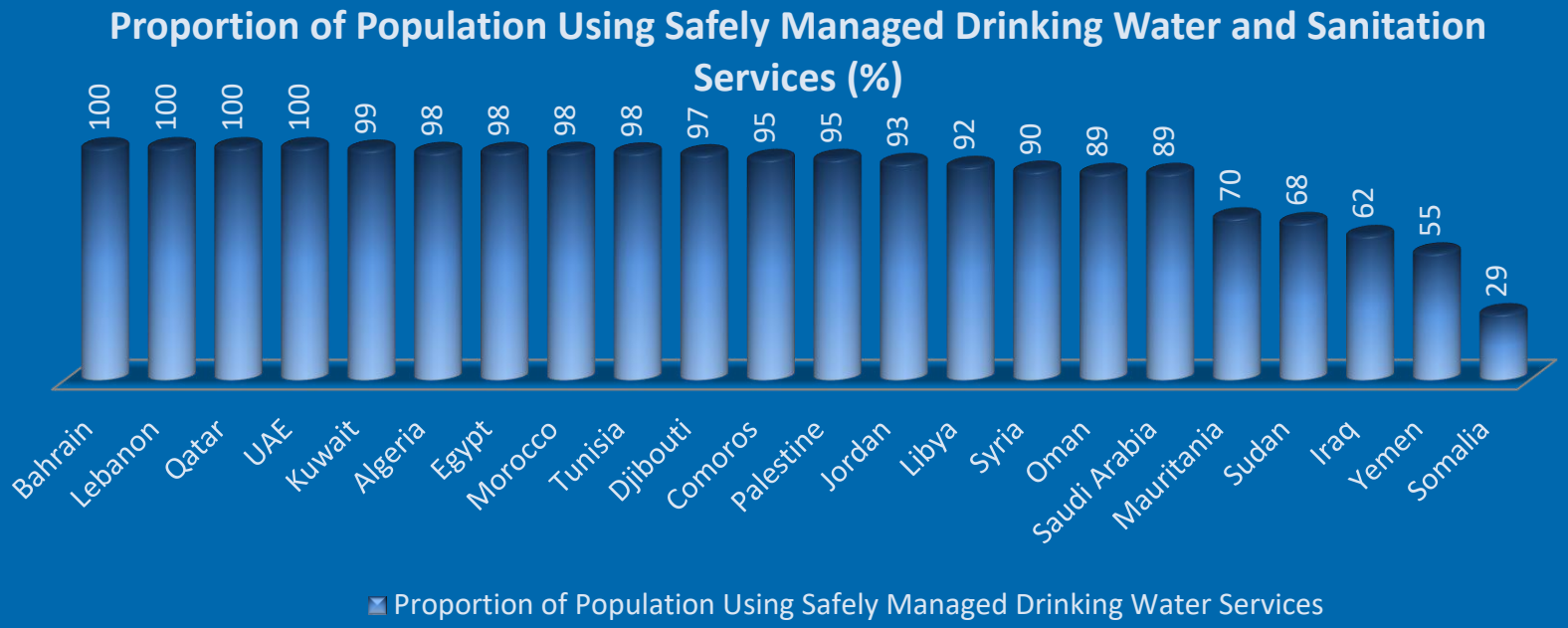
برنامج إدارة الموارد المائية
Water Resources Management Programme

Arab SoW Report & SDG 6 Indicators



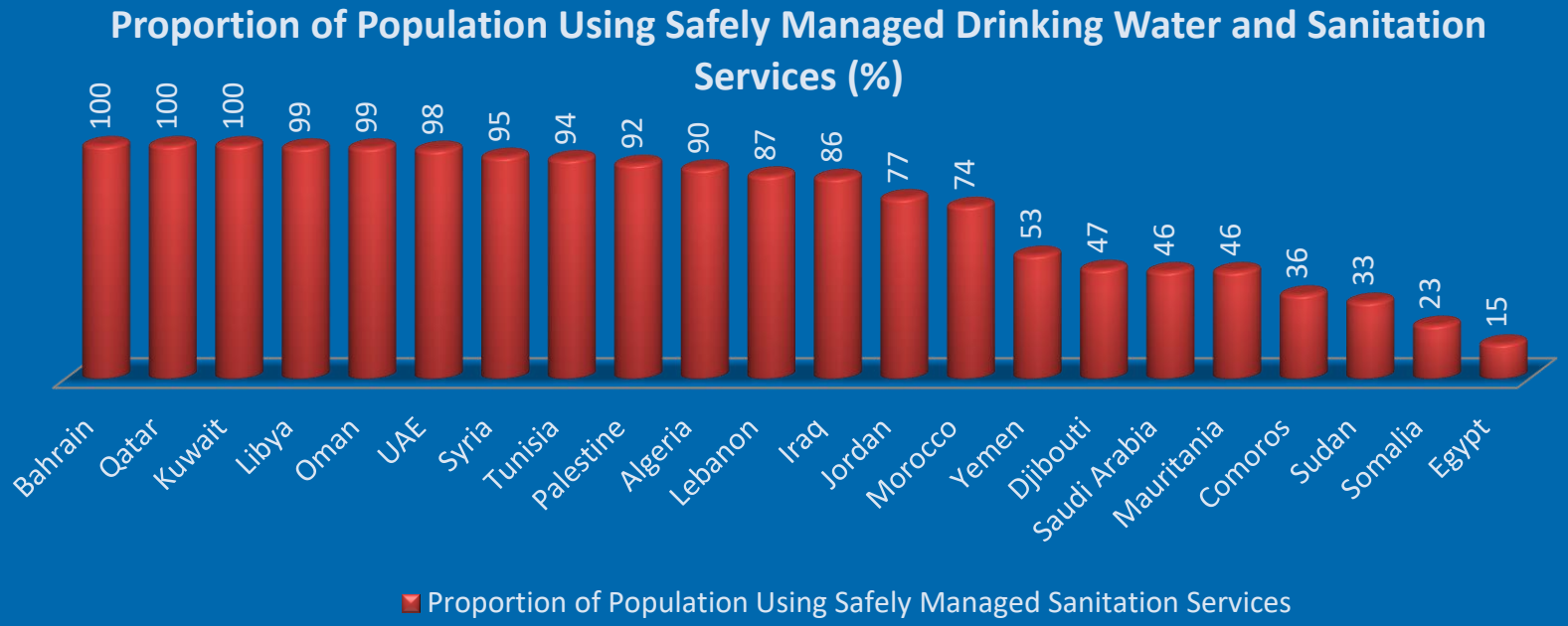
6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water

Goal 6 targets	Goal 6 indicators
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water	6.1.1 Proportion of population using safely managed drinking water services Definition: Population using a basic drinking water source ('improved' sources of drinking water used for MDG monitoring i.e. piped water into dwelling, yard or plot; public taps or standpipes; boreholes or tubewells; protected dug wells; protected springs and rainwater) which is located on premises and available when needed and free of faecal (and priority chemical) contamination. Responsible for global monitoring: WHO and UNICEF, through the Joint Monitoring Programme for Water Supply and Sanitation (JMP), on behalf of UN-Water



6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Goal 6 targets	Goal 6 indicators
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using safely managed sanitation services, including a handwashing facility with soap and water Definition: Population using a basic sanitation facility at the household level ('improved' sanitation facilities used for MDG monitoring i.e. flush or pour flush toilets to sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, pitlatrines with a slab, and composting toilets, the same categories as improved sources of drinking water used for MDG monitoring) which is not shared with other households and where excreta is safely disposed in situ or treated off-site. Definition: Population with a handwashing facility (a device to contain, transport or regulate the flow of water to facilitate handwashing) with soap and water at home. Responsible for global monitoring: WHO and UNICEF through JMP, on behalf of UNWater



Comments on the Indicator

- It is difficult to combine the Handwashing and the Sanitation targets under one indicator.
- States have different understanding of safely managed sanitation which is different than the JMP's definition.

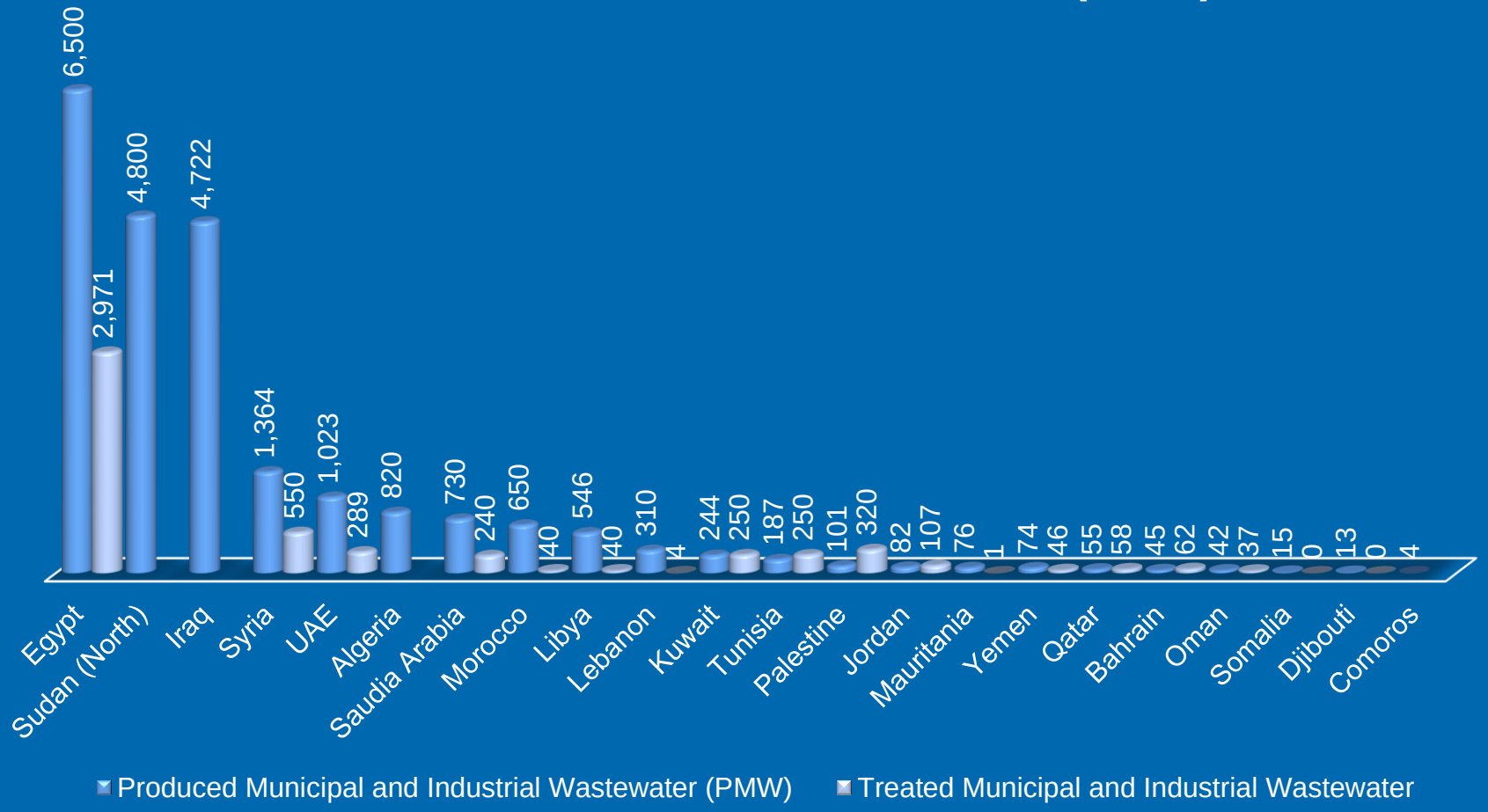
6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and at least doubling recycling & safe reuse globally

Goal 6 targets	Goal 6 indicators
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and at least doubling recycling and safe reuse globally	6.3.1 Proportion of wastewater safely treated Definition: Proportion of wastewater generated both by households (sewage and faecal sludge), as well as economic activities (based on ISIC categories) safely treated compared to total wastewater generated both through households and economic activities. While the definition conceptually includes wastewater generated from all economic activities, monitoring will focus on wastewater generated from hazardous industries (as defined by relevant ISIC categories). Responsible for global monitoring: WHO and UN-Habitat, through GEMI – Integrated monitoring of water and sanitation related SDG targets1, on behalf of UN-Water

Comments on the Indicator

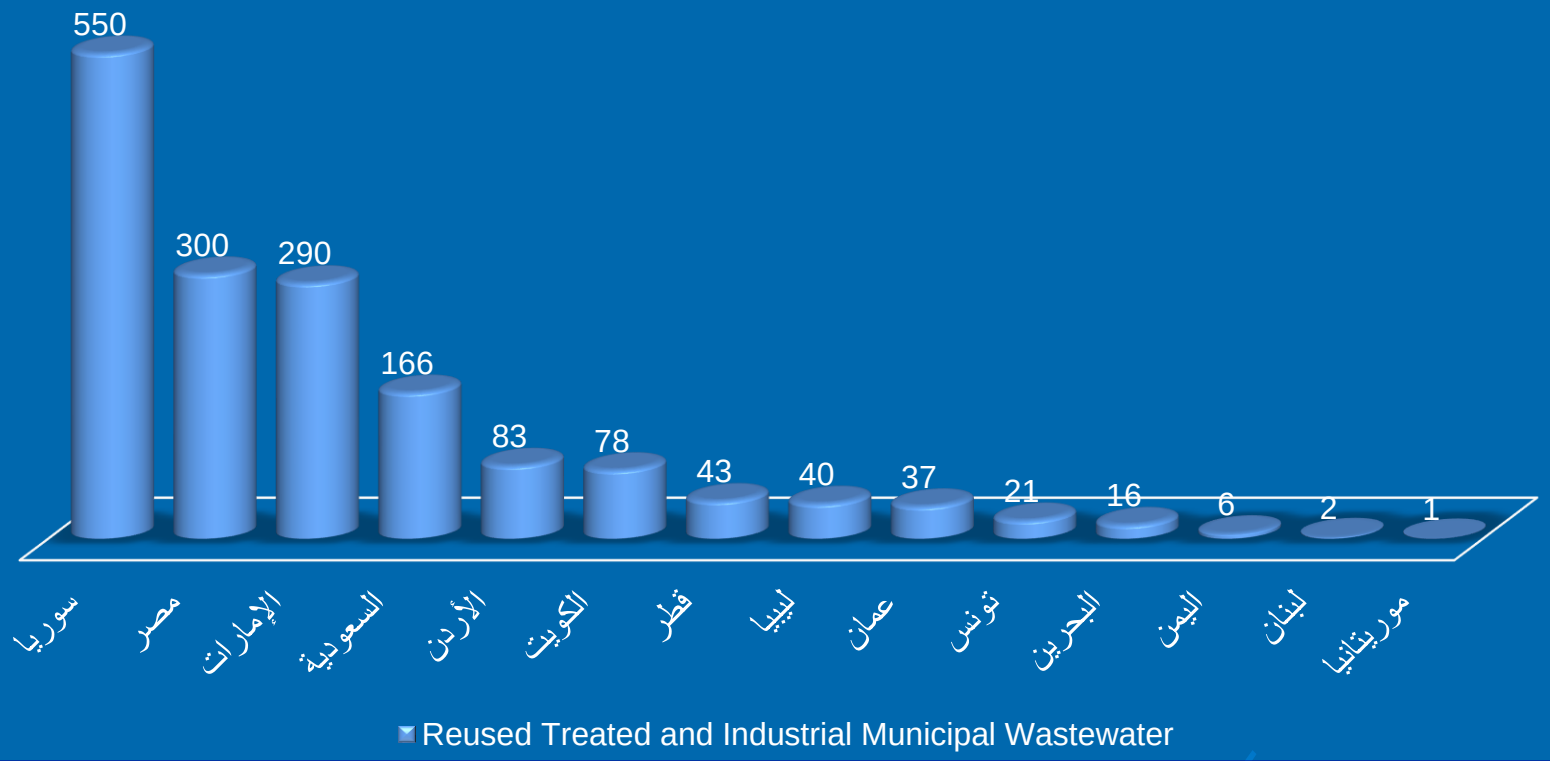
- Defining what is meant by safe treatment (primary, secondary, tertiary, according to purpose of reuse,..)
- Parts of the Target are not reflected in the in the Indicators, especially the recycling target

Produced and Treated Wastewater (MCM)

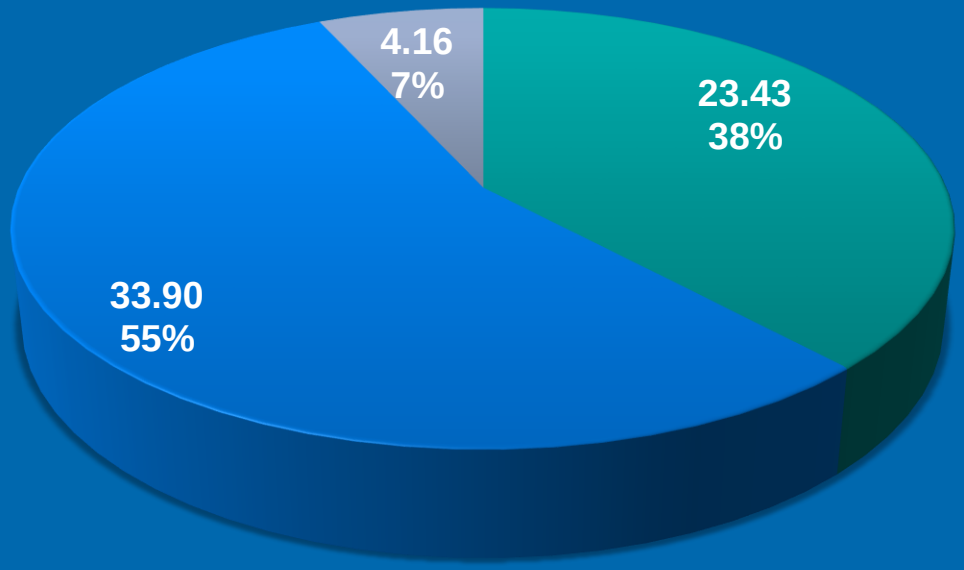


Reused Treated Domestic & Industrial Wastewater

مياه الصرف الصناعي والمنزلي المعالجة والمعاد استخدامها (مليون متر مكعب)



Non-Conventional Water resources in the Arab Region (BCM/Y)



Goal 6 targets	Goal 6 indicators
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and at least doubling recycling and safe reuse globally	6.3.2 Proportion of bodies of water with good ambient water quality Definition: Proportion of water bodies (area) in a country with good ambient water quality compared to all water bodies in the country. “Good” indicates an ambient water quality that does not damage ecosystem function and human health according to core ambient water quality indicators. Responsible for global monitoring: UNEP through GEMI, on behalf of UN-Water

6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

Goal 6 targets	Goal 6 indicators
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water use efficiency over time Definition: This indicator is defined as the output over time of a given major sector per volume of (net) water withdrawn (showing the trend in water use efficiency). Following ISIC 4 coding, sectors are defined as agriculture, forestry and fishing (ISIC 4-A); manufacturing, constructions, mining and quarrying (ISIC 4-B, 4-C and 4-F); electricity industry (ISIC 4-D); and the municipal sector (ISIC 4-E). Responsible for global monitoring: FAO through GEMI, on behalf of UN-Water

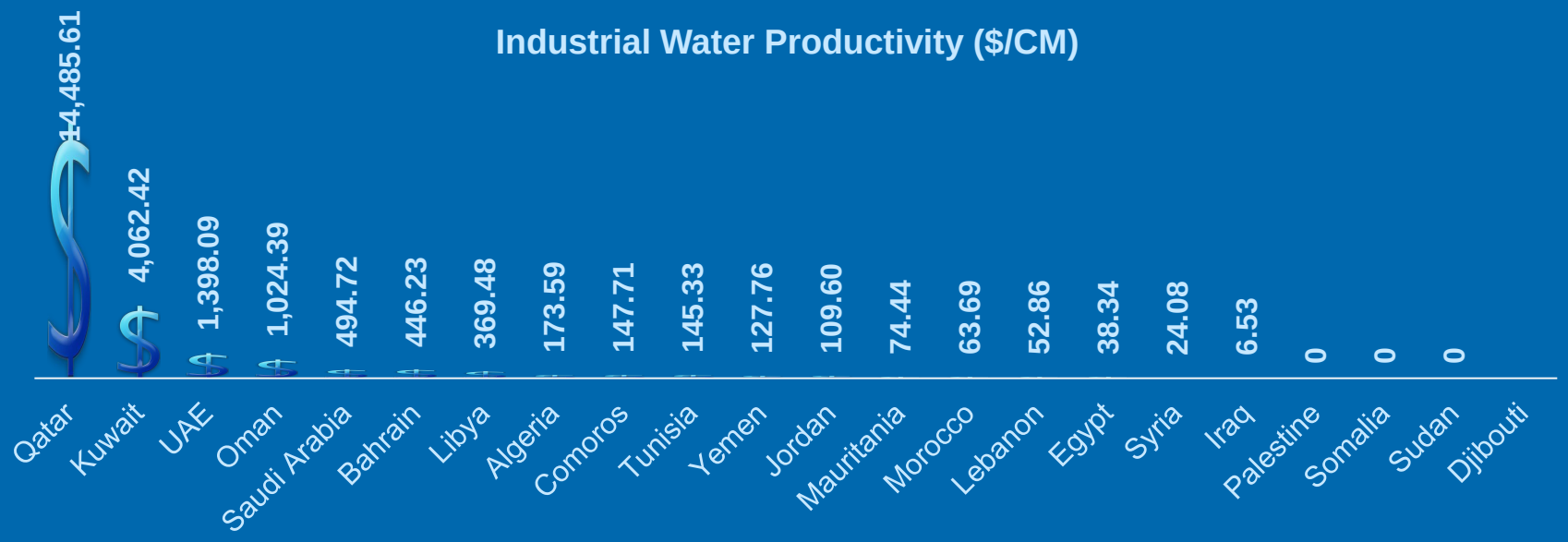
6.4.1	Change in water use efficiency over time
Method of computation	Method of computation: The indicator is disaggregated by sector, in order to allow for different metrics in different sectors. Water efficiency in irrigated agriculture is calculated as the agricultural value added per agricultural (net) water withdrawn, expressed in USD/m3. In formula: $A_{we} = \frac{GVA_a \times (1 - C_r)}{V_a - R_a}$ Where: • Awe = Irrigated agriculture water efficiency [USD/m3] • GVAa = Gross value added by agriculture (excluding river and marine fisheries and forestry) [USD] • Cr = Proportion of agricultural GVA produced by rainfed agriculture [-] • Va = Volume of water withdrawn by the agricultural sector (including irrigation, livestock and aquaculture) [m3] • Ra = Volume of water returned to the hydrologic system (return flow) [m3]

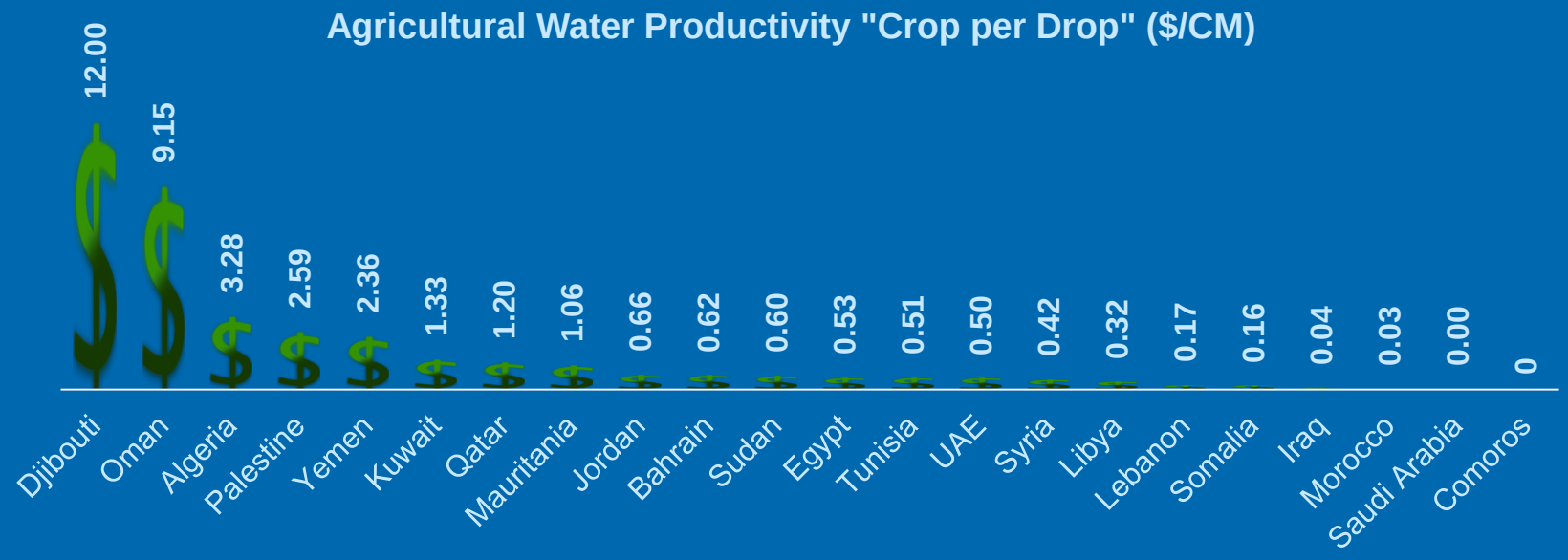
6.4.1	Change in water use efficiency over time
Method of computation	Method of computation: Water efficiency of industries is calculated as the industrial value added per unit of industrial (net) water withdrawn, and expressed in USD/m3. In formula: $I_{we} = \frac{GVA_i}{V_i - R_i}$ Where: ▪ Iwe = Industrial water efficiency [USD/m3] ▪ GVAi = Gross value added by industry (excluding energy) [USD] ▪ Vi = Volume of water withdrawn by the industries (excluding energy) [m3] ▪ Ri = Volume of water returned to the hydrologic system (return flow) [m3]

6.4.1	Change in water use efficiency over time
Method of computation	Method of computation: Municipal water supply efficiency is the ratio between water effectively distributed to the municipal users and the water withdrawn for municipal use by water supply utilities (i.e. distribution efficiency, size of network losses). In formula: $M_{we} = \frac{Mu_d}{V_m}$ Where: Mwe = Municipal water supply efficiency [-] Mud = Water distributed to municipal users [m3] Vm = Volume of water withdrawn by municipal utilities (i.e. the pub distribution network) [m3] Data on volumes of withdrawn and distributed are collected at country level from the municipal supply utilities records.

Comments on the indicator

- Indicator does not consider green water as renewable water
- Indicator ignores return from rainfed agriculture
- Indicator ignores economic return from recycled wastewater and desalinated water
- Difficulty in combining the 3 efficiencies together due to different units





Overall Water Use Efficiency (%) 2012

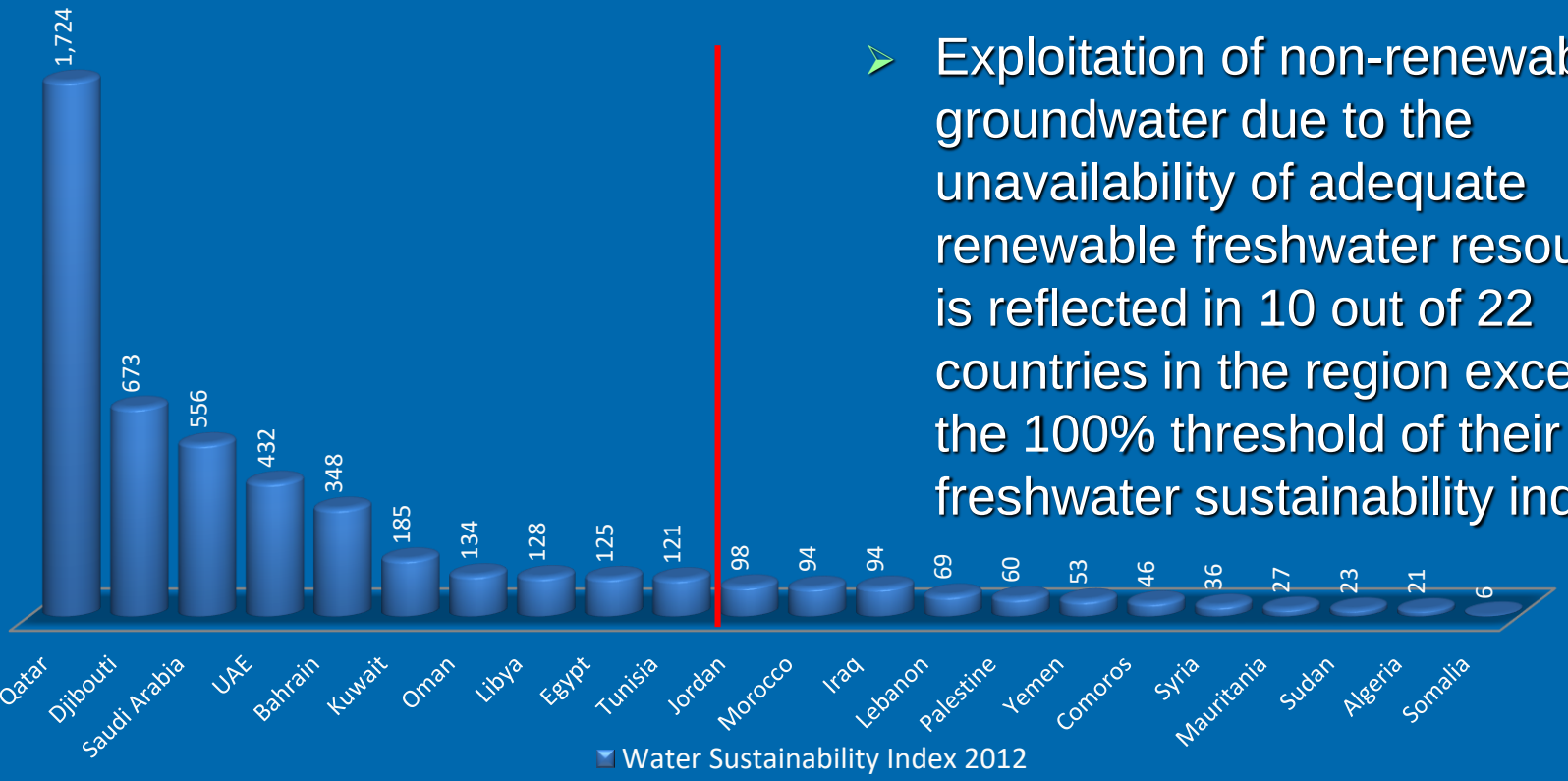
(Source: SoW, CEDARE, 2012)

Goal 6 targets	Goal 6 indicators
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources Definition: Ratio between total freshwater withdrawn by all major sectors (as defined by ISIC standards) and total renewable freshwater resources, taking into account environmental water requirements. The indicator builds on MDG indicator 7.5 and also accounts for environmental water requirements. Responsible for global monitoring: FAO through GEMI, on behalf of UN-Water

Comments on the Indicator

- Indicator ignores efforts made in desalination and reuse
- Indicator penalizes Arab countries for being in an arid zone because of depleting their scarce water resources

Water sustainability index (%) in the Arab Region (2012)



- Exploitation of non-renewable groundwater due to the unavailability of adequate renewable freshwater resources is reflected in 10 out of 22 countries in the region exceeding the 100% threshold of their freshwater sustainability index

(AbuZeid, K. et al, 2015)

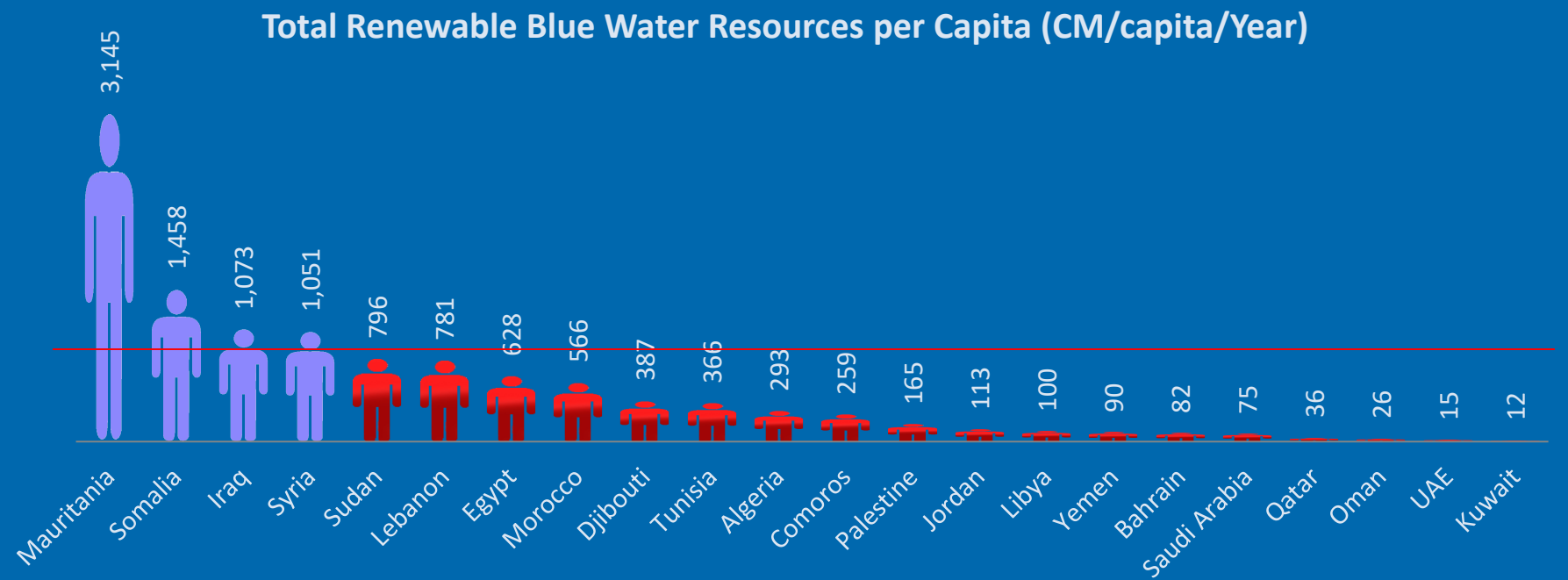
Web: water.cedare.int
E-mail: water@cedare.int

Proper Water Accounting

(lessons from the Arab State of the Water Report)

"Accounting for all Waters"

Traditional Renewable (Blue Water)



Web: water.cedare.int
E-mail: water@cedare.int

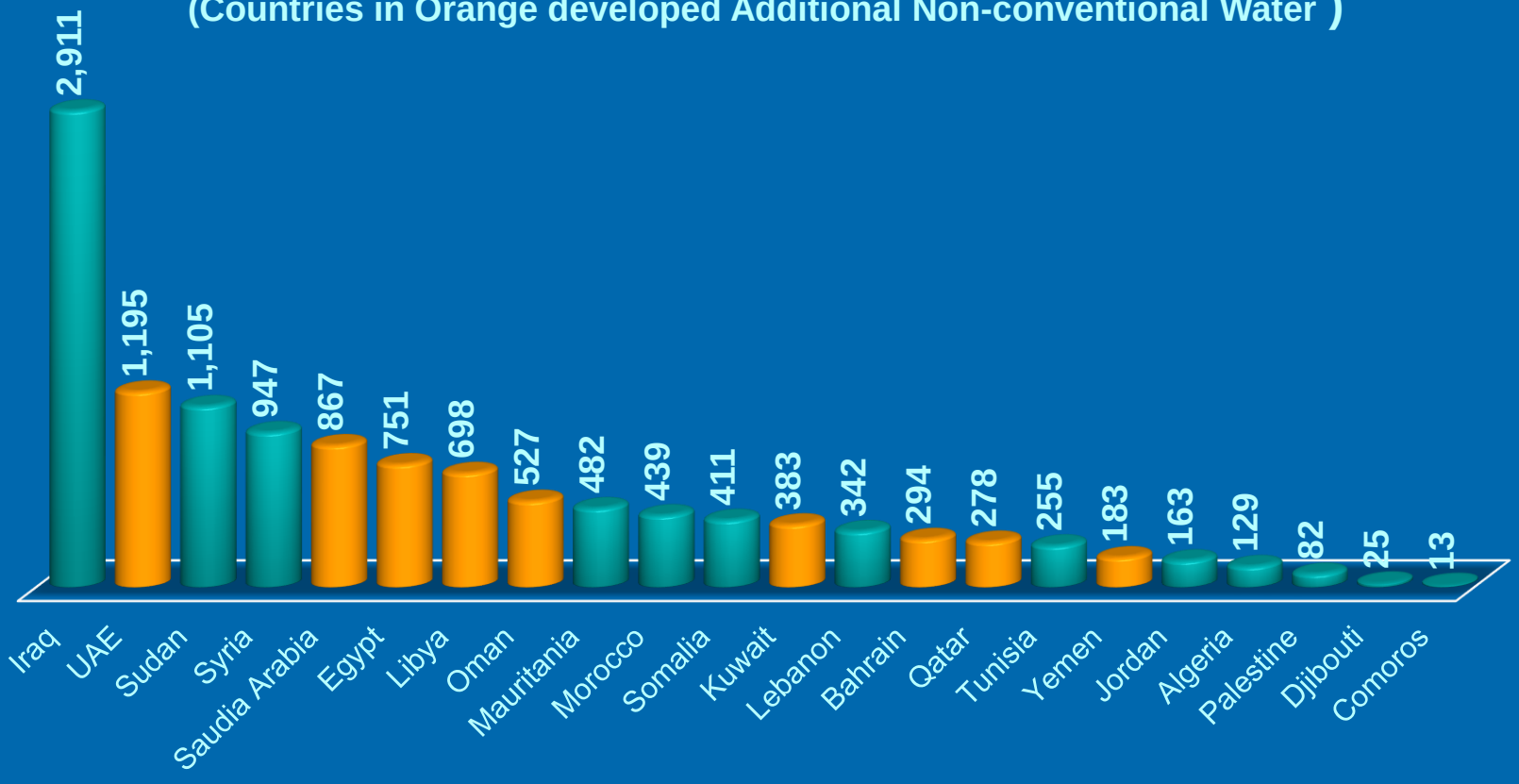
CEDARE
سـيداري

برنامج إدارة الموارد المائية
Water Resources Management Programme

2015

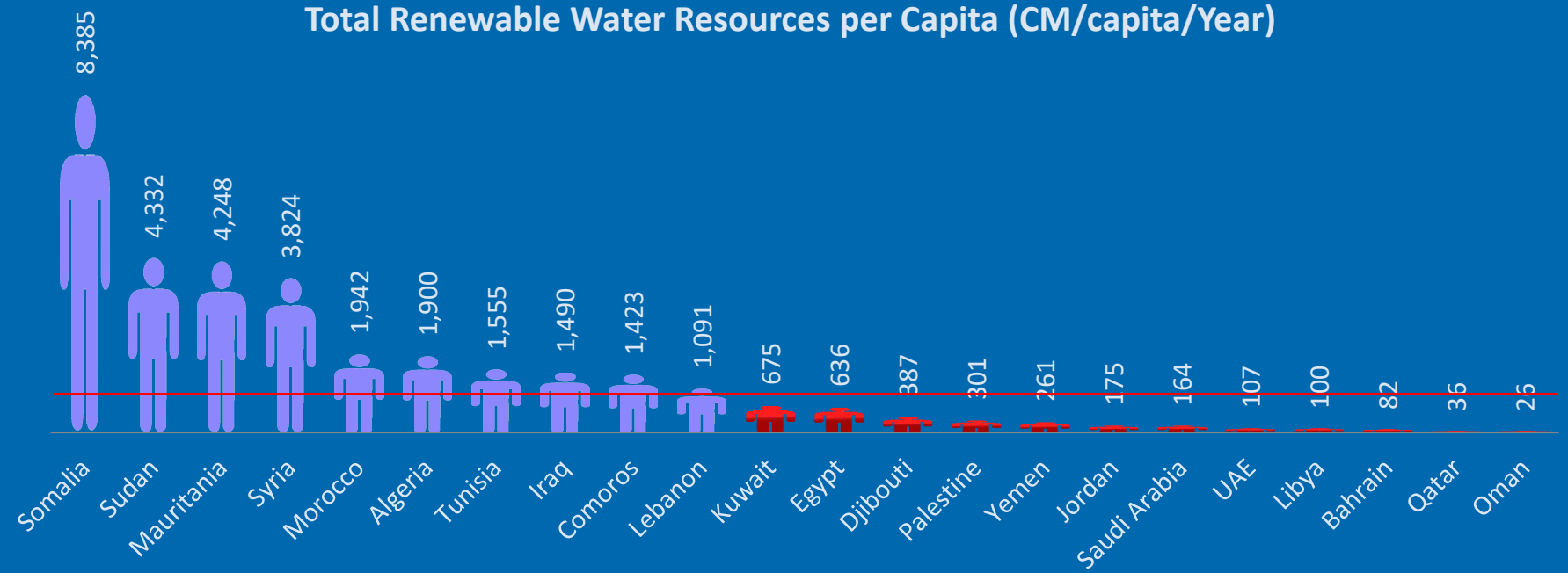
Blue Water Withdrawal Per Capita (CM/capita)

(Countries in Orange developed Additional Non-conventional Water)



CEDARE
سـيدارى
Web: water.cedare.int
E-mail: water@cedare.int

Accounting for the Real Renewable (Green & Blue Water)

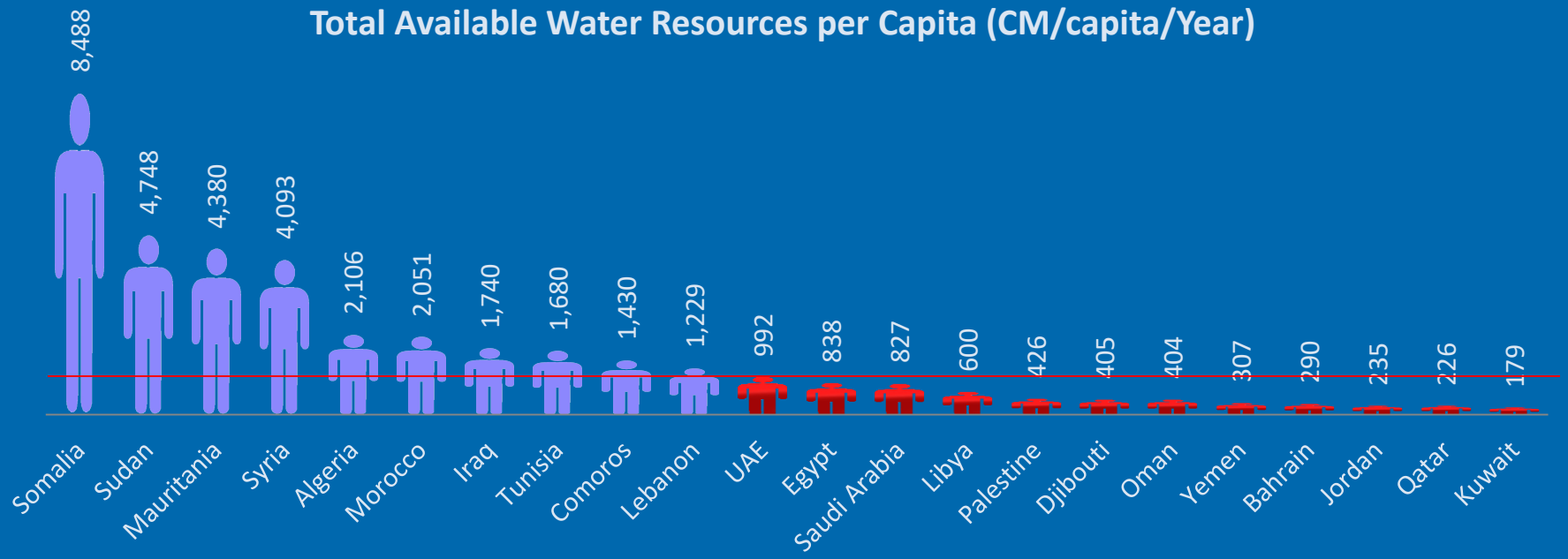


Web: water.cedare.int
E-mail: water@cedare.int

CEDARE
سـيـداري

برنامج إدارة الموارد المائية
Water Resources Management Programme

Including the Non-conventional Water Resources Potential



6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Goal 6 targets	Goal 6 indicators
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0-100) This indicator reflects the extent to which integrated water resources management (IWRM) is implemented, structured in 4 components: policies, institutions, management tools, and financing. It takes into account the various users and uses of water with the aim of promoting positive social, economic and environmental impacts on all levels, including transboundary, where appropriate. Responsible for global monitoring: UNEP through GEMI, on behalf of UN-Water

Comments on Indicator

- IWRM questionnaire is very qualitative and not measureable.

Web: water.cedare.int
E-mail: water@cedare.int

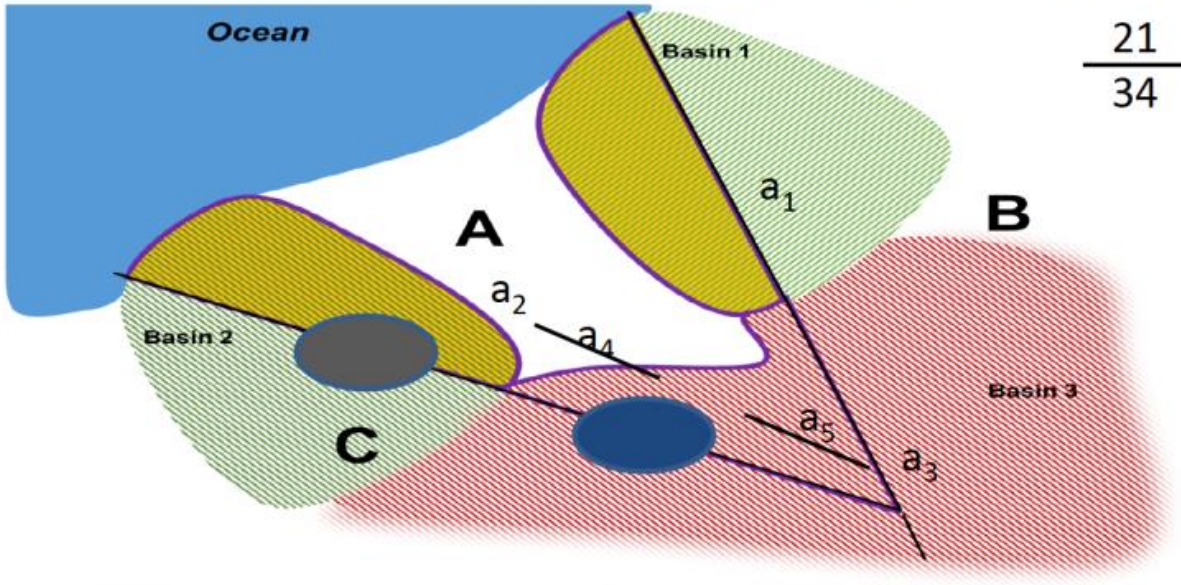
IWRM related SOW indicators

كود المؤشر	المؤشرات المرتبطة بالمياه	الوحدات
I-14-1	خطة الإدارة المتكاملة للموارد المائية	نعم/ لا
I-14-2	درجة التنفيذ للإدارة المتكاملة للموارد المائية (0-100)	عدد
I-14-3	نظام وطني لمتابعة وتقييم المياه والصرف الصحي والإبلاغ عنها	نعم/ لا
I-14-4	إجمالي حقوق المياه الحجمية المرتبطة بتراخيص المياه السطحية كنسبة مئوية من السحب السنوي على المياه الزرقاء السطحية	%
I-14-5	إجمالي حقوق المياه الحجمية المرتبطة بتصاريح آبار المياه الجوفية كنسبة مئوية من كميات السحب السنوي للمياه الجوفية الزرقاء	%
I-14-6	عدد الآبار غير المرخصة	عدد
I-14-7	التكاوى المرتبطة بالري والصرف كنسبة مئوية من مستخدمي مياه الري	العدد / السنة
I-14-8	التكاوى المرتبطة بإمدادات المياه والصرف الصحي كنسبة مئوية من الأسر الحاصلة على الخدمة	العدد / السنة
I-14-9	عدد عدادات المياه المركبة كنسبة من إجمالي عدد الأسر الحاصلة على الخدمة	%
I-14-10	عدد عدادات المياه الجوفية كنسبة مئوية من الآبار المرخصة	العدد
I-14-11	عدد عدادات مياه الري السطحية المركبة كنسبة مئوية من تصاريح مياه الري السطحية	%
I-14-12	فواقد مياة الشرب المنزلية	مليار متر مكعب/ السنة
I-14-13	كميات الفواقد التجارية	مليار متر مكعب/ السنة
I-14-14	كميات فواقد مياه الري	مليار متر مكعب/ السنة
I-14-15	الكفاءة الكلية لاستخدام المياه	%
I-14-16	التغيير في مدى النظم الإيكولوجية ذات الصلة بالمياه على مر الزمن	مليار متر مكعب/ السنة
I-14-17	مستوى الإجهاد المائي: سحب المياه العذبة كنسبة من موارد المياه العذبة المتاحة	%
I-14-18	معيار استدامة المياه/ معيار الاستنزاف	%
I-14-19	سريان مياه الصرف الصحي والصرف الزراعي إلى الخارج	مليار متر مكعب/ السنة
I-14-20	التصرفات العابرة للحدود من مياه الصرف الصحي والصرف الزراعي	مليار متر مكعب/ السنة
I-14-21	عدد الغرامات/ العقوبات المتعلقة بالمياه (إنفاذ قوانين المياه)	العدد
I-14-22	اجمالي تغطية الأراضي الزراعية لجمعيات مستخدمي المياه	من الأرض الزراعية %
I-14-23	نسبة الوحدات الإدارية المحلية ذات السياسات والإجراءات التشغيلية والتشغيلية لمشاركة المجتمعات المحلية في إدارة المياه والصرف الصحي	%
I-14-24	المسئولية الاجتماعية للقطاع الخاص تجاه قطاع المياه	

Goal 6 targets	Goal 6 indicators
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation Definition: Proportion of surface area of transboundary basins that have an operational agreement/arrangement and/or institution for transboundary water cooperation. Regular meetings of the riparian countries to discuss IWRM and exchange information are required for an arrangement to be defined as “operational”. Responsible for global monitoring: UNECE and UNESCO through GEMI, on behalf of UN-Water

Transboundary Waters Indicator

$$\frac{a_1 + a_2 + a_5}{a_1 + a_2 + a_3 + a_4 + a_5} = \frac{10 + 10 + 1}{10 + 10 + 12 + 1 + 1} = \frac{21}{34} \text{ X } 100\% = \mathbf{61.8\%}$$



Operational Arrangement
No operational Arrangement
Operational arrangement (aquifer)
Total transboundary basin area - Country A
Area with an operational arrangement - Country A
No operational arrangement (aquifer)

UNECE UNESCO UN WATER

Comments on the Indicator

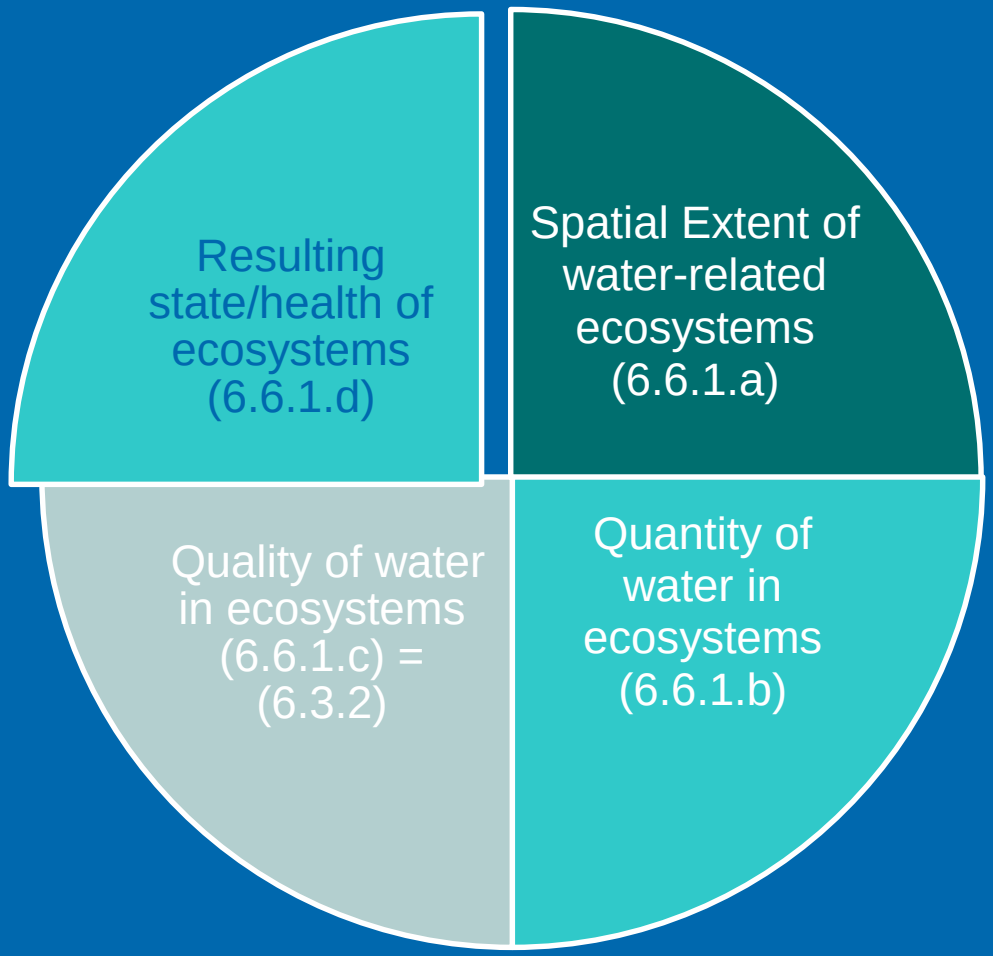
- Defining transboundary cooperation by geographic coverage of the basin is not logical
- Indicator does not consider cooperation efforts with by a country with more than one country in the basin

SDG 6.5.2 Alternative

- **I-15-5- Ratio of Riparian Countries with Agreements to Riparian Countries:** The number of riparian countries, with water Benefit Sharing and/or Water Cooperation bilateral and/or multilateral agreements with the concerned country, as a percentage of the number of countries that are riparians to existing transboundary aquifers or river basins shared with that country. (riparian countries may be recounted as many times as the number of different transboundary aquifer/river basins they may be sharing with the concerned country)

Goal 6 targets	Goal 6 indicators
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time Definition: Percentage of change in water-related ecosystems over time (% change/year). The indicator would track changes over time in the extent of wetlands, forests and drylands, and in the minimum flows of rivers, volumes of freshwater in lakes and dams, and the groundwater table. The Ramsar Convention broad definition of "wetland" is used, which includes rivers and lakes, enabling three of the biome types mentioned in the target to be assessed - wetlands, rivers, lakes - plus other wetland types. Responsible for global monitoring: UNEP through GEMI, on behalf of UN-Water

SDG 6.6.1



Countries that submitted data 6.3.2 & 6.6.1

- **Arab Region: Morocco, Lebanon, Jordan, Sudan, Tunisia, United Arab Emirates**

Arab SOW Ecosystems Indicators

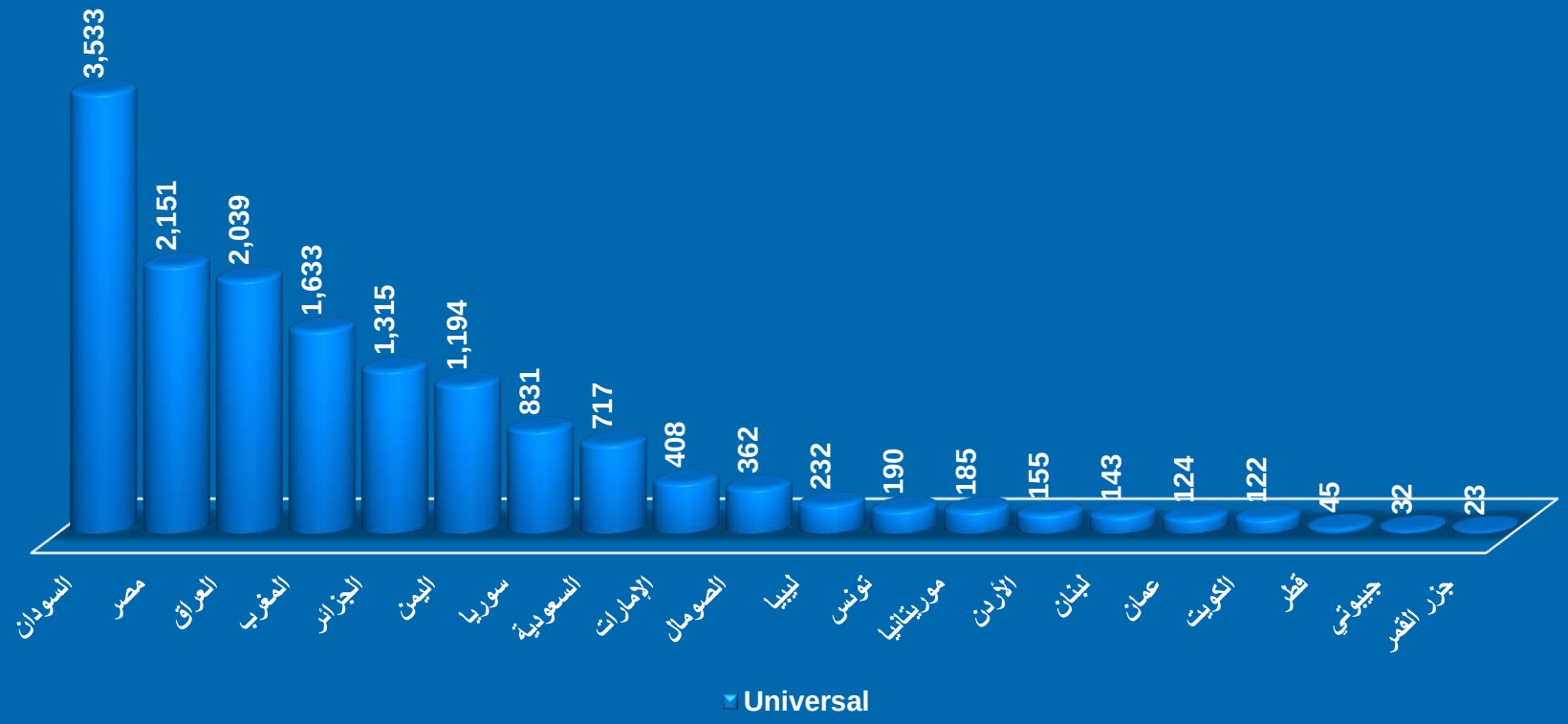
9	المياه والنظم الإيكولوجية	
I-9-1	عدد مواقع الأراضي الرطبة حسب اتفاقية رامسار (داخل الحوض)	العدد
I-9-2	إجمالي مساحات الأراضي الرطبة	هكتار
I-9-3	إجمالي عدد الأنواع الموجودة في المياه العذبة	العدد
I-9-4	عدد الأنواع المهددة بالانقراض	العدد
I-9-5	عدد الأنواع الدخيلة	العدد
I-9-6	نسبة أجسام المياه ذات نوعية المياه المحيطة الجيدة	%
I-9-7	التغيير في نطاق النظم الإيكولوجية ذات الصلة بالمياه على مر الزمن	%/Time

Goal 6 targets	Goal 6 indicators
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government coordinated spending plan Definition: Official Development Assistance (ODA) is defined as flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 per cent. A government coordinated spending plan is defined as a financing plan/budget for the water and sanitation sector, clearly assessing the available sources of finance and strategies for financing future needs. The indicator is computed as the proportion between the amount of water and sanitation related Official Development Assistance a government receives, and the total amount budgeted for water and sanitation in a government coordinated spending plan, which allows for a better understanding of how much countries depend/rely on ODA and highlighting countries total water and sanitation budgets over time. Responsible for global monitoring: WHO through UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) and UNEP through GEMI, on behalf of UN-Water, in collaboration with OECD

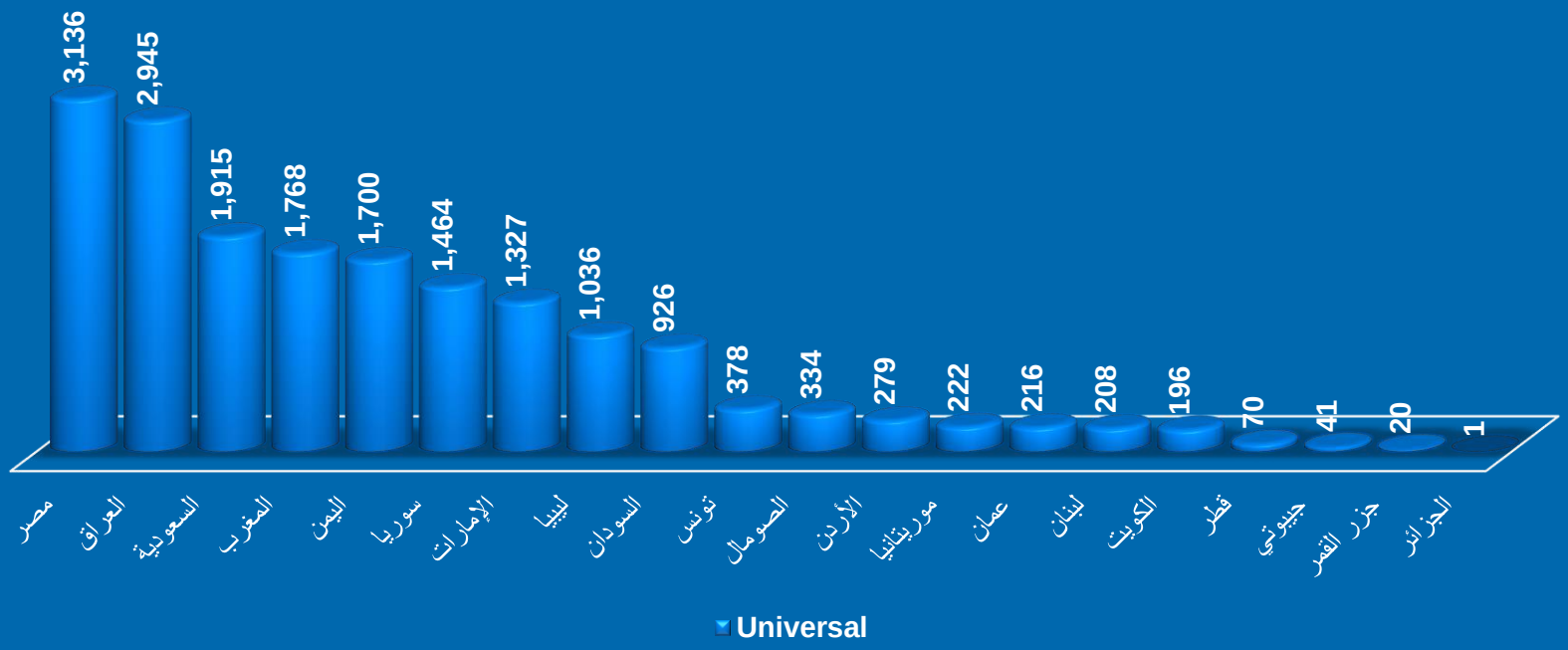
Comments on the Indicator

- Indicator is not clear on whether to consider ODA received by the reporting state or ODA given to the reporting state.

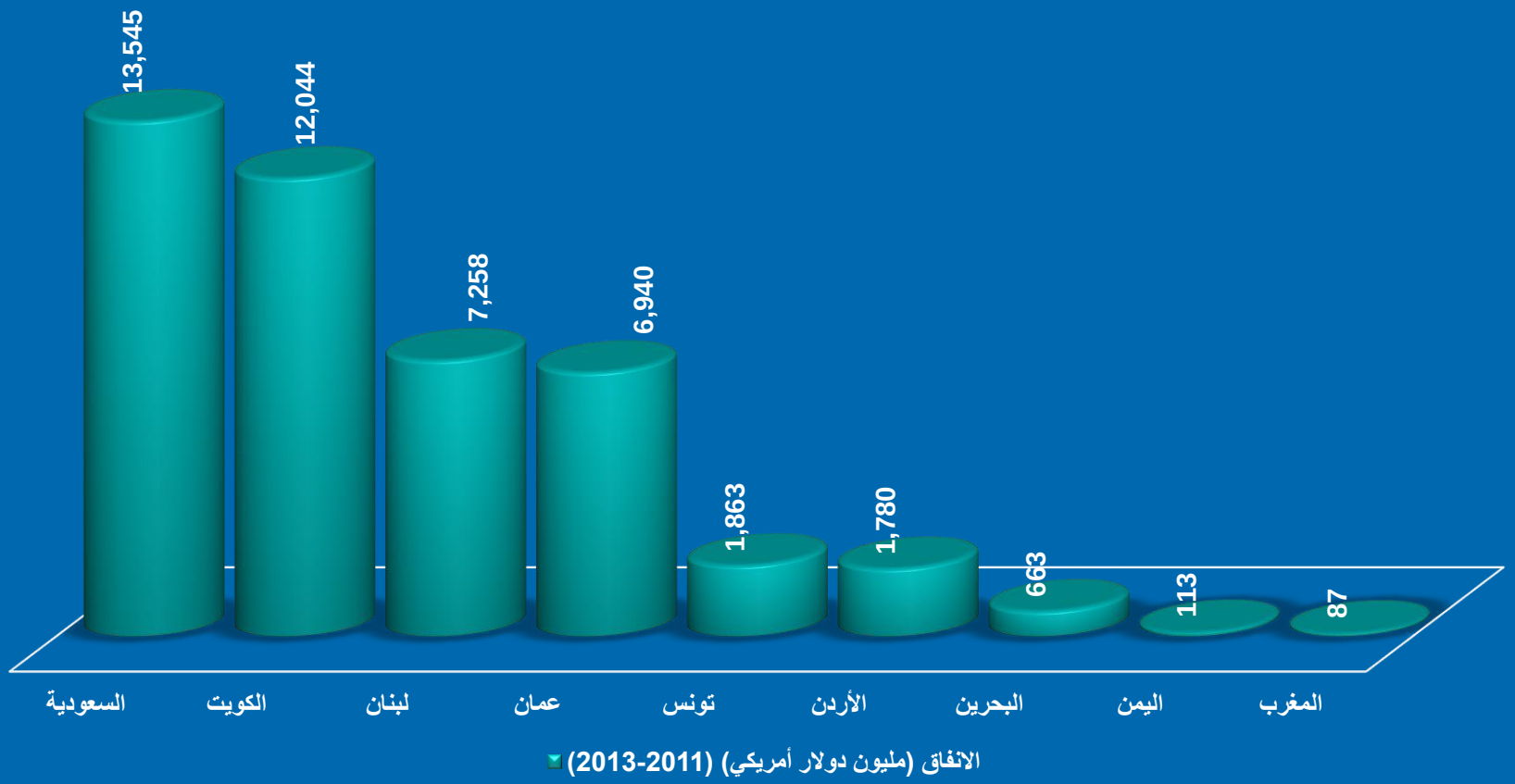
مجموع التكاليف المالية للتغطية الكلية بمياه الشرب (مليون دولار أمريكي)



مجموع التكاليف المالية للتغطية الكلية بالصرف الصحي
(مليون دولار أمريكي)



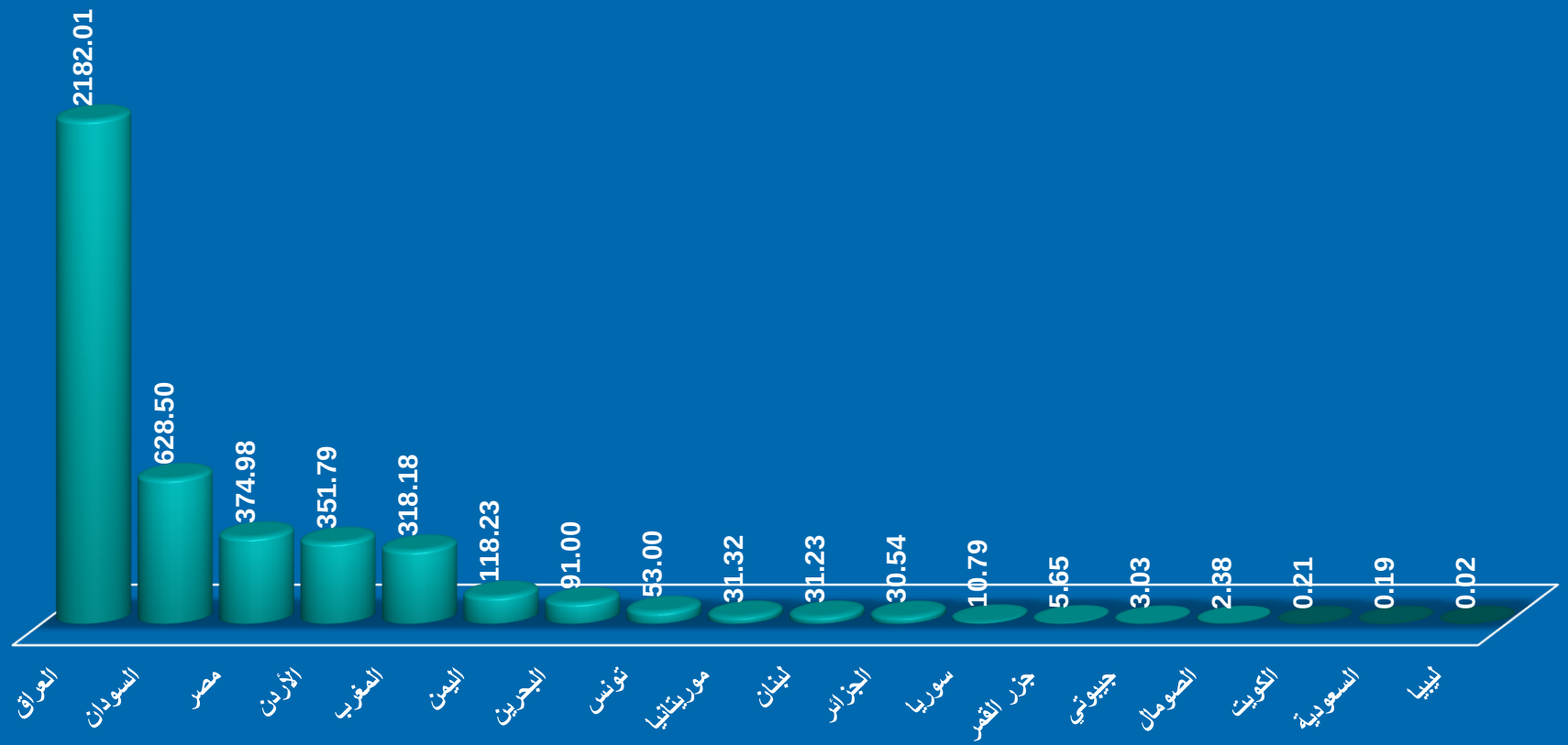
متوسط الإنفاق السنوي في قطاع المياه من 2011 إلى 2013 (مليون دولار أمريكي)



إجمالي الاستثمارات (مليون دولار أمريكي)

النسبة المئوية من الموازنة الوطنية الموجهة لقطاع المياه والصرف الصحي (%)

المعونات الأجنبية التي وردت إلى الدولة لقطاع المياه والصرف الصحي (مليون دولار أمريكي)



Goal 6 targets	Goal 6 indicators
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management Definition: Indicator tracks the presence, at the national level, of clearly defined procedures in laws or policies for participation by service users (for aspects related to WASH), and the presence of formal stakeholder structures established at sub-catchment level (for aspects related to the management of water, wastewater and ecosystem resources). Responsible for global monitoring: WHO through GLAAS and UNEP through GEMI, on behalf of UN-Water

Participation related SOW indicators

I-14-22	اجمالى تغطية الأراضى الزراعية لجمعيات مستخدمى المياه	من الأرض الزراعية %
I-14-23	نسبة الوحدات الإدارية المحلية ذات السياسات والإجراءات التشغيلية والتشغيلية لمشاركة المجتمعات المحلية في إدارة المياه والصرف الصحي	%

Thank you for your attention