

SDG 6 (Water and Sanitation)

Hyun Jung Park, Ph.D.

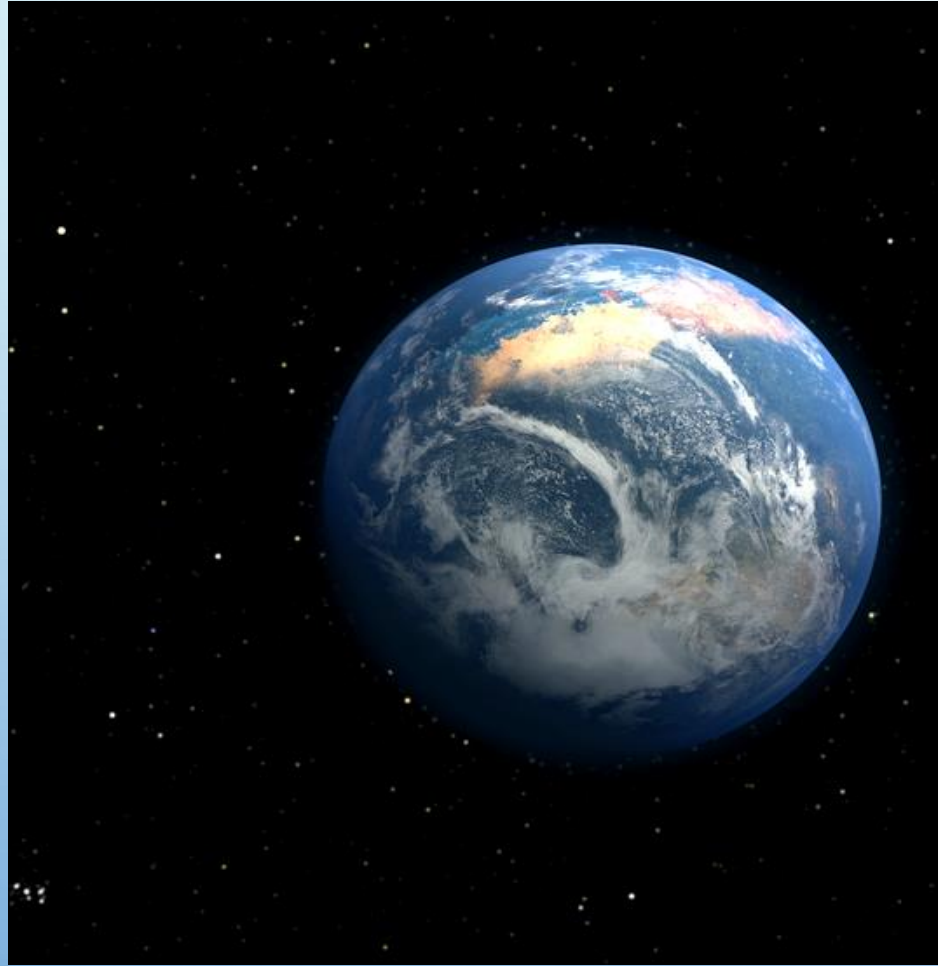
Institute for Climate Change Action

Executive Training Course for Policymakers on the 2030 Agenda and
the Sustainable Development Goals (SDGs) Incheon, 23-27 April 2018

Contents

- **WHY** is water important in the context of sustainable development?
- **WHAT** is water for us?
should we know about water?
- **HOW** has the water-related **SDG** been implemented?
should the water-related **SDG** be implemented?
- **WHO** have critical roles in achieving the **SDG6**?

Early Mars vs. Mars Today



Our Earth Today!

Water & Sanitation are the Key to a Sustainable Future

(SOURCE: UN WATER
<http://www.unwater.org/app/uploads/2017/05/SDG6-Interlinkages-1and2.pdf>)

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

A STRONG, INTEGRATED WATER AND SANITATION GOAL SHOULD HAVE INTERCONNECTING, MUTUALLY REINFORCING TARGETS - WHICH LINK TO ALL OTHER AREAS OF SUSTAINABLE DEVELOPMENT.

SUCCESSFUL REALISATION OF GOAL 6 WILL UNDERPIN PROGRESS ACROSS MANY OF THE OTHER GOALS AND TARGETS.



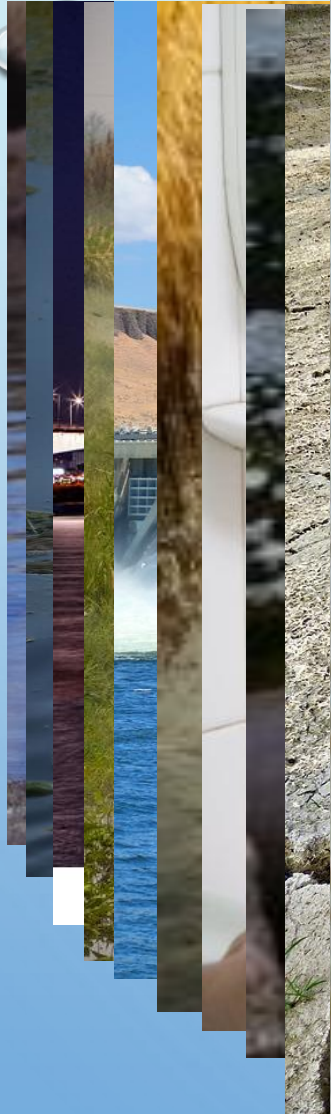
KEY:

LINKED GOALS

RESILIENT INFRASTRUCTURE (9.4) END POVERTY (1.4) END HUNGER (2.1) HEALTHY LIVES (3.6, 3.9) GENDER EQUALITY (5.4) RESILIENT INFRASTRUCTURE (9.4, 9.A) SUSTAINABLE CITIES (11.1, 11.B, 11.D, 11.F) CLIMATE CHANGE (13.1, 13.2, 13.3, 13.A, 13.B) SUSTAINABLE ECOSYSTEMS (15.1, 15.2, 15.3, 15.A, 15.B, 15.C, 15.D, 15.E)

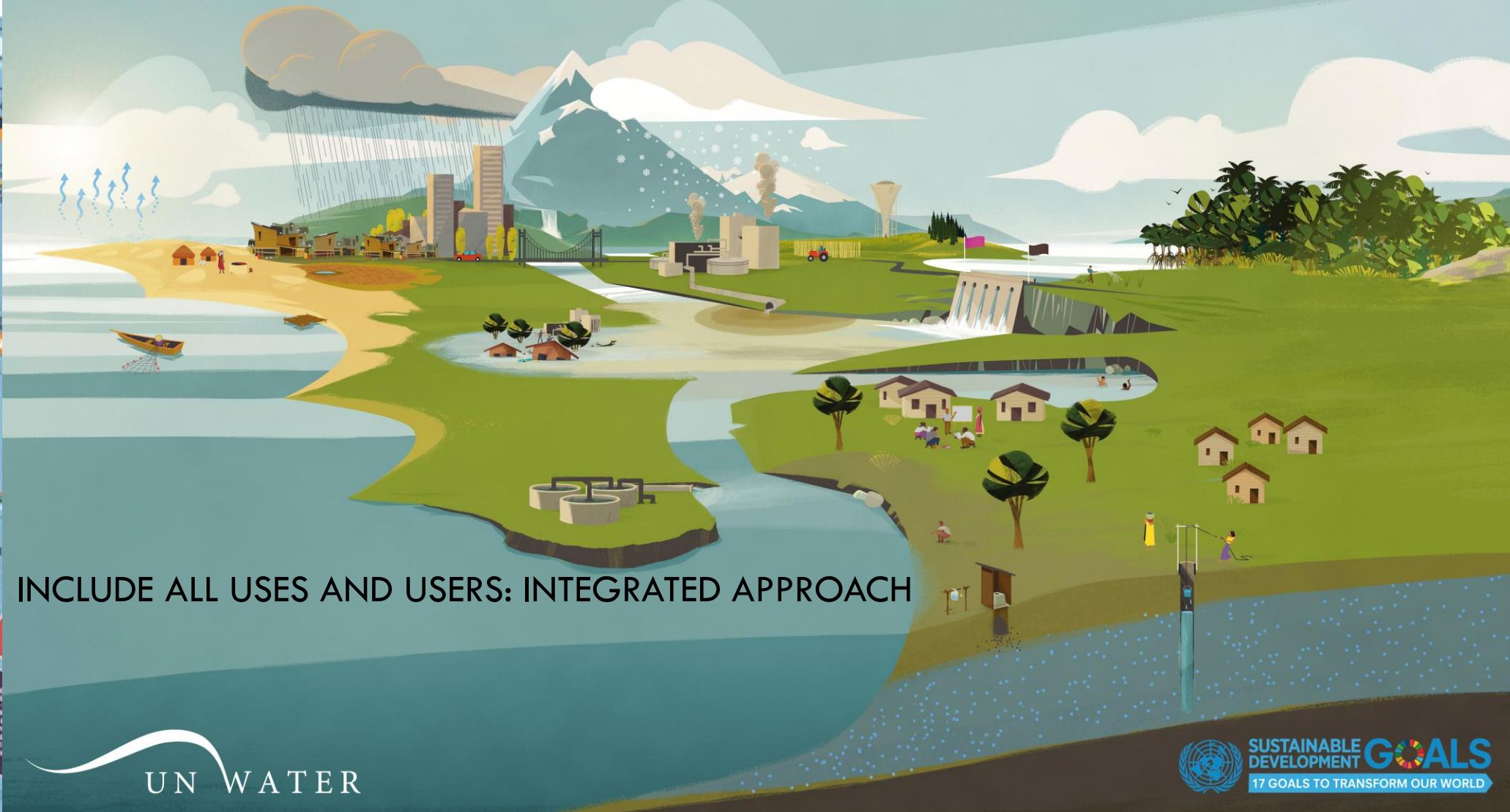
UN Water logo and other organizational icons.

Water is ~ life!
everyone's concerns!



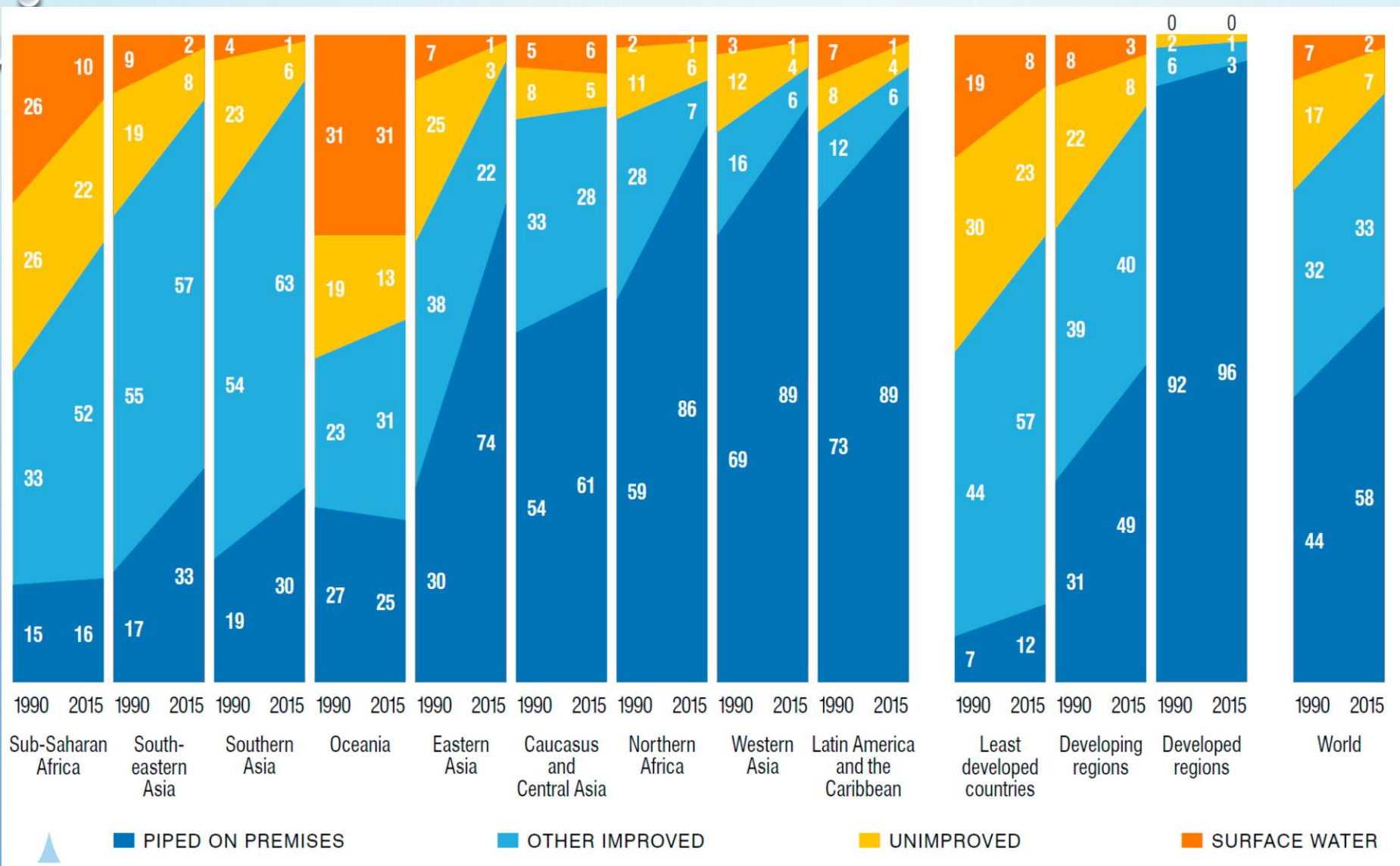
Water is complex

The Water Cycle in the Sustainable Development Goals



INCLUDE ALL USES AND USERS: INTEGRATED APPROACH

Target 6.1 “By 2030, achieve universal and equitable access to safe and affordable **drinking** water for all”

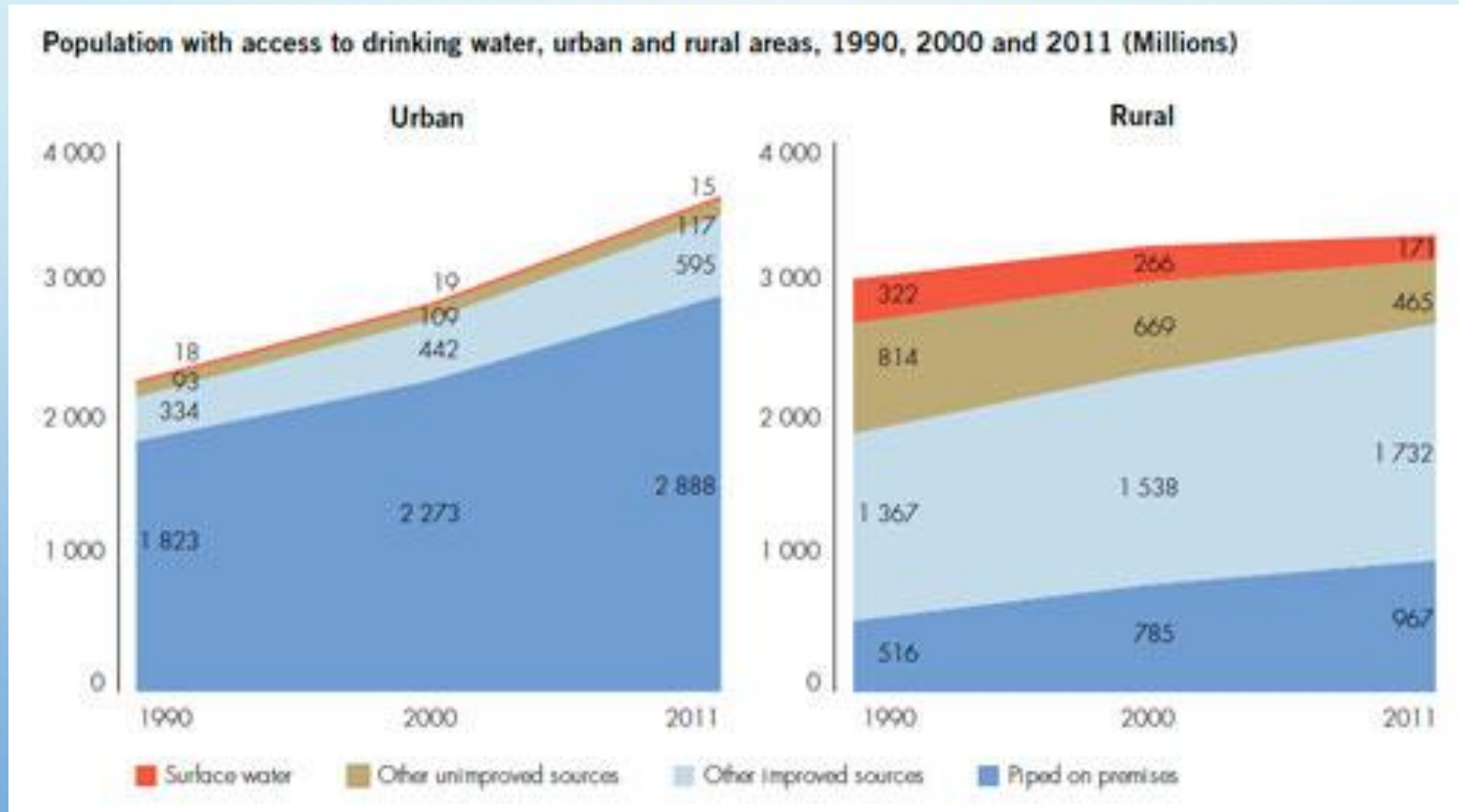


DRINKING-WATER COVERAGE TRENDS BY DEVELOPING REGIONS AND THE WORLD, USING THE JMP IMPROVED WATER DEFINITION, 1990–2015.

SOURCE: WHO/UNICEF (2015)

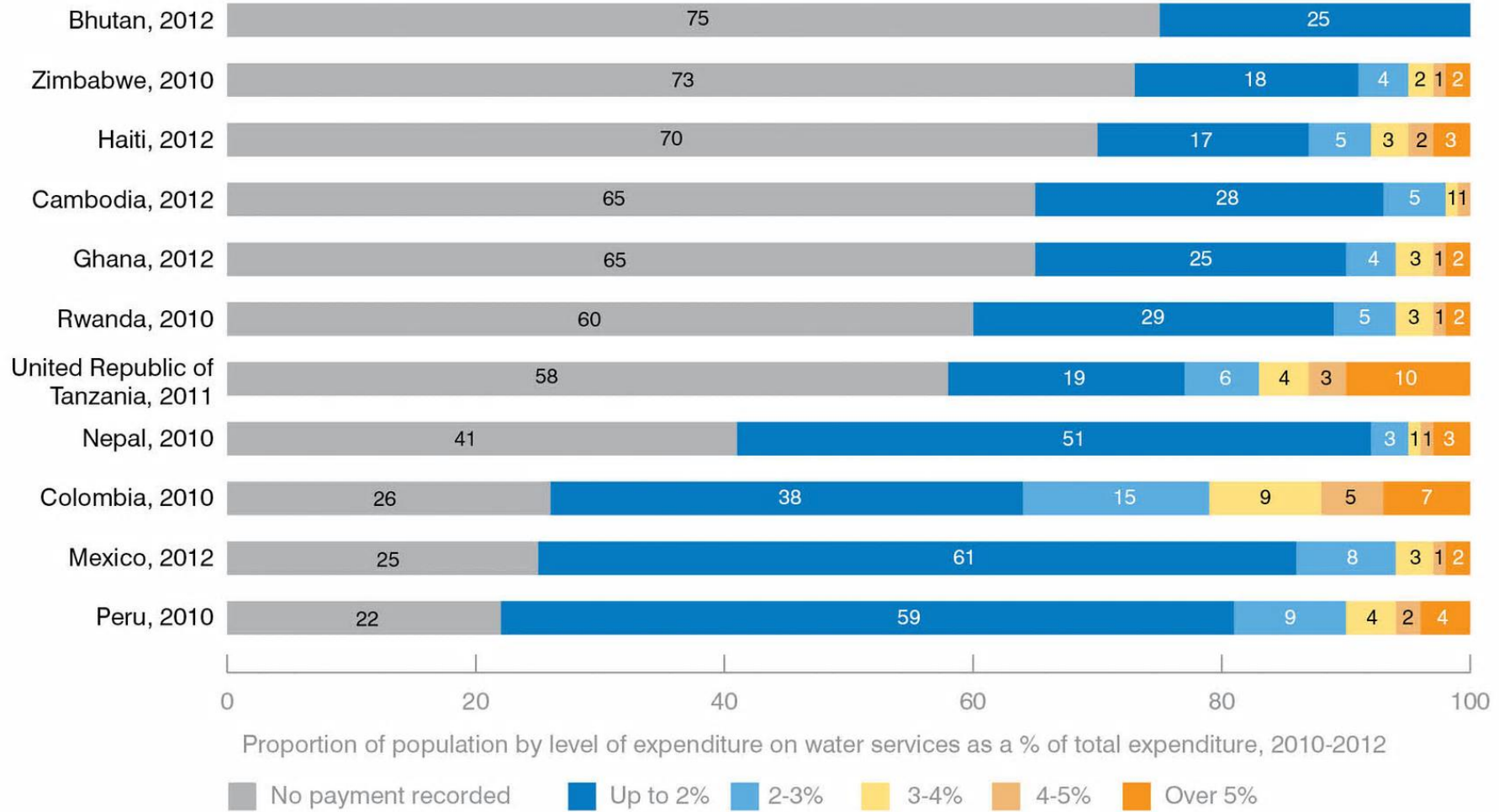
<https://www.researchgate.net/publication/303597267> THE KNOWLEDGE BASE FOR ACHIEVING THE SUSTAINABLE DEVELOPMENT GOAL TARGETS ON WATER SUPPLY SANITATION AND HYGIENE

Target 6.1 “By 2030, achieve **universal and equitable** access to **safe** and affordable drinking water for all”



SOURCE: THE MILLENNIUM DEVELOPMENT GOALS REPORT 2013

Target 6.1 “By 2030, achieve universal and equitable access to safe and **affordable** drinking water for all”



Proportion of population by level of expenditure on water services as a % of total expenditure, 2010-2012

No payment recorded
 Up to 2%
 2-3%
 3-4%
 4-5%
 Over 5%

Not
 private
 adjusted
 Source:
 countries

WHO/Unicef Joint Monitoring Programme)

Target 6.1 “By 2030, achieve universal and equitable access to **safe and affordable drinking water** for all”

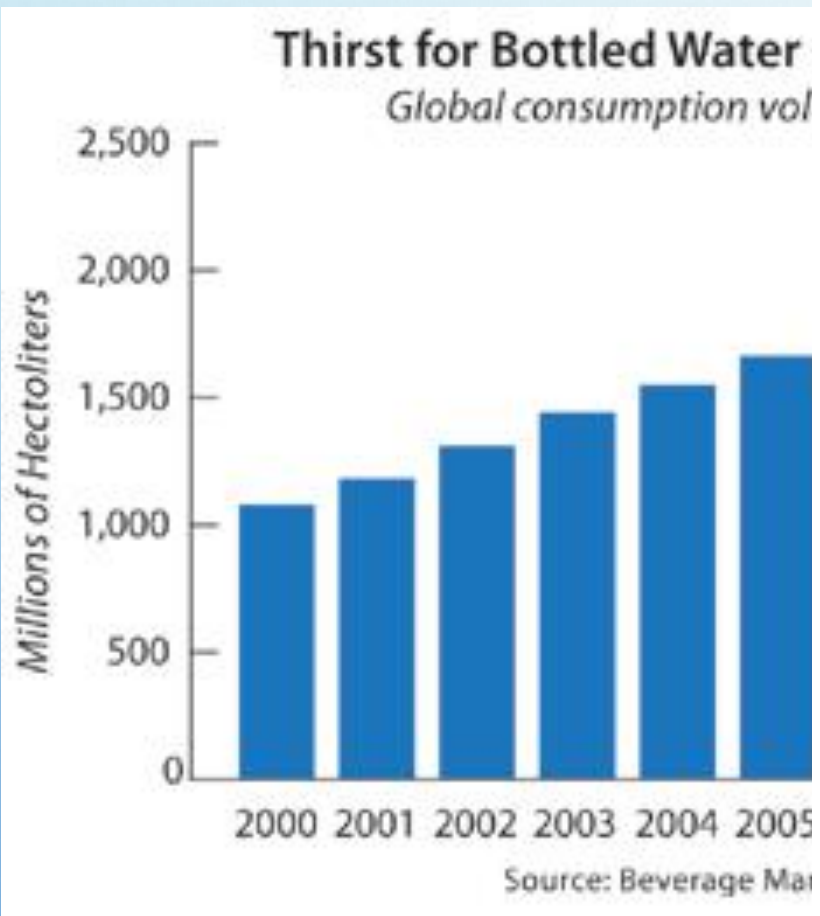


Exhibit 1.8

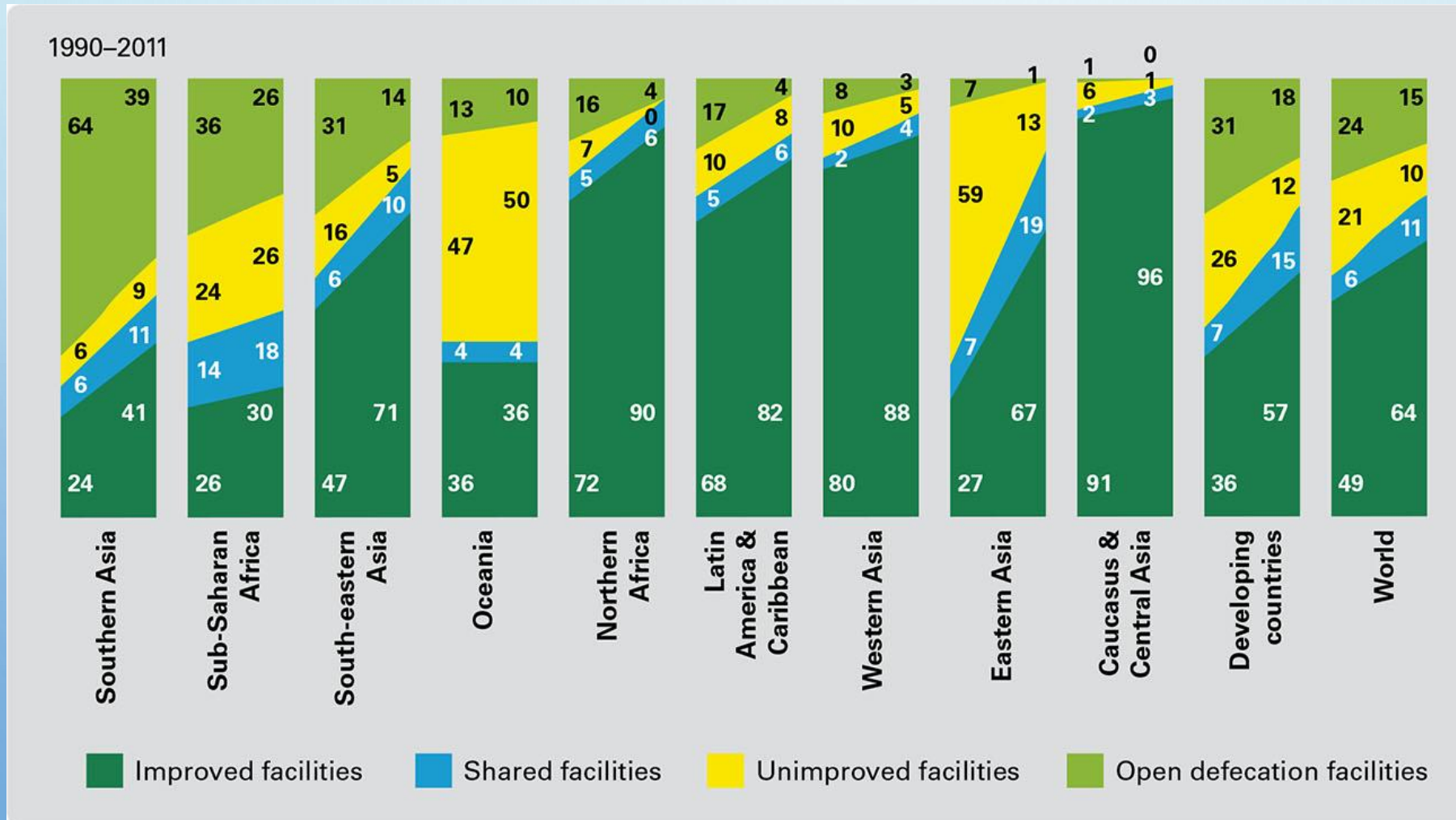
GLOBAL BOTTLED WATER MARKET SHARE OF CONSUMPTION BY REGION 2005 – 2010(P)

Regions	2005	2006	2007	2008	2009	2010(P)
North America	30.2%	30.7%	31.2%	30.8%	30.3%	29.8%
Asia	22.9%	23.6%	24.9%	26.3%	27.1%	28.5%
Europe	34.3%	33.5%	31.3%	30.1%	28.9%	28.1%
South America	9.1%	8.8%	9.2%	9.4%	10.2%	10.1%
Africa/Mideast/ Oceania	3.5%	3.4%	3.4%	3.5%	3.5%	3.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

(P) Preliminary

Source: Beverage Marketing Corporation

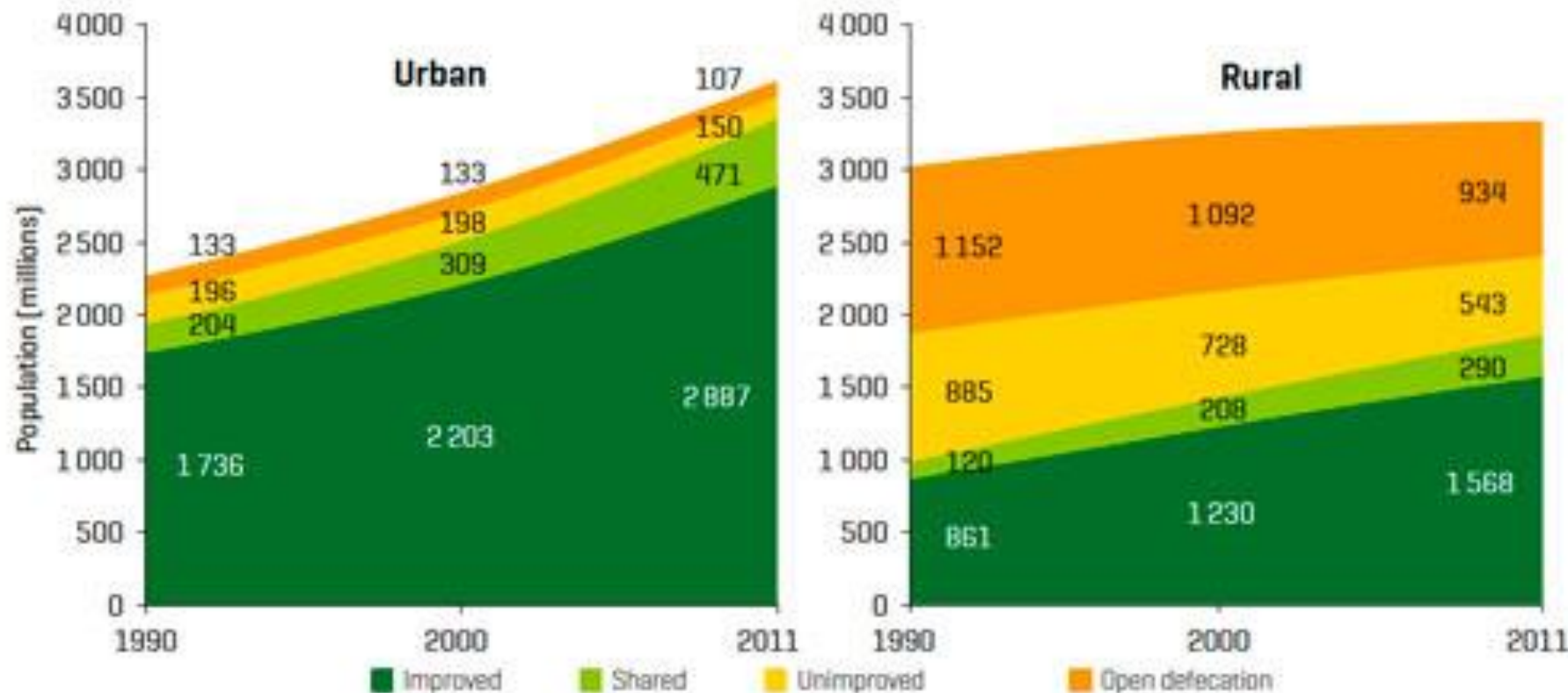
Target 6.2 “By 2030, achieve access to adequate and equitable **sanitation** and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”



SOURCE: PROGRESS ON DRINKING WATER AND SANITATION: 2013 UPDATE.

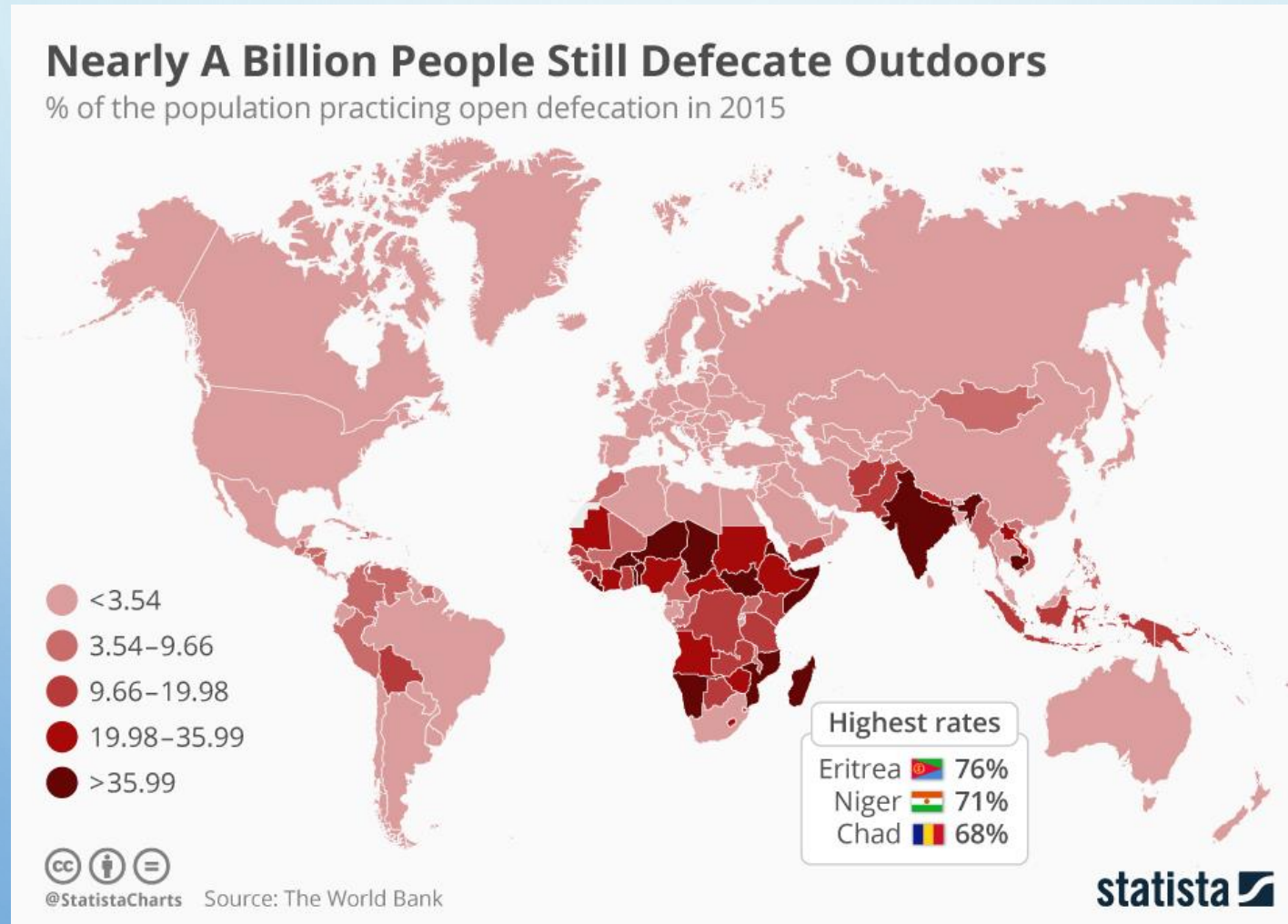
Target 6.2 “By 2030, achieve access to **adequate and equitable sanitation** and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”

Since 1990, 1.1 billion people in urban areas gained access to improved sanitation whereas the rural population grew by 1.3 billion people

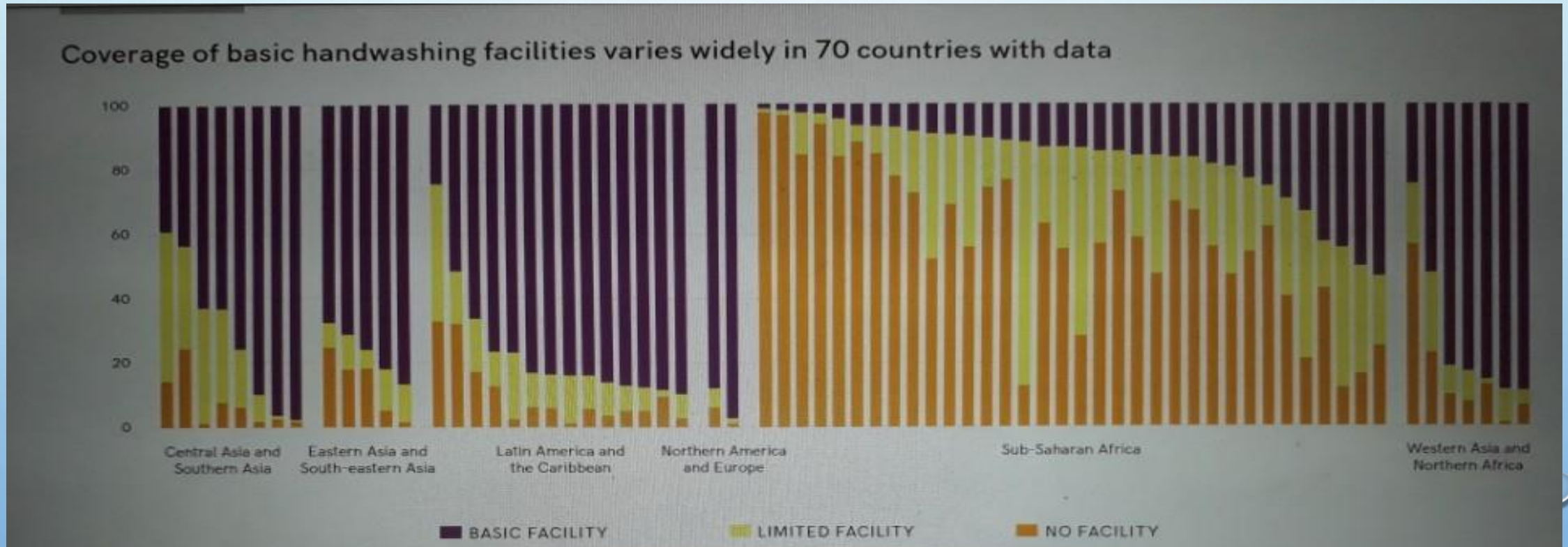


SOURCE: PROGRESS ON DRINKING WATER AND SANITATION: 2013 UPDATE.

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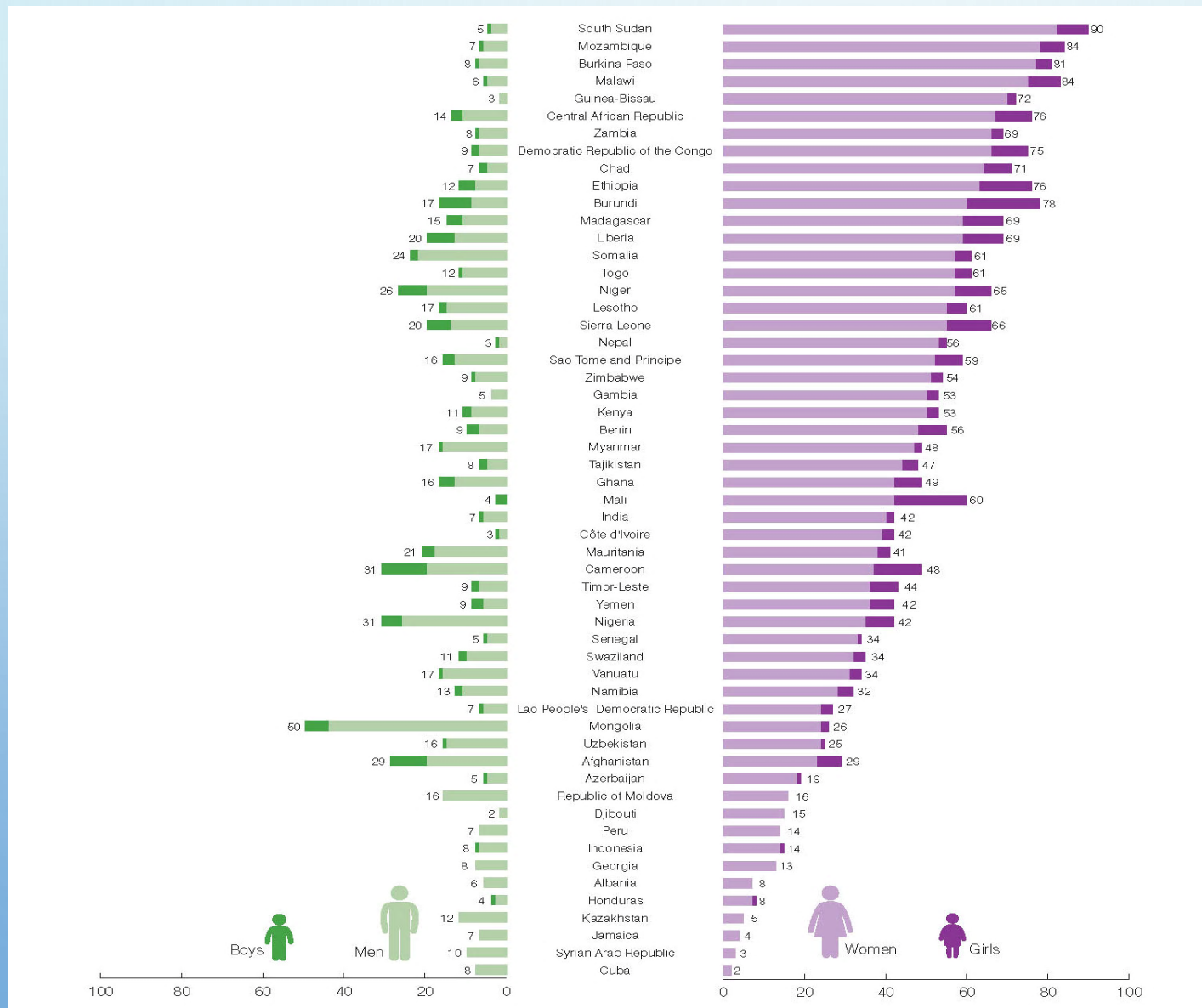
Target 6.2 “By 2030, achieve access to adequate and equitable sanitation and **hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”



Source: UNICEF and WHO, “Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG Baselines”

FIG 24. PROPORTION OF POPULATION USING BASIC AND LIMITED HANDWASHING FACILITIES IN 2015, BY COUNTRY AND SDG REGION (%)

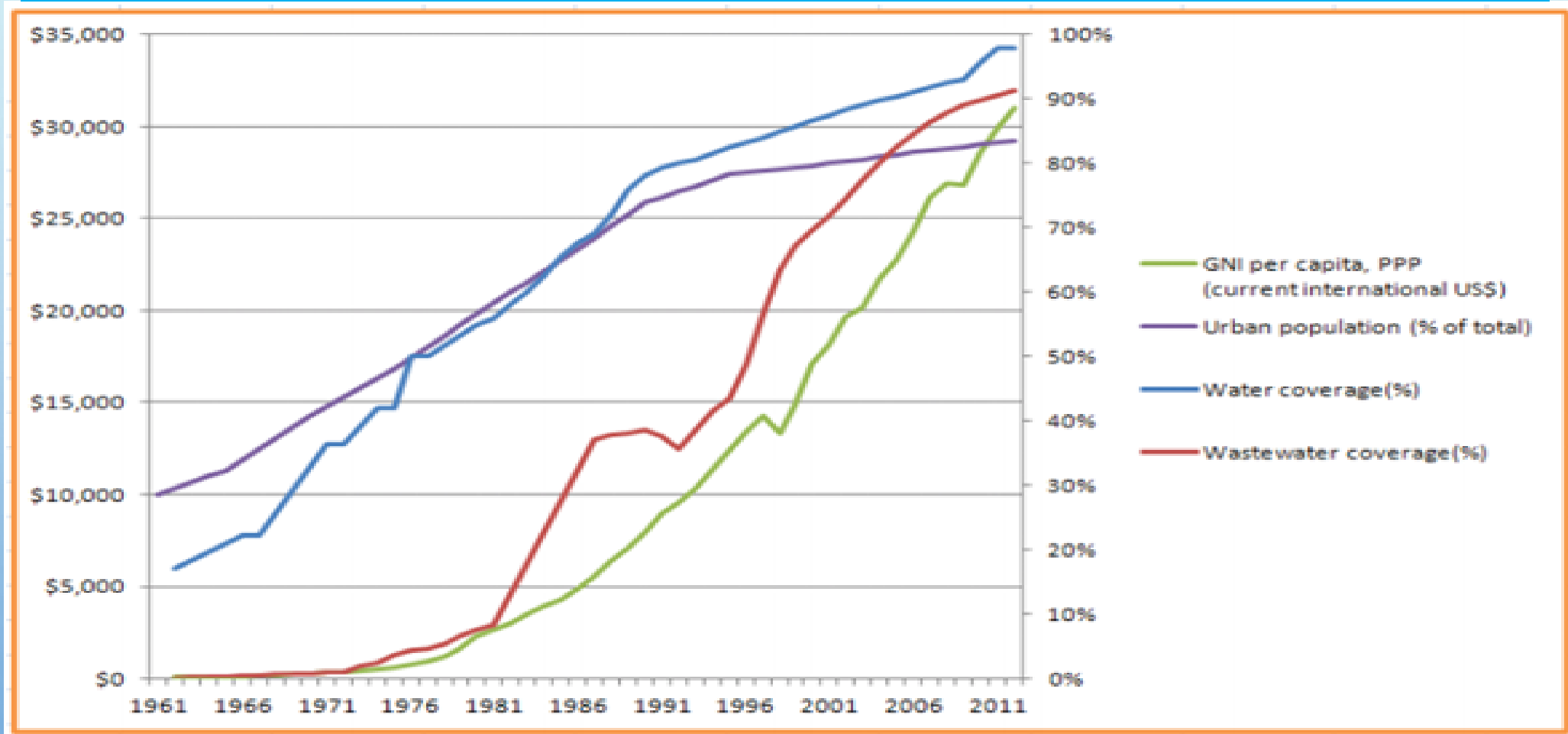
Paying special attention to the needs of **women and girls!** They have primary responsibility for collecting water in rural areas (by gender and age)



SOURCE: WHO/UNICEF JOINT MONITORING PROGRAMME

Key Drivers: Water & Sanitation Coverage

Water & Sanitation Coverage in Korea: Overview for the last 50 years



SOURCE: "REPUBLIC OF KOREA: TRANSFORMATION OF THE WATER SECTOR (1960-2012)", KWWA, 2016, PAGE 11, (ORIGINAL SOURCE: "REVISION OF A STUDY ON THE VISION 2050 OF WASTEWATER POLICY, KOREAN MINISTRY OF ENVIRONMENT, 2012)

Key Drivers: Water & Sanitation Coverage

Economic Rates of Return for Key Infrastructure In Africa

Table 2.5 Economic Rates of Return for Key Infrastructure

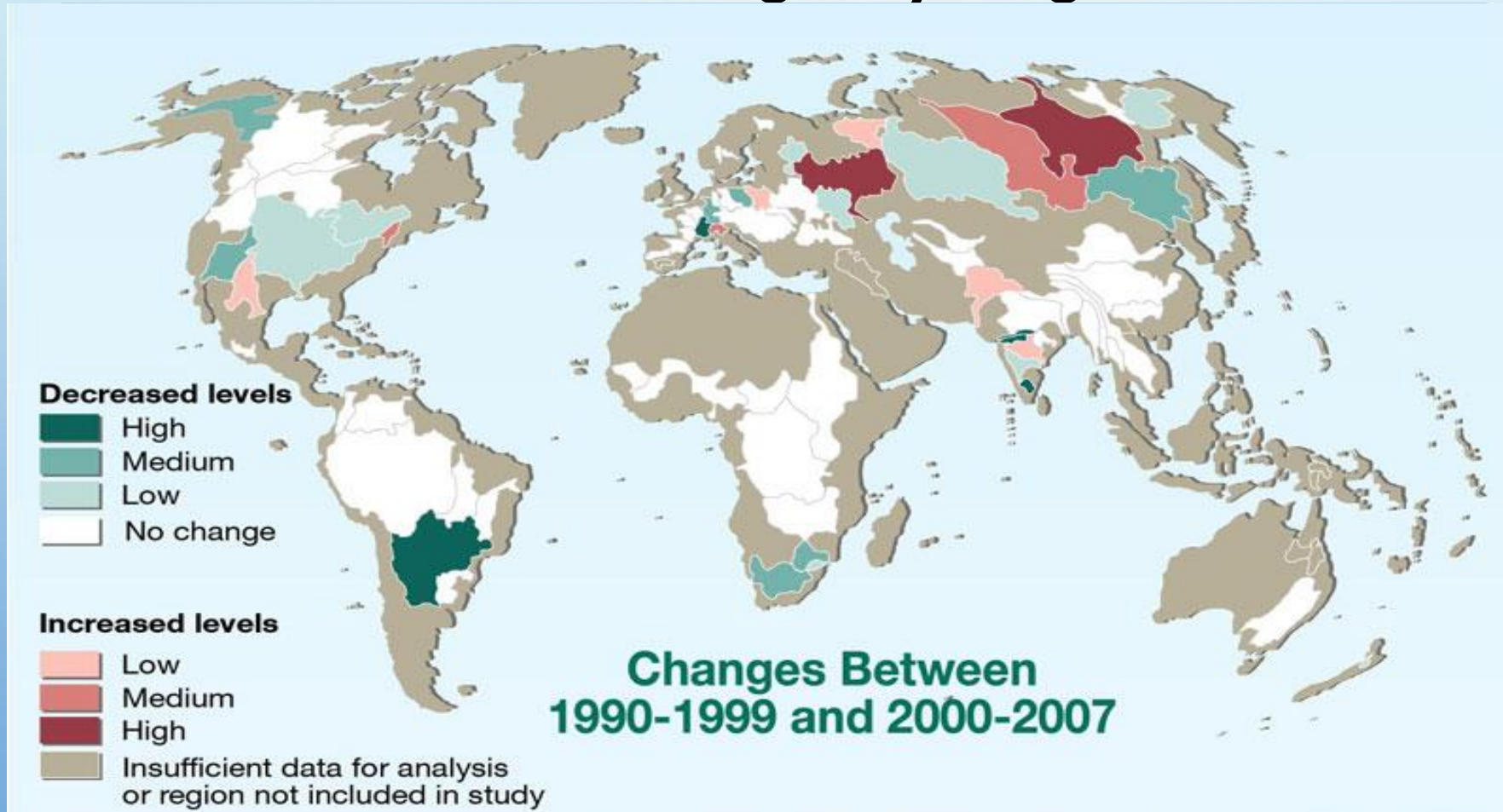
Country type	Railway rehabilitation	Irrigation	Road rehabilitation	Road upgrades	Road maintenance	Generation	Water
Middle income	18.5	19.3	45.4	19.8	143.0	13.6	26.8
Resource rich	10.8	24.2	16.2	17.4	114.5	20.2	37.0
Low-income nonfragile	6.2	17.2	17.6	12.8	125.7	14.3	7.7
Low-income fragile	2.5	—	9.2	12.0	67.6	24.7	36.9
Sub-Saharan Africa	5.1	22.2	24.2	17.0	138.8	18.9	23.3

Source: Africa Infrastructure Country Diagnostic.

Note: — Not available.

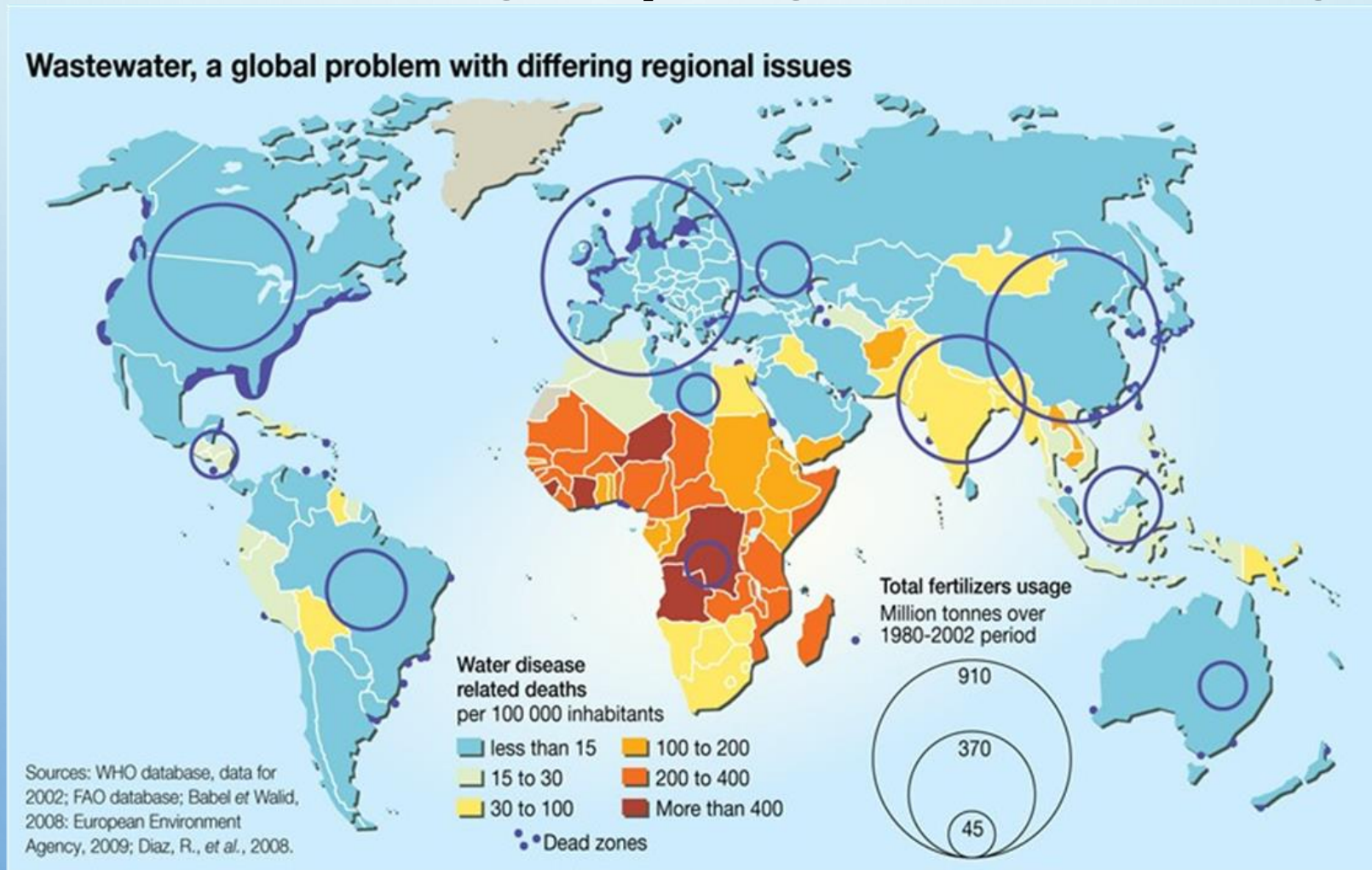
SOURCE: FOSTER AND BRICEÑO-GARMENDIA (2010, TABLE 2.5, P. 71) "AFRICA'S INFRASTRUCTURE : A TIME FOR TRANSFORMATION" [HTTPS://OPENKNOWLEDGE.WORLDBANK.ORG/HANDLE/10986/2692](https://openknowledge.worldbank.org/handle/10986/2692)

Target 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 increasing recycling and safe reuse globally”

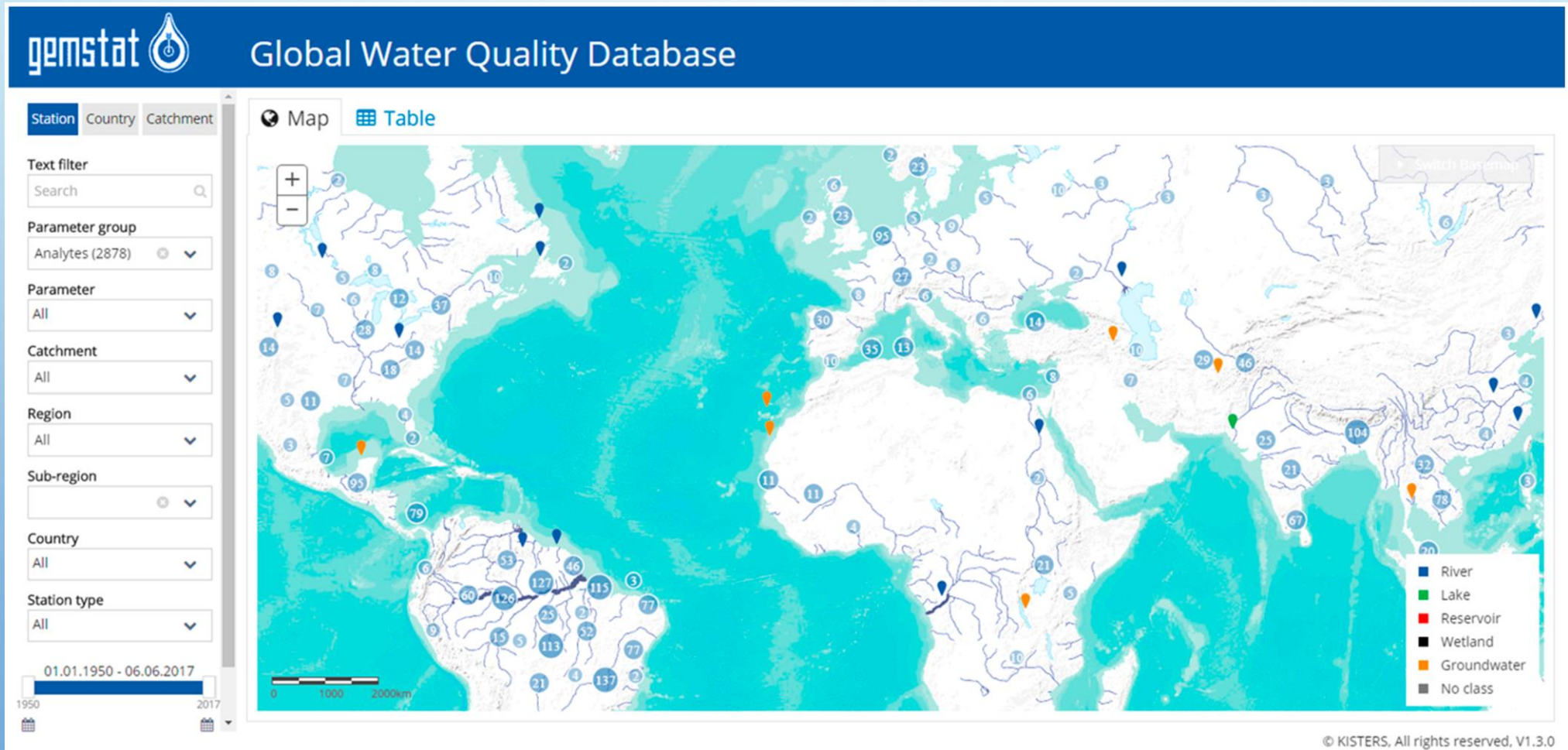


NITRATE LEVELS:
CONCENTRATIONS AT
RIVER MOUTHS

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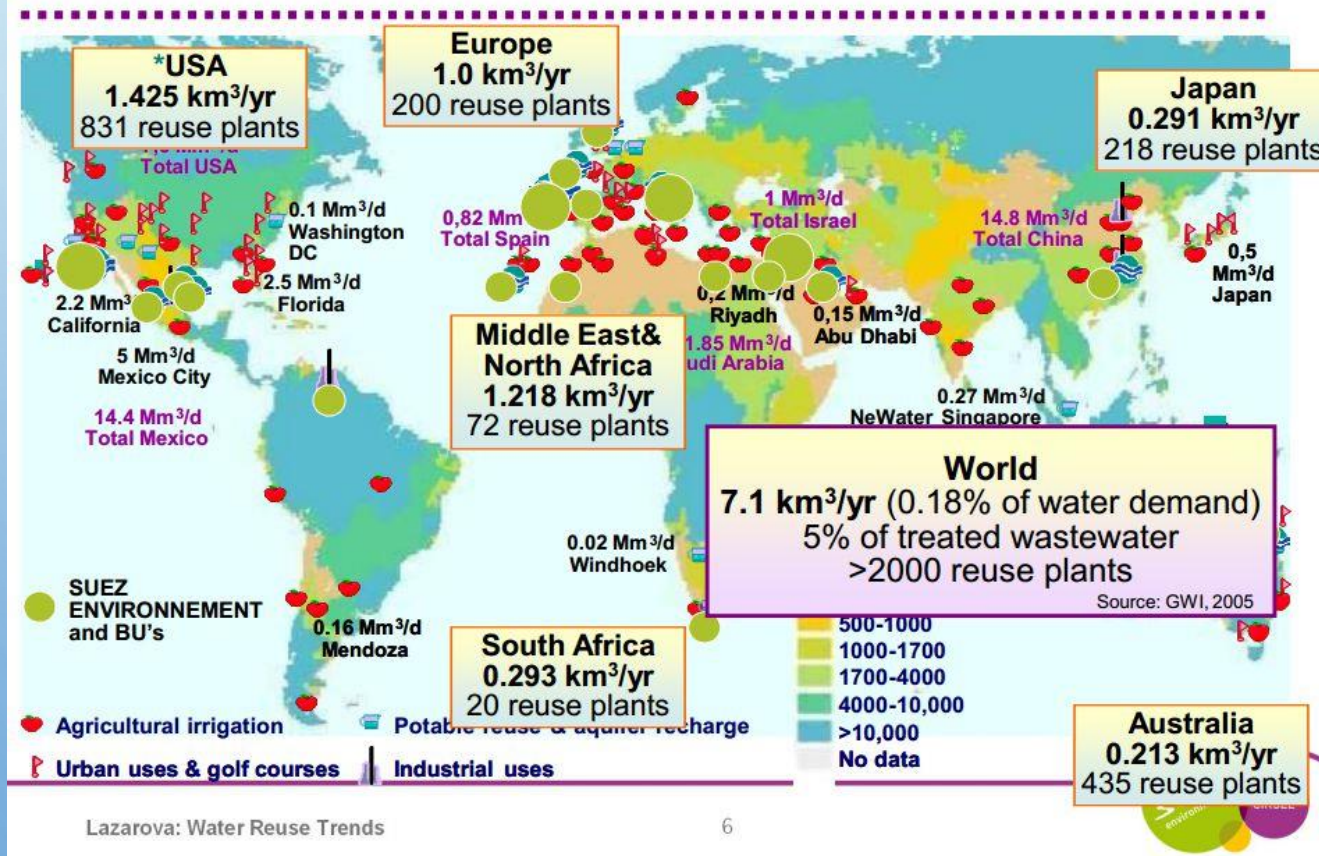


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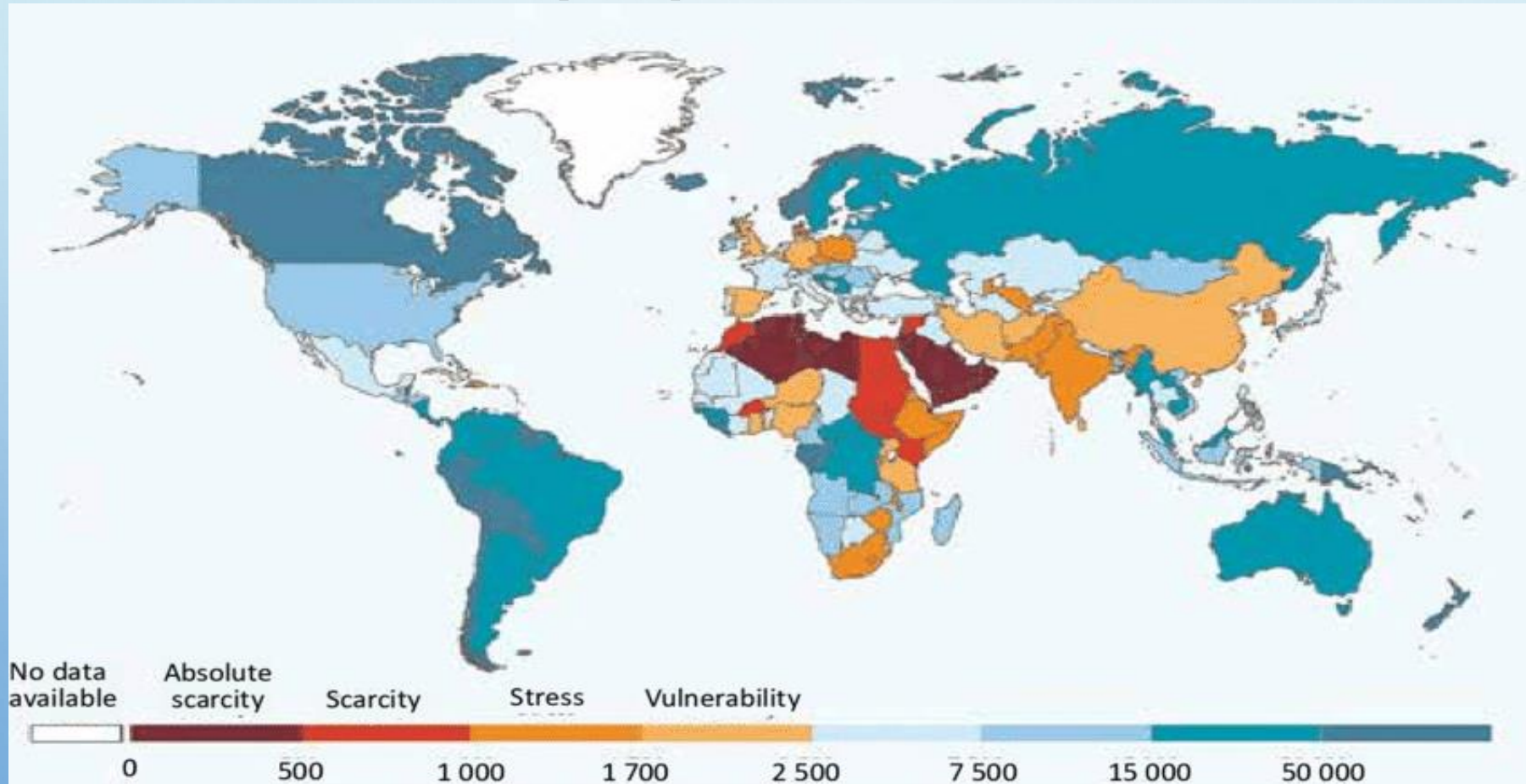
Target 6.3 “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and increasing **recycling and safe reuse globally**”

Water Reuse: a Global Trend towards Sustained Growth in All Continents



[HTTP://SLIDEPLAYER.COM /SLIDE/3411290/](http://slideplayer.com/slide/3411290/)

Target 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”**

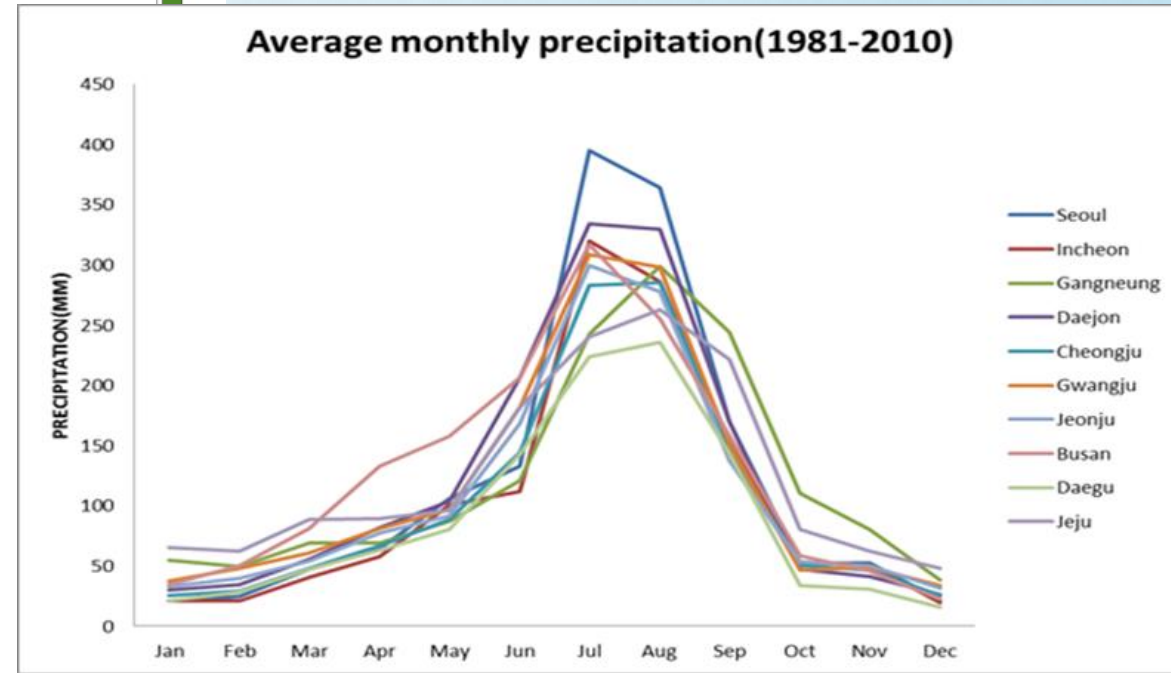
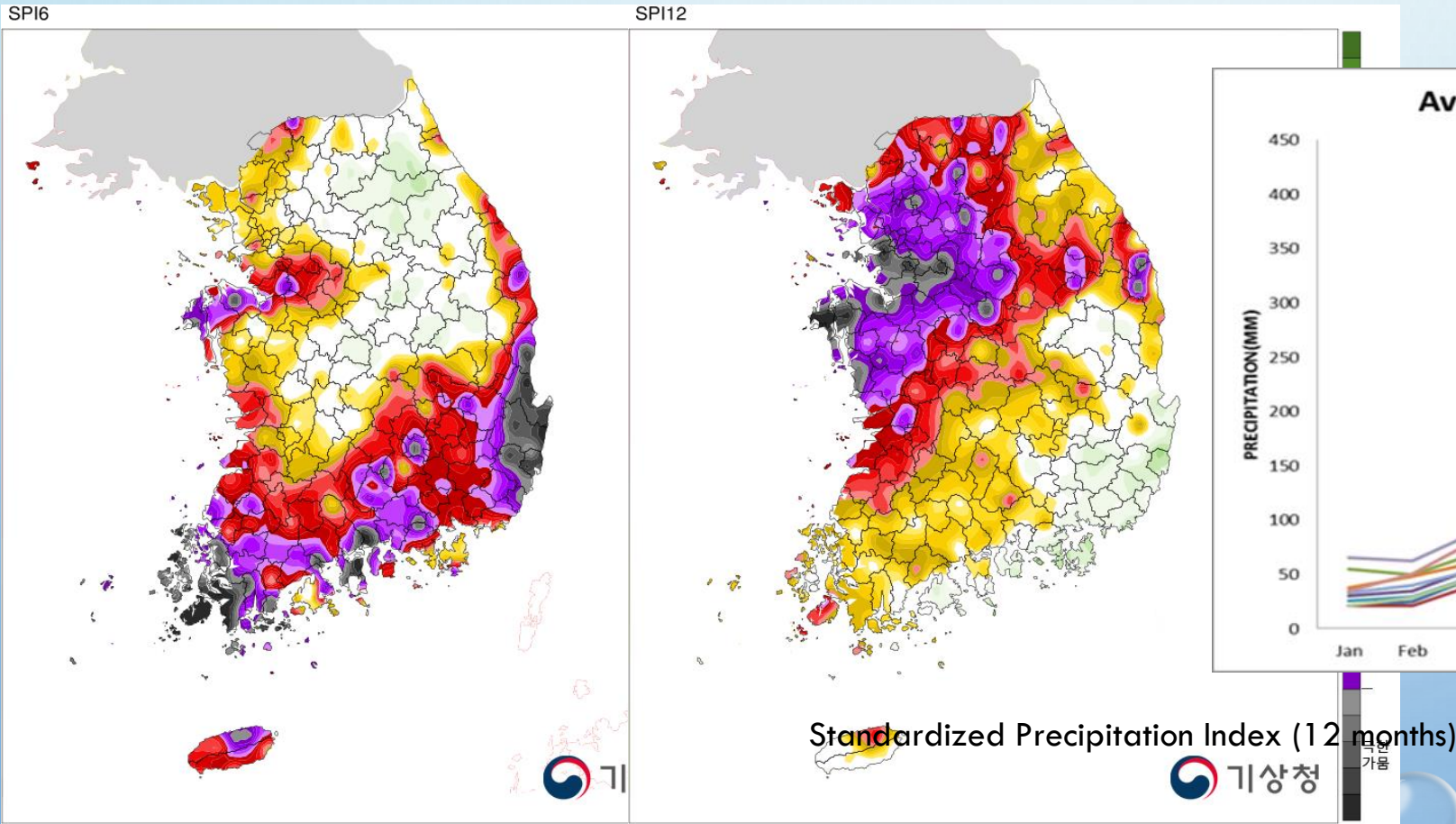


**TOTAL
RENEWABLE
WATER
RESOURCES
PER CAPITA
(2013)**

Note: The figures indicate total renewable water resources per capita in m³

Source: WWAP, with data from the FAO AQUASTAT database (<http://www.fao.org/nr/water/aquastat/main/index.stm>) (aggregate data from all countries)

Target 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”



SEASONAL VARIATION OF PRECIPITATION IN KOREA

(SOURCE: KOREA METEOROLOGICAL ADMINISTRATION)

Data Time 2017.07.06

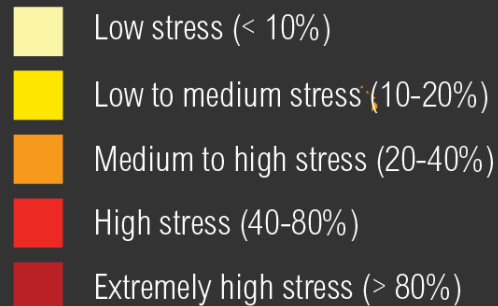
Data Time 2017.07.06

(SOURCE: [HTTPS://DROUGHT.KMA.GO.KR/OBSE/DISTMAP.DO#](https://drought.kma.go.kr/obse/distmap.do#))

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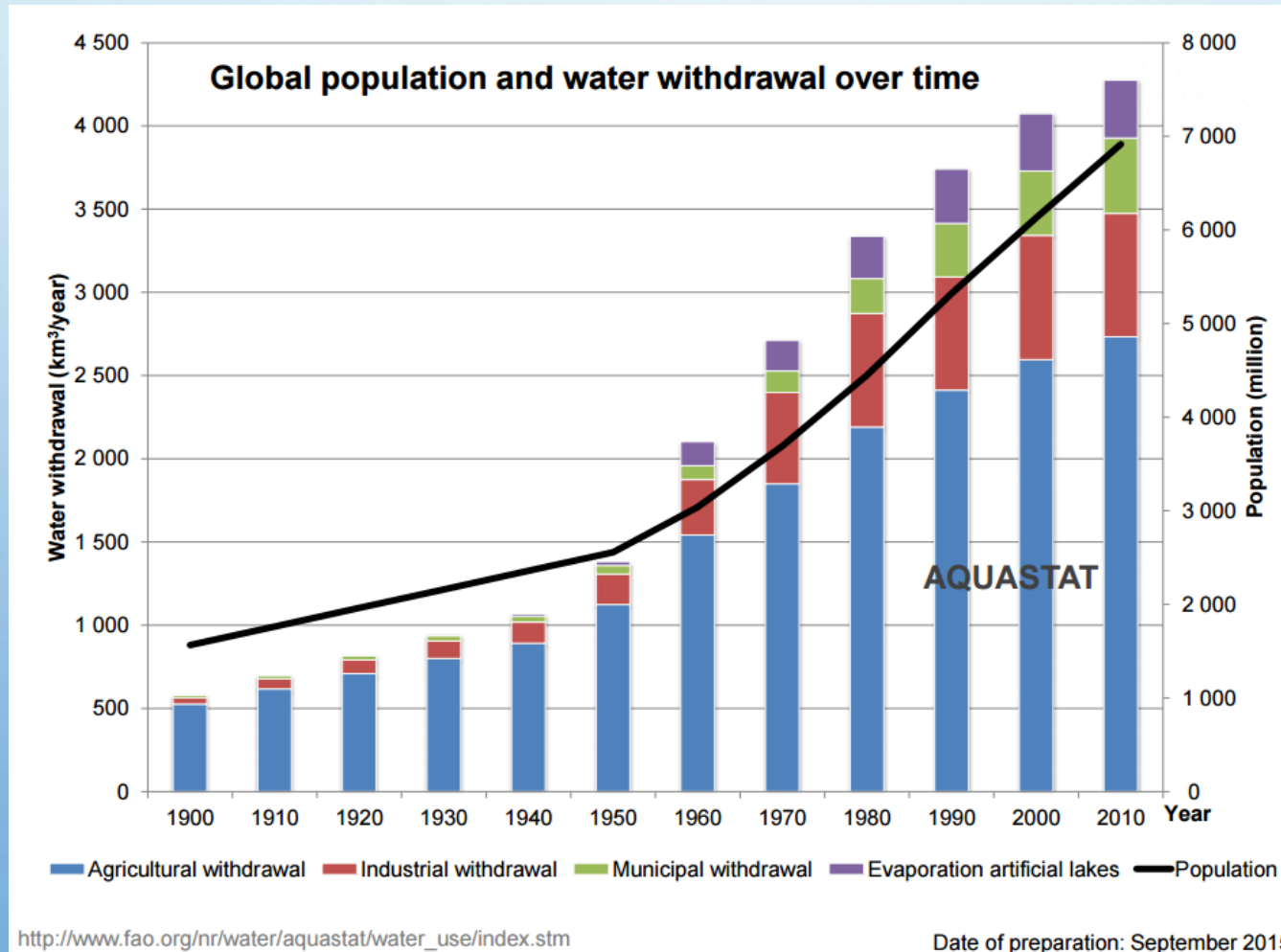
WATER STRESS BY COUNTRY

ratio of withdrawals to supply



This map shows the average exposure of water users in each country to water stress, the ratio of total withdrawals to total renewable supply in a given area. A higher percentage means more water users are competing for limited supplies. Source: WRI Aqueduct, Gassert et al. 2013

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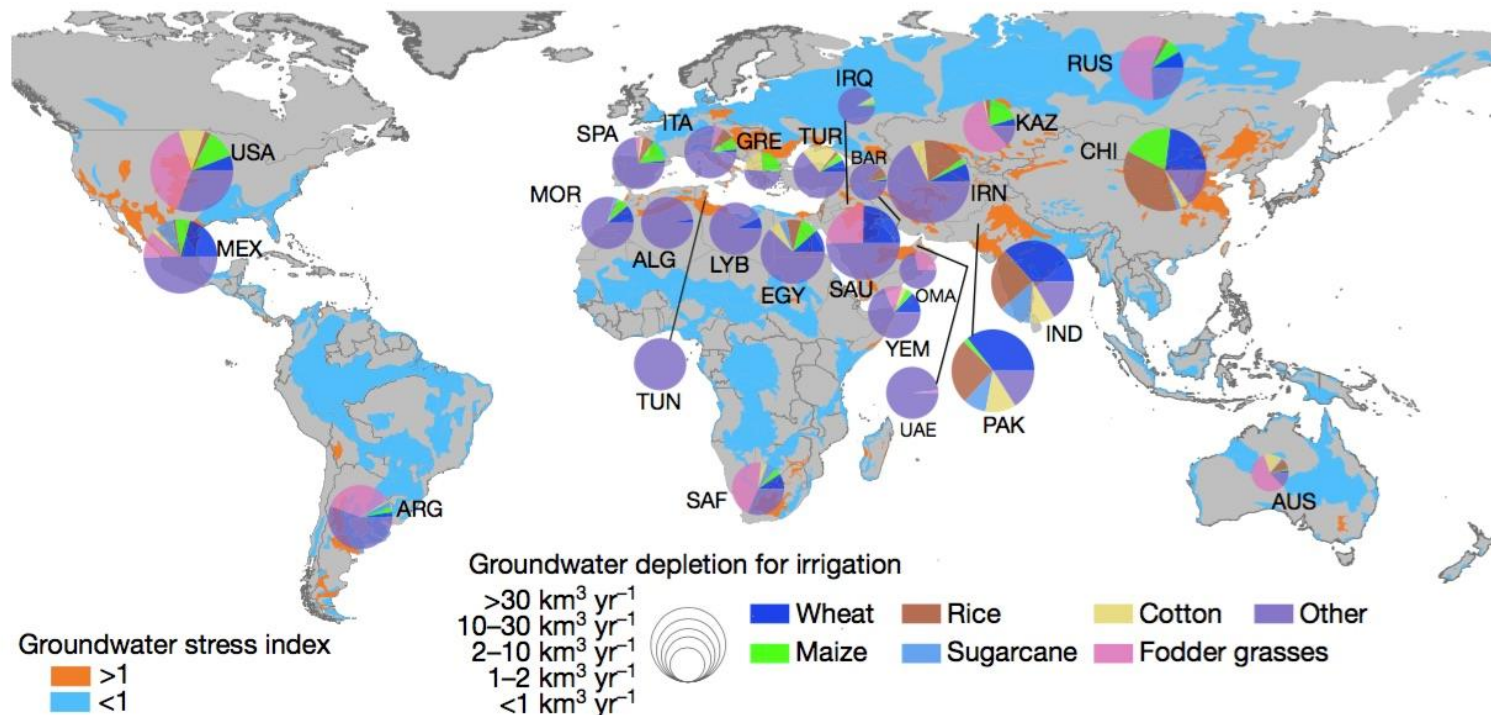
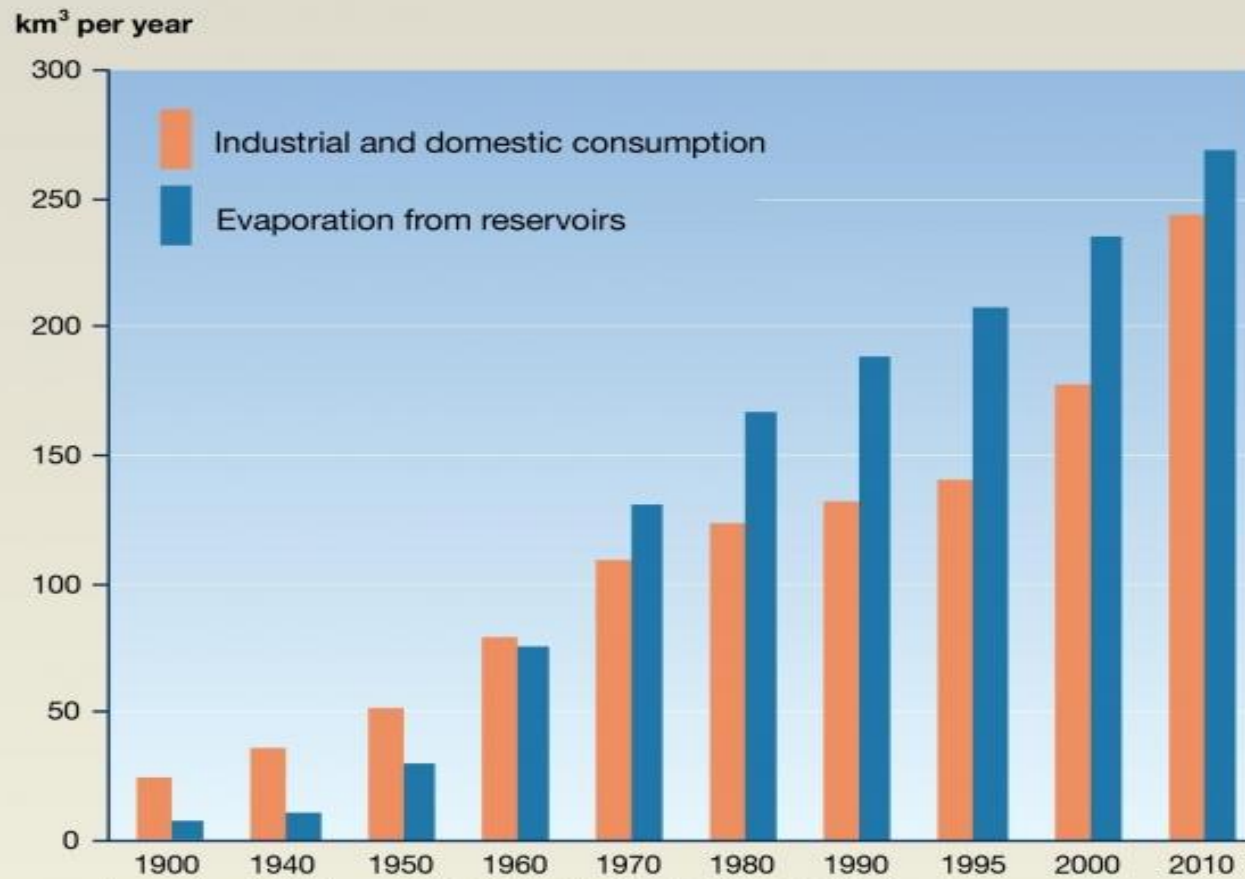


Figure 1 | Crop-specific contribution to groundwater depletion worldwide in 2010. The pie charts show fractions of groundwater depletion for irrigation (GWD) of major crops by country, and their sizes indicate total GWD volume. The background map shows groundwater

stress index (corresponding to overexploitation when larger than one) of major aquifers¹⁵. Some countries have overexploited aquifers but no pie chart is shown because groundwater use is not primarily related to irrigation.

(SOURCE: GROUNDWATER DEPLETION EMBEDDED IN INTERNATIONAL FOOD TRADE)

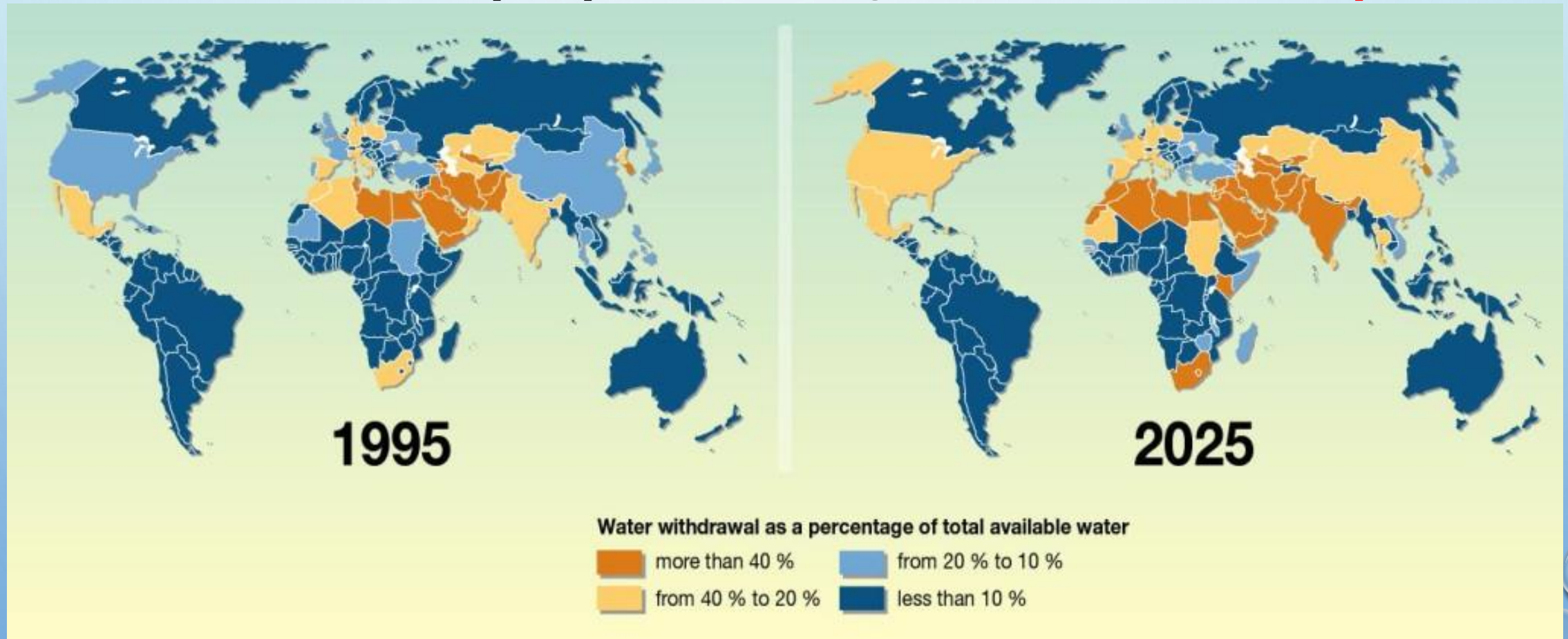
Target 6.4 “By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity”



Source: Igor A. Shiklomanov, State Hydrological Institute (SHI, St. Petersburg) and United Nations Educational, Scientific and Cultural Organisation (UNESCO, Paris), 1999.

PHILIPPE REKACEWICZ
FEBRUARY 2002

Target 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”**

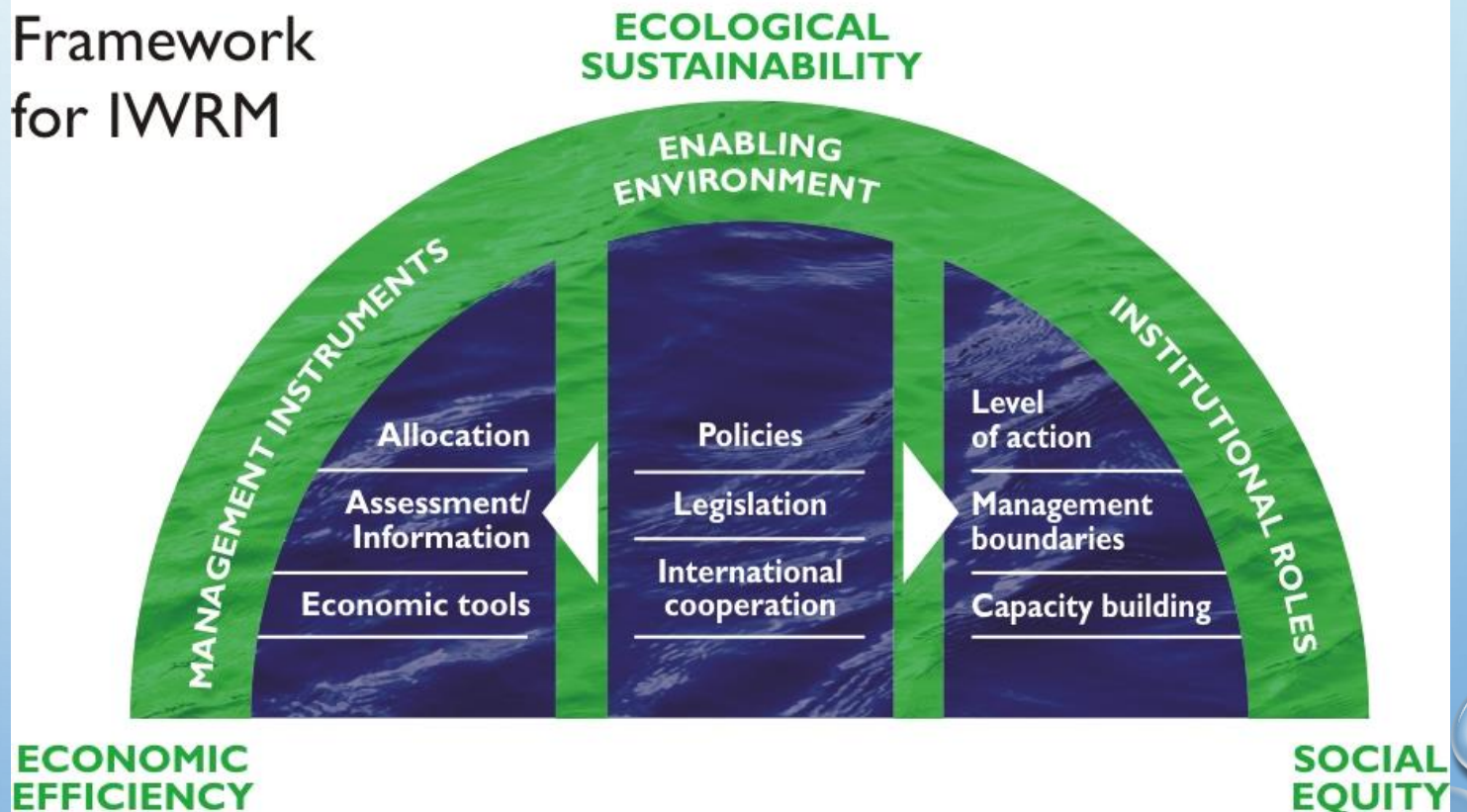


(SOURCE: UNITED NATIONS WORLD WATER ASSESSMENT PROGRAMME, 2012)

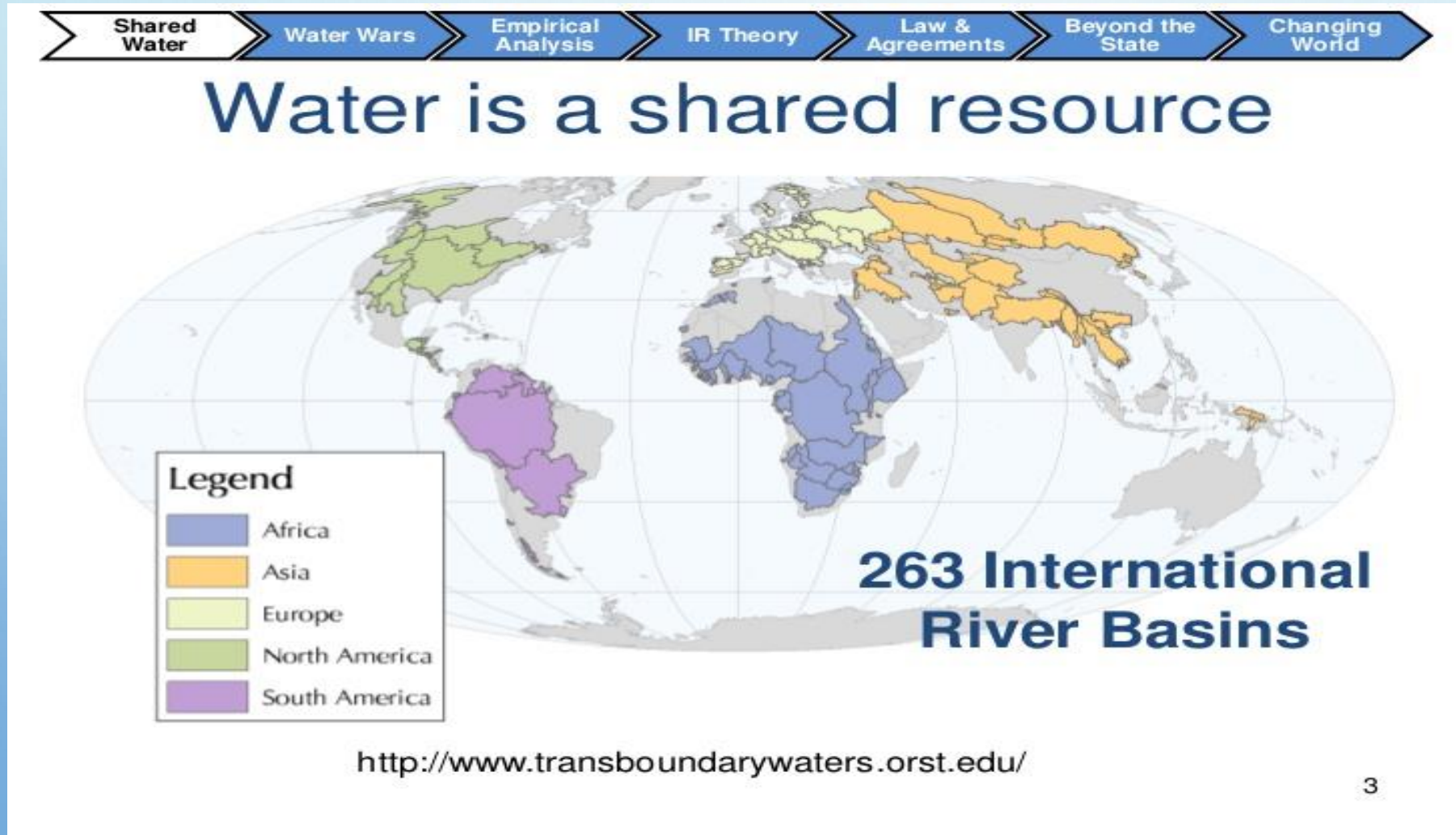
Target 6.5 “By 2030, implement **integrated water resources management** at all levels, including through **transboundary cooperation as appropriate**”

- “Integrated water resources management (IWRM)” is a process to manage water resources in a comprehensive, participatory and coordinate manner by incorporating relevant sectors, stakeholders and agendas.

General Framework for IWRM

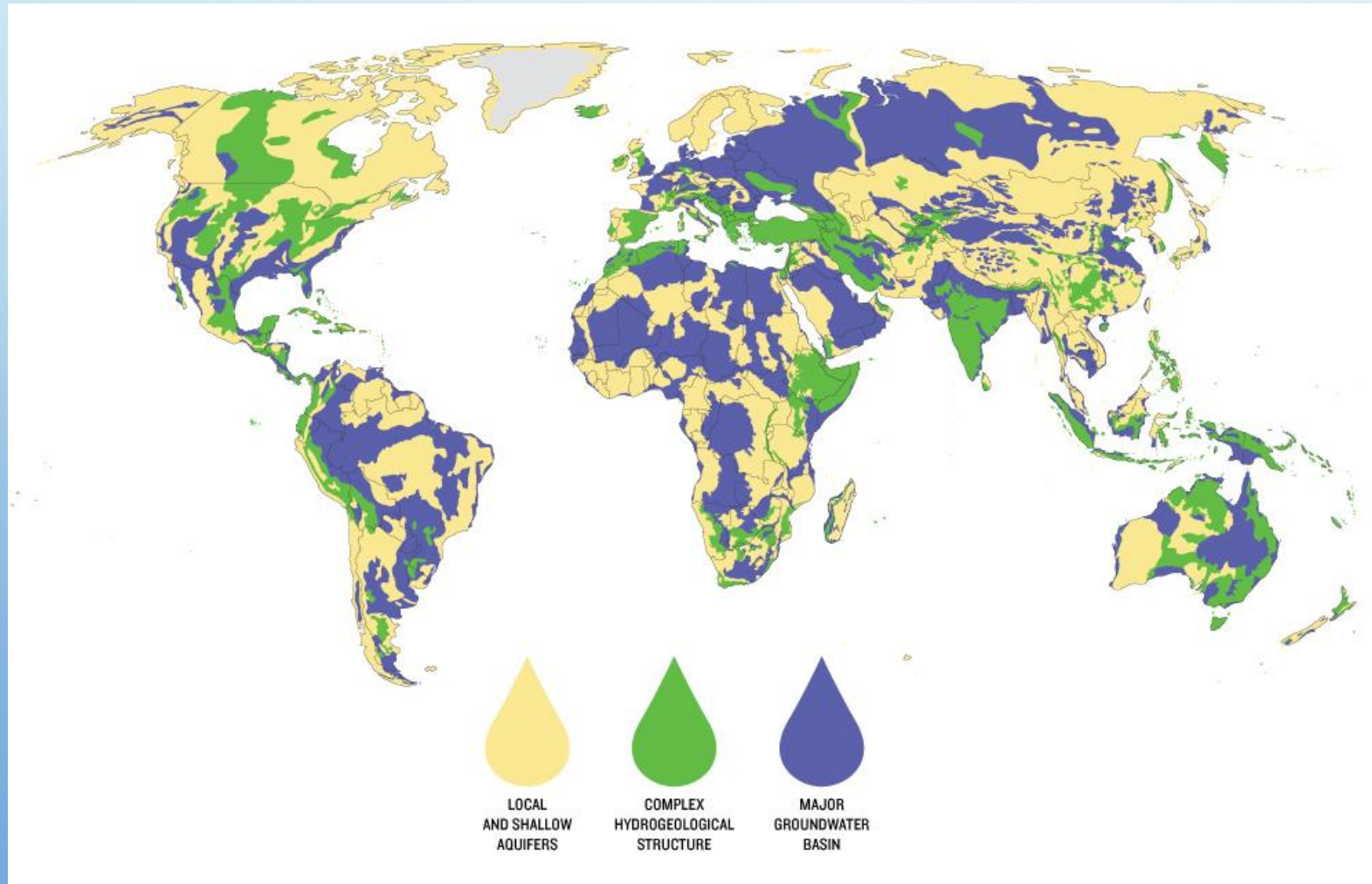


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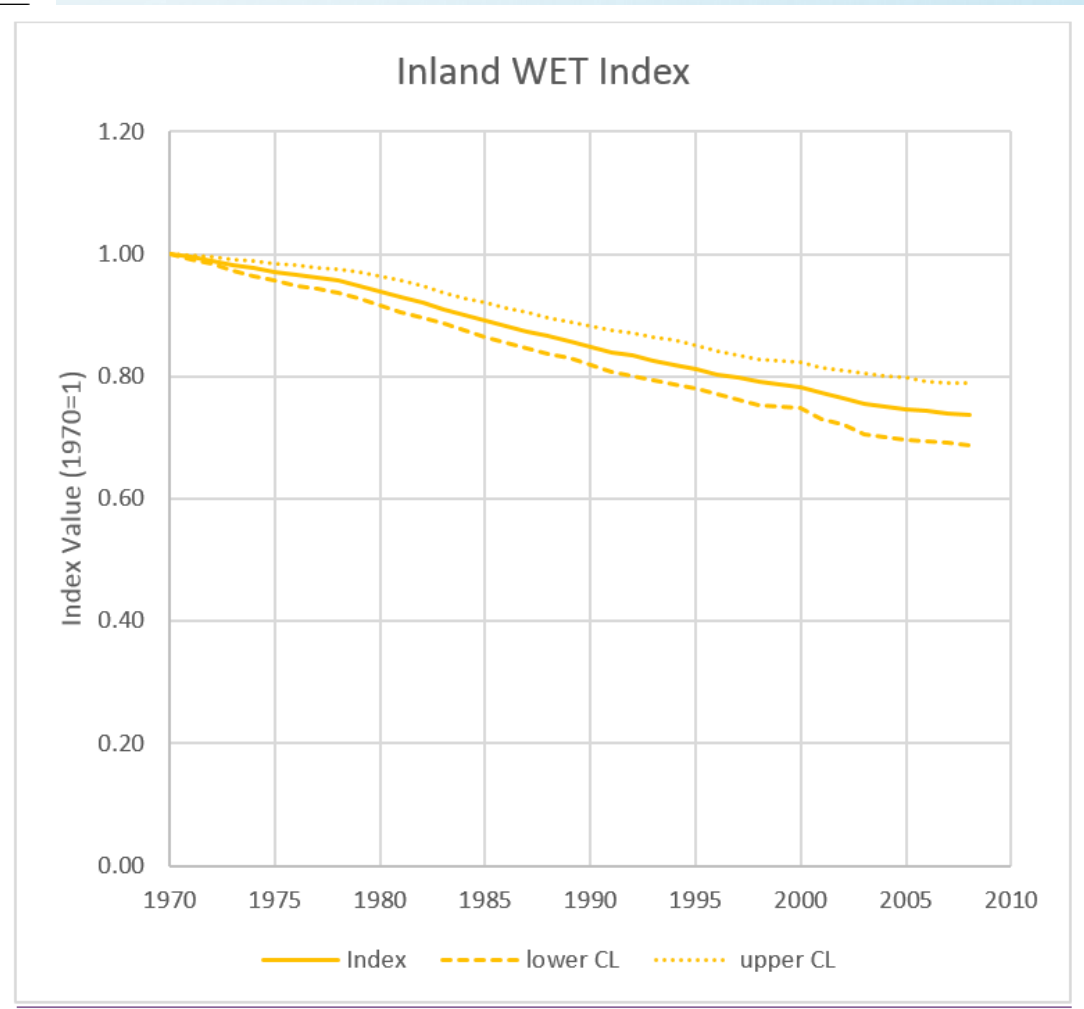
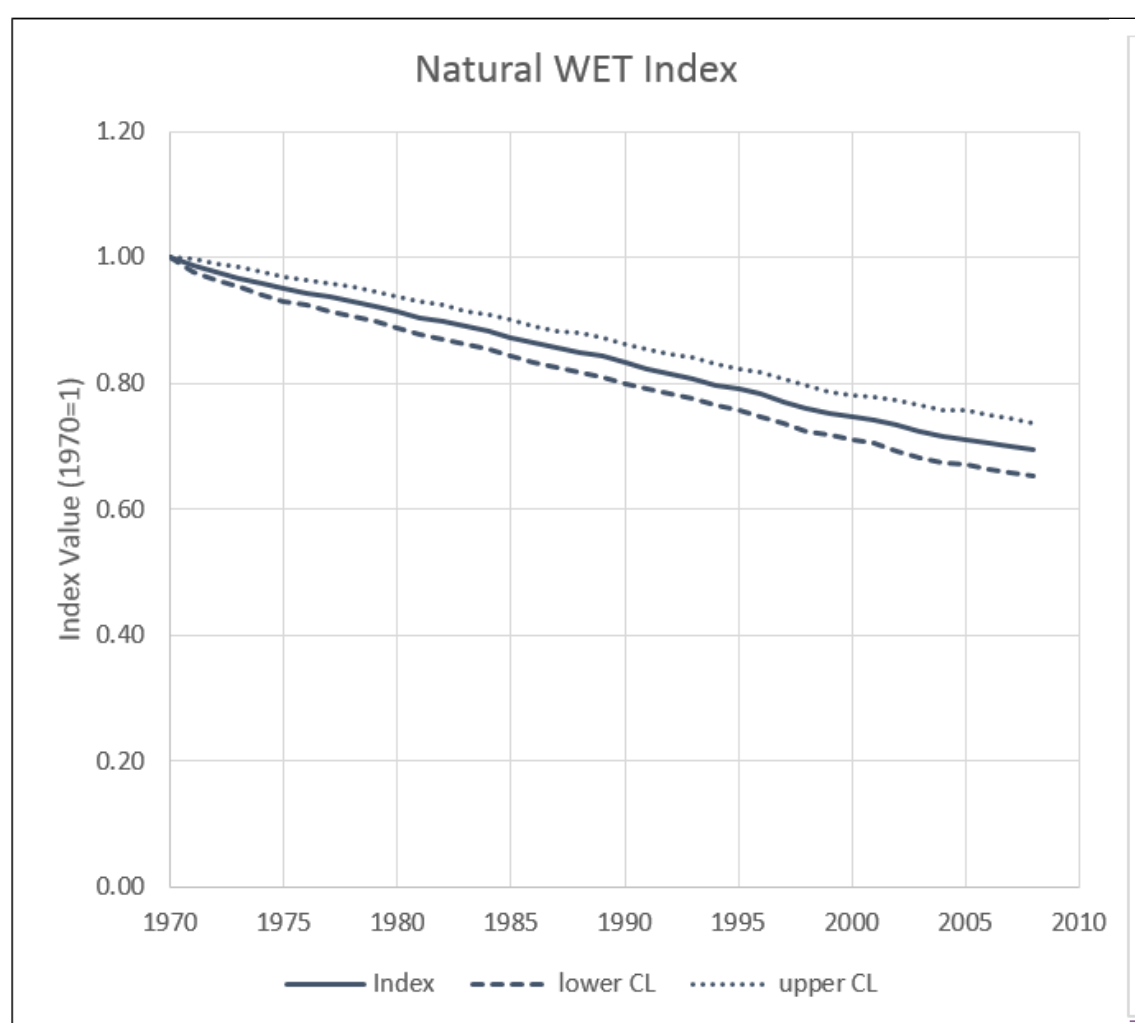
Transboundary Water Systems of the World. Data sources: IGRAC 2012 for aquifers, TWAP Lakes Group, Naturalearthdata for rivers, NOAA 2007 for LMEs

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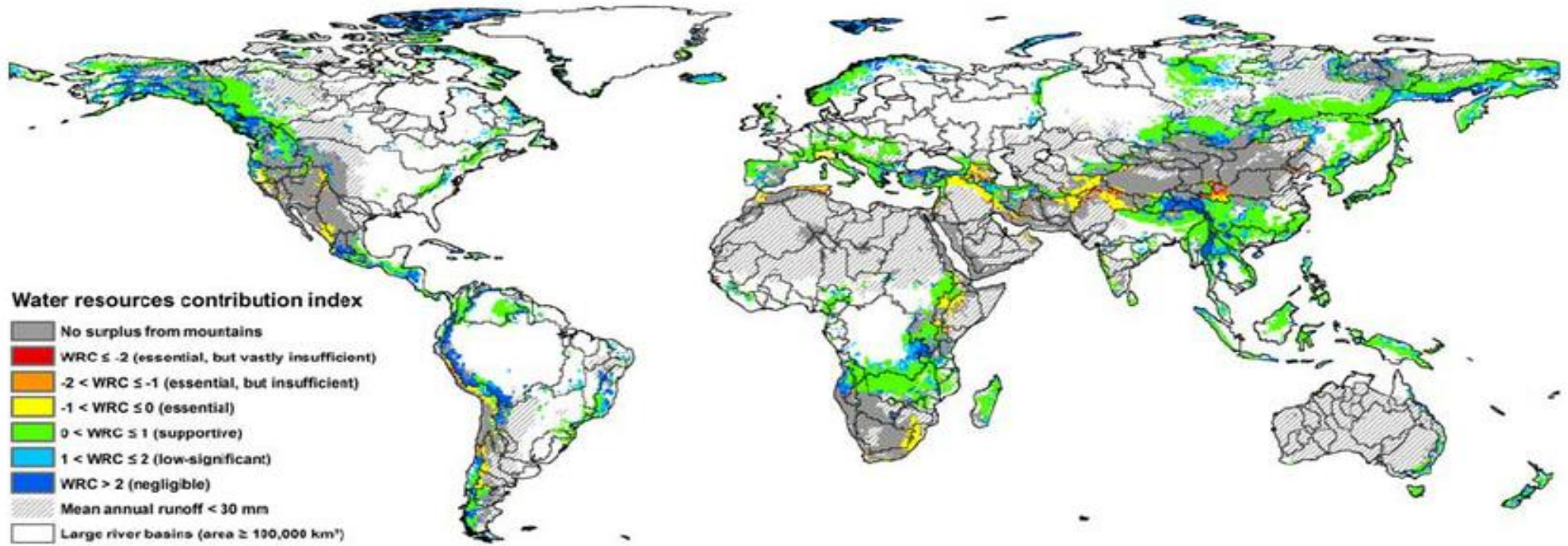
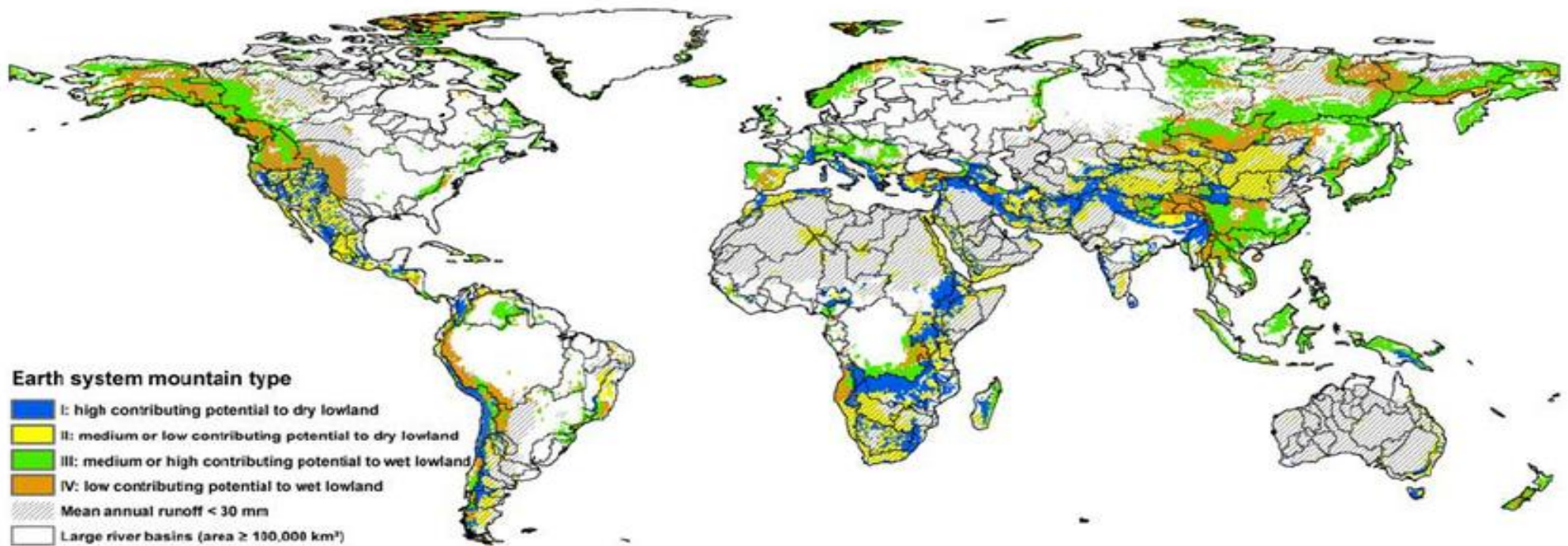
created by Peder Engstrom and Kate Brauman of the Institute on the Environment's Global Landscape Initiative. BGR & UNESCO (2008): Groundwater Resources of the World 1

Target 6.6 “By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes”



<https://www.bipindicators.net/indicators/wetland-extent-trends-index>

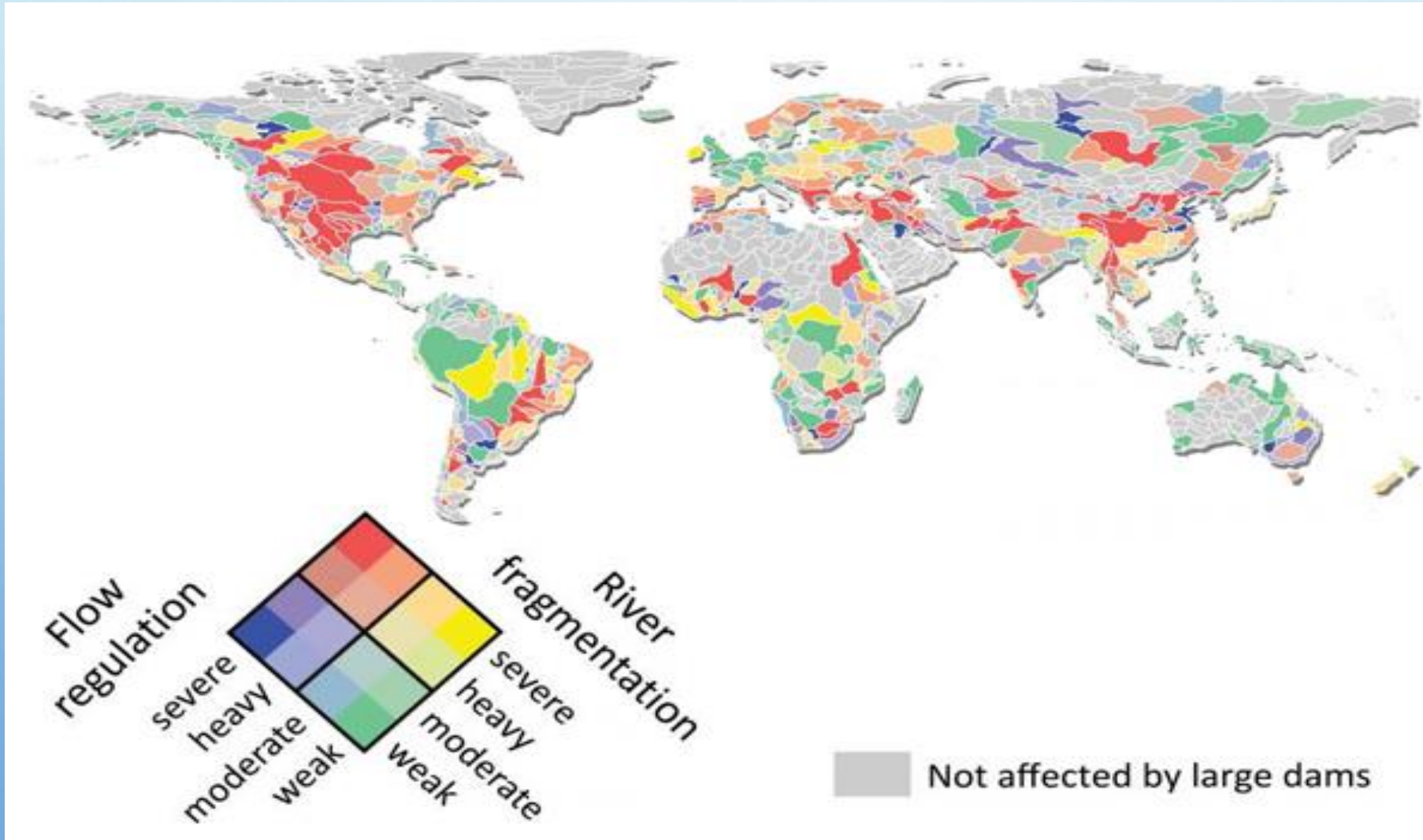
**Wetland
Extent Trends
Index**



Global map of Earth system mountain types (top, cf. Figure 2) and of water resources contribution index WRC (bottom, cf. Table 2)

<https://www.researchgate.net/figure/Global-map-of-Earth-system-mountain-types-top-cf-Figure-2-and-of-water-resources-fig2-228616164>

Target 6.6 “By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes”

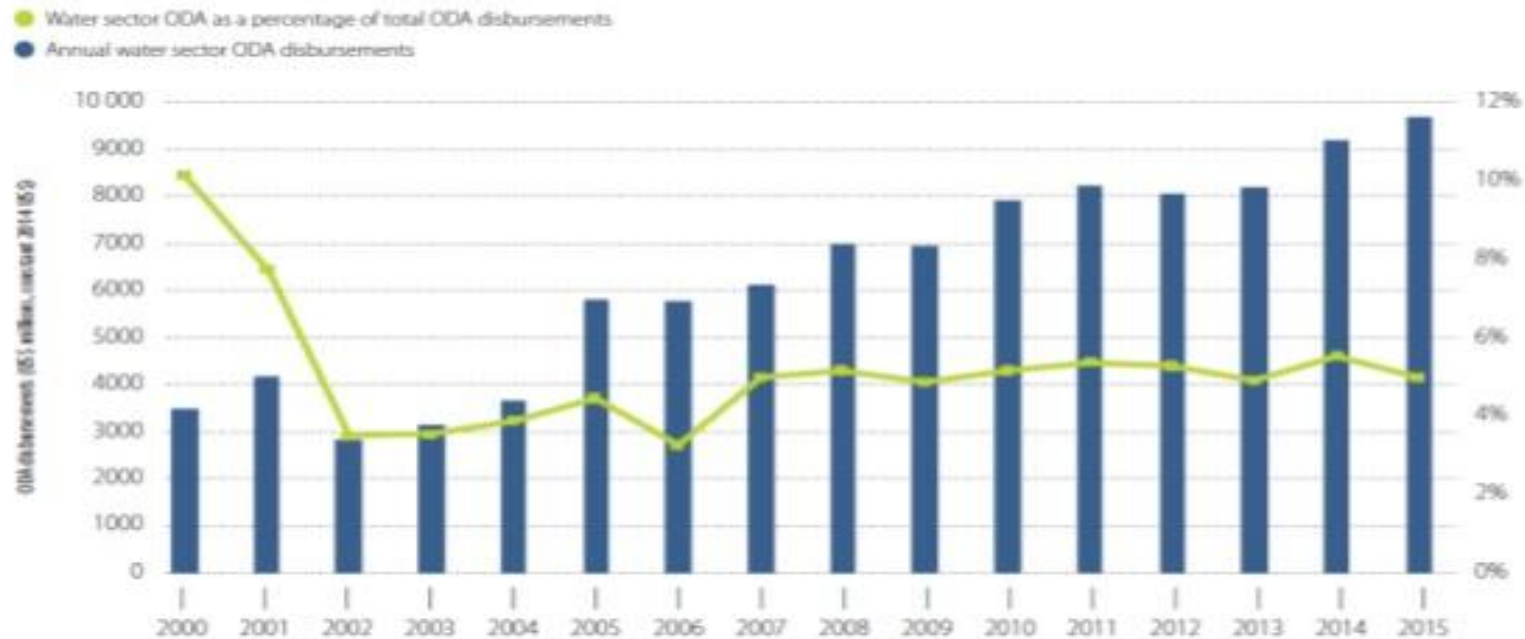


<http://iopscience.iop.org/article/10.1088/1748-9326/10/1/015001>

McGill University
: Dam impact matrix (DIM) for Sub-basin: Combining fragmentation and flow regulation indices for the current situation (2010).

Target 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”

Annual water sector ODA disbursements and as a percentage of total ODA



Source: OECD-CRS, 2016.

Target 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”

FOREIGN AID COMMITMENTS FOR WASH HAVE DECLINED

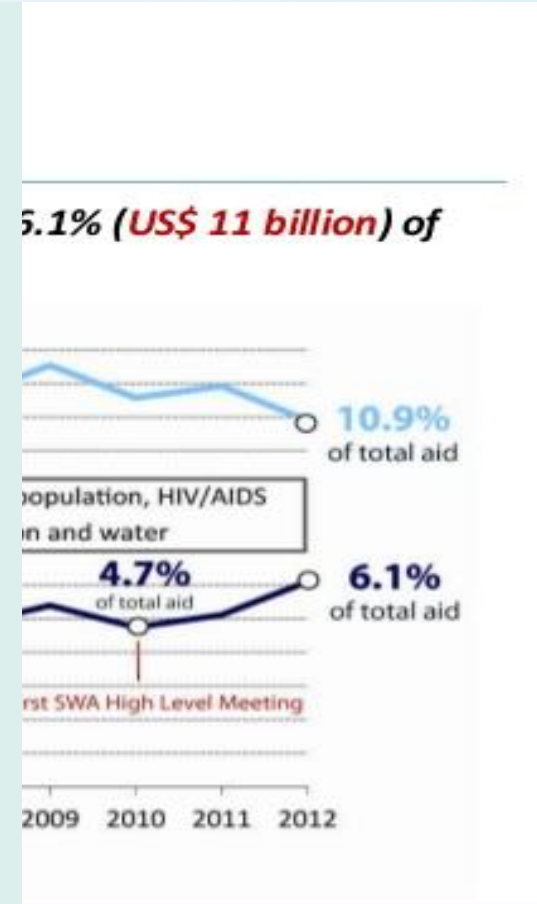
While international aid spending on WASH increased from

US\$6.3 BILLION TO US\$7.4 BILLION

between 2012 and 2015, future commitments declined from

US\$10.4 BILLION TO US\$8.2 BILLION

in the same period.

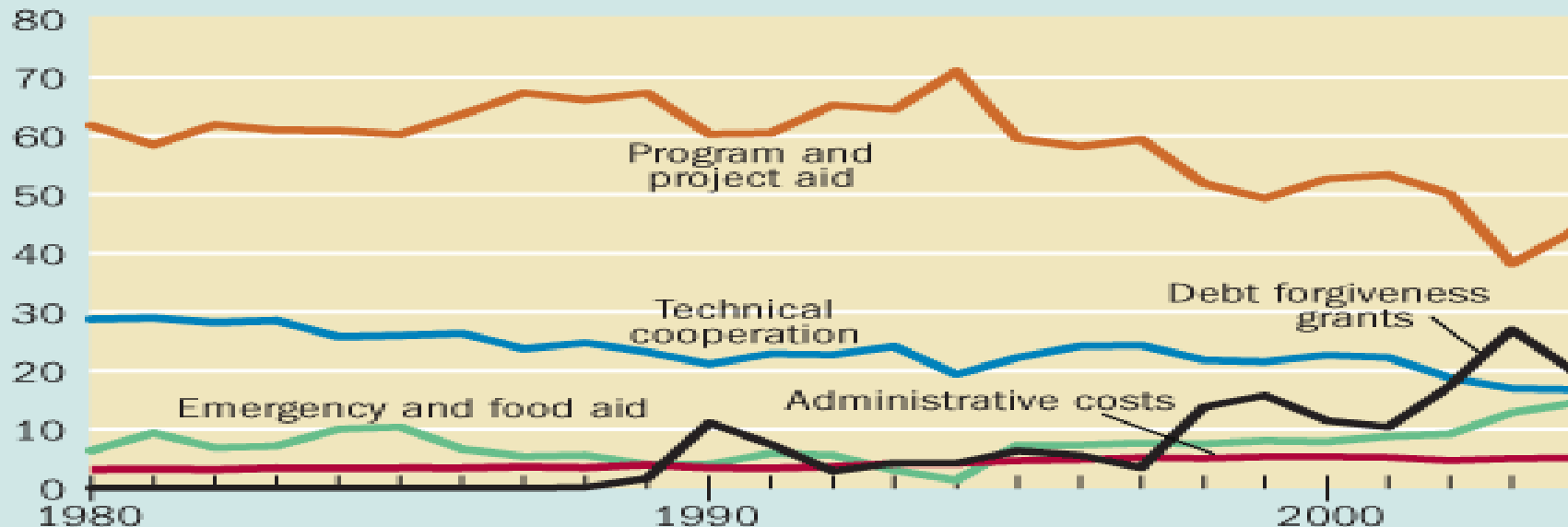


Target 6.a “By 2030, expand **international cooperation** and **capacity-building support** to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies”

Chart 3

The changing landscape of aid to Africa

The share of program and project aid has taken a big fall.
(percent of net ODA by aid instrument)

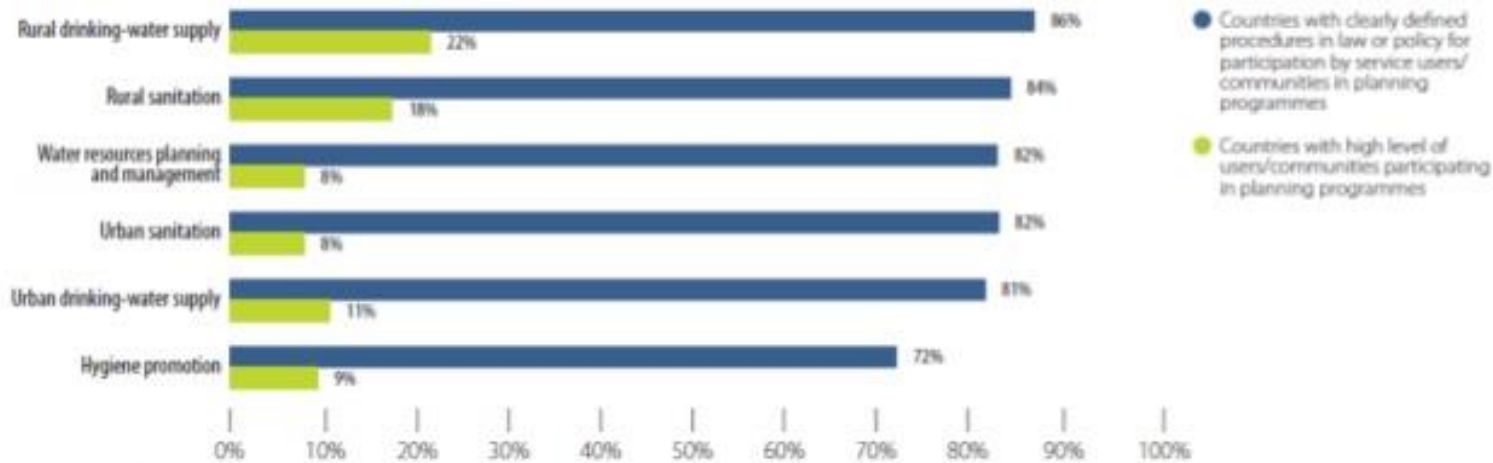


Source: OECD-DAC database.

Note: Aid categories follow OECD-DAC definitions. Program and project ODA refers to total net ODA less special-purpose grants (technical cooperation grants, food and emergency relief, and all debt forgiveness). Administrative costs are for bilateral ODA only and have been imputed for Africa based on global levels. Administrative costs are not reported by multilateral agencies. Debt relief before 1988 was small (less than 1 percent of ODA) and cannot be distinguished by recipient region.

Target 6.b “Support and strengthen the **participation of local communities** in improving water and sanitation management”

Countries with defined procedures in law or policy for participation by service users/communities, and extent of high user participation

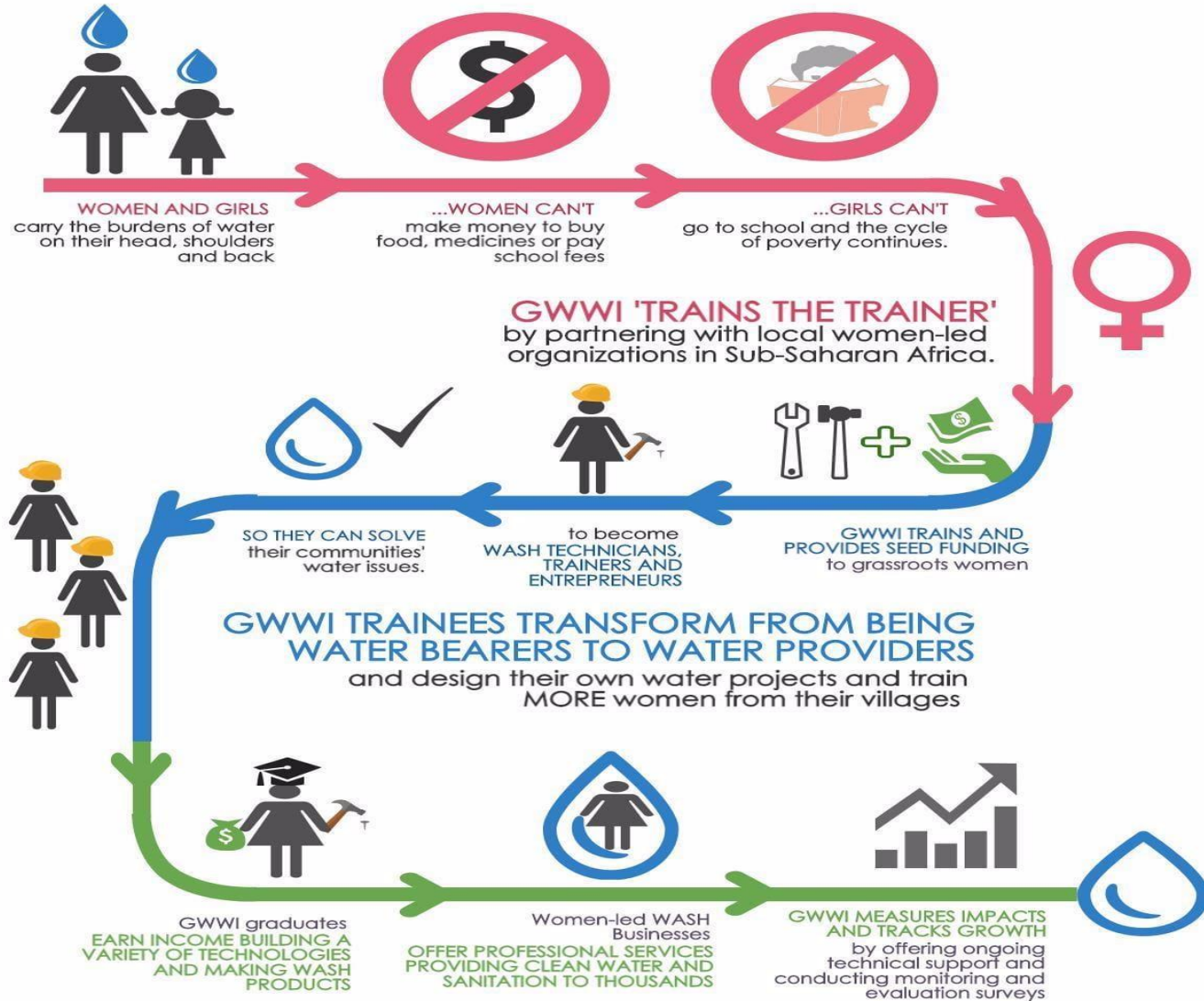


Source: GLAAS 2016/2017 country survey.

GWWI Ripple Effect

As water bearers and family caretakers, women and girls are disproportionately affected by the lack of access to water, sanitation and hygiene (WASH).

GLOBAL WOMEN'S WATER INITIATIVE IS CHANGING THAT.



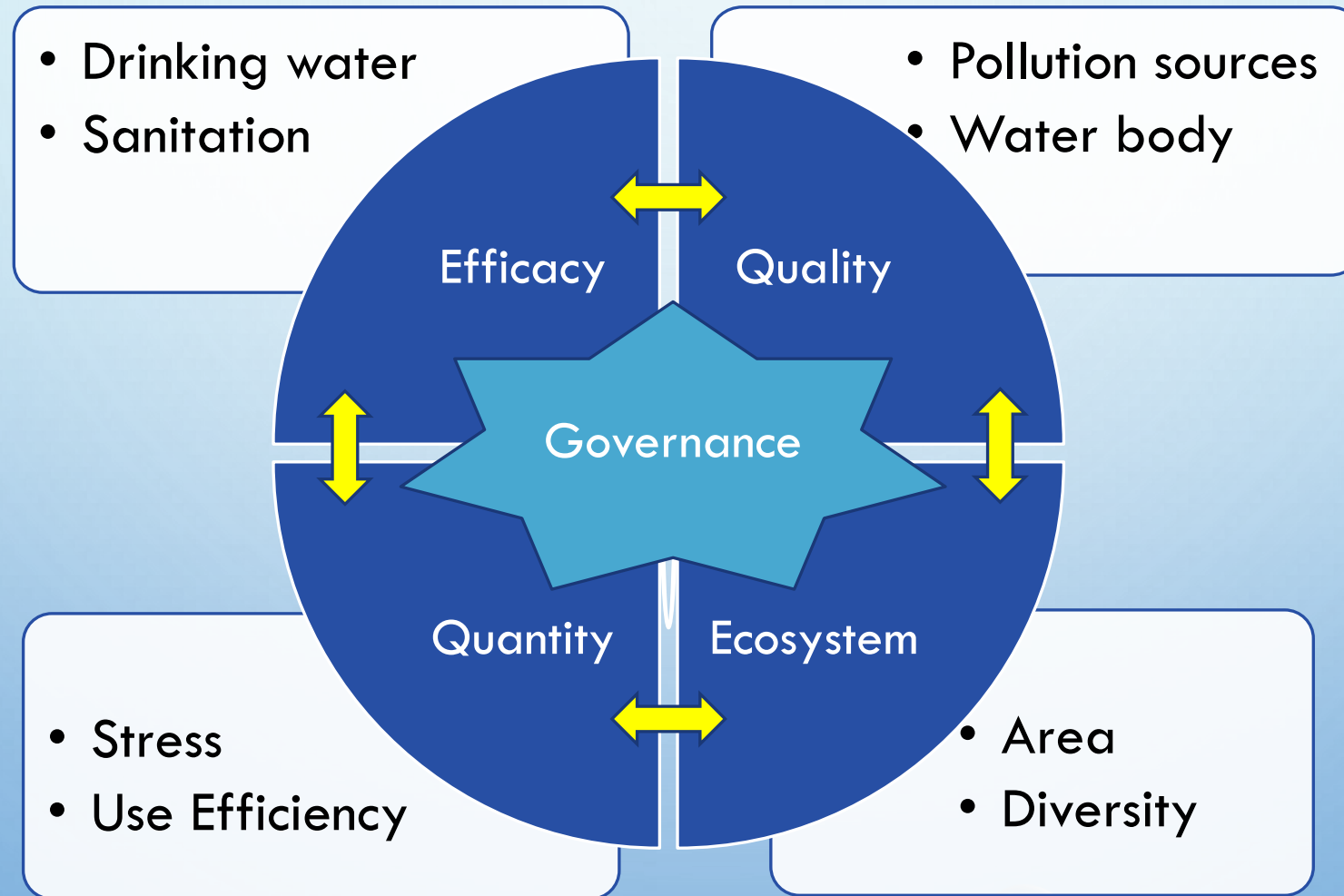
[HTTPS://WWW.GLOBALWOMENSWATER.ORG/WHAT](https://www.globalwomenswater.org/what)

FROM WATER BEARERS TO WATER PROVIDERS AND SOCIAL ENTREPRENEURS!

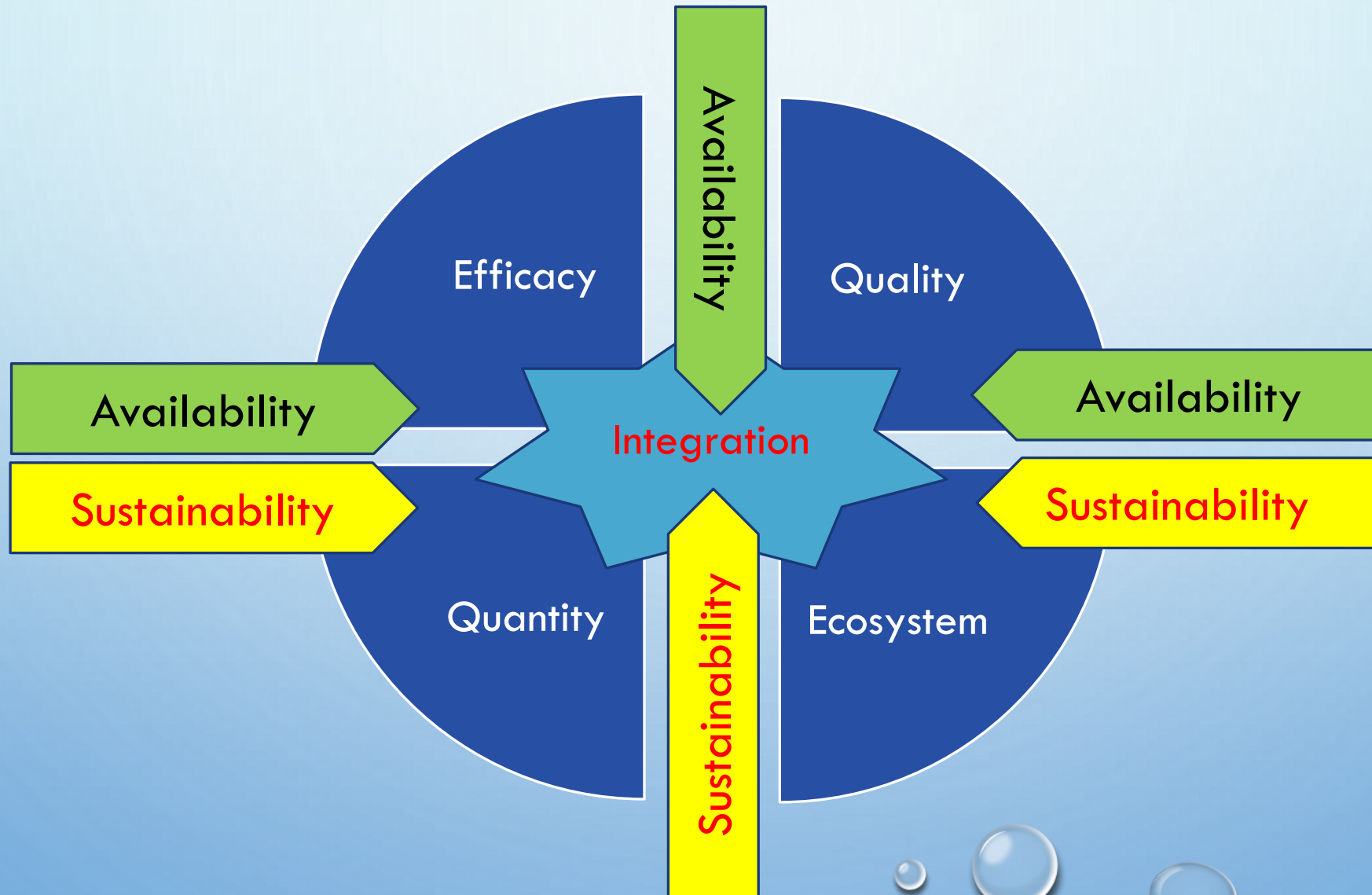
What Women Learn at the Academy

- ✓ **TECHNOLOGIES:** Rainwater harvesting systems, water storage tanks, water filters, toilets
- ✓ **WASH PRODUCTS:** Soap, shampoo, reusable menstrual pads, chlorine, latrine digesters
- ✓ **BUSINESS SKILLS:** Costing, budgeting, sales, marketing, resource mobilization
- ✓ **LEADERSHIP:** Community engagement and organizing, advocacy, public-speaking

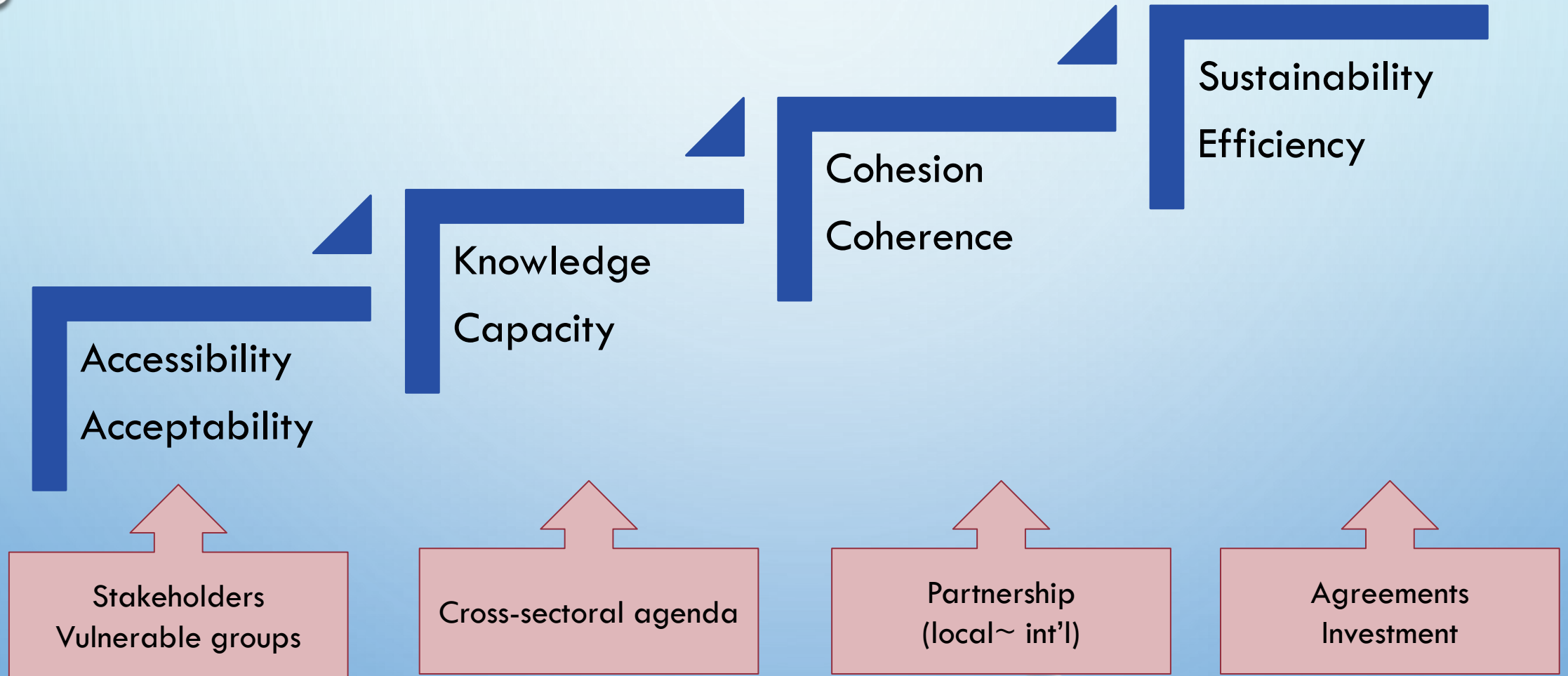
Conceptual Framework of SDG 6



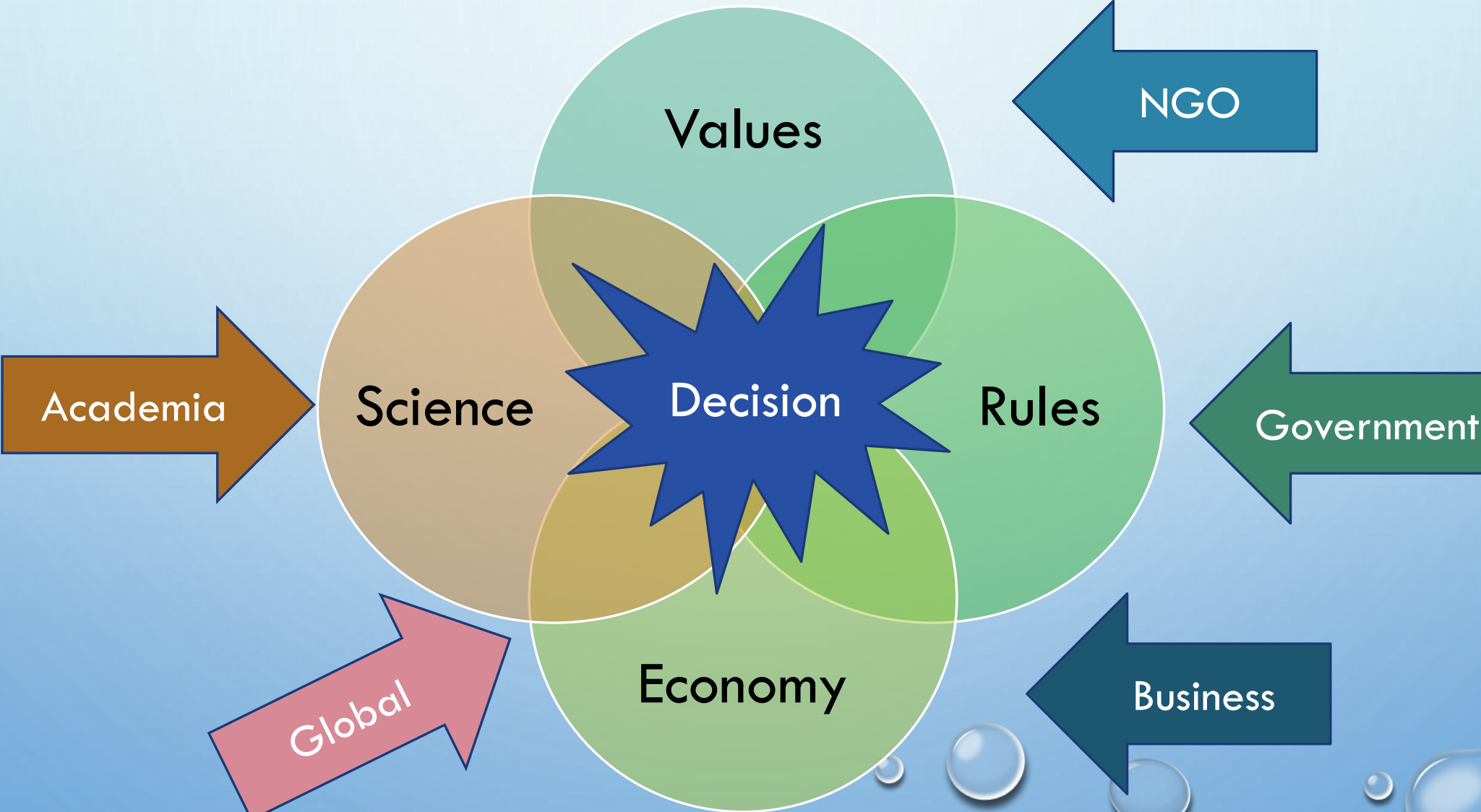
Availability and Sustainability of SDG 6



Inclusive Water Governance



Decision-Making Components and Players





Q & A

Hyun Jung Park, Ph.D.

Institute for Climate Change Action

climate@eco.re.kr