

# Water in Agenda 2030

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## Research priorities

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# Millennium Development Goals MDGs

- UN-led
- 8 goals and 21 targets, focusing on poverty reduction
- Relevant to low income countries
- 2 water and sanitation targets under MDG 7
- 3 core indicators on water and sanitation
- Monitoring through household surveys

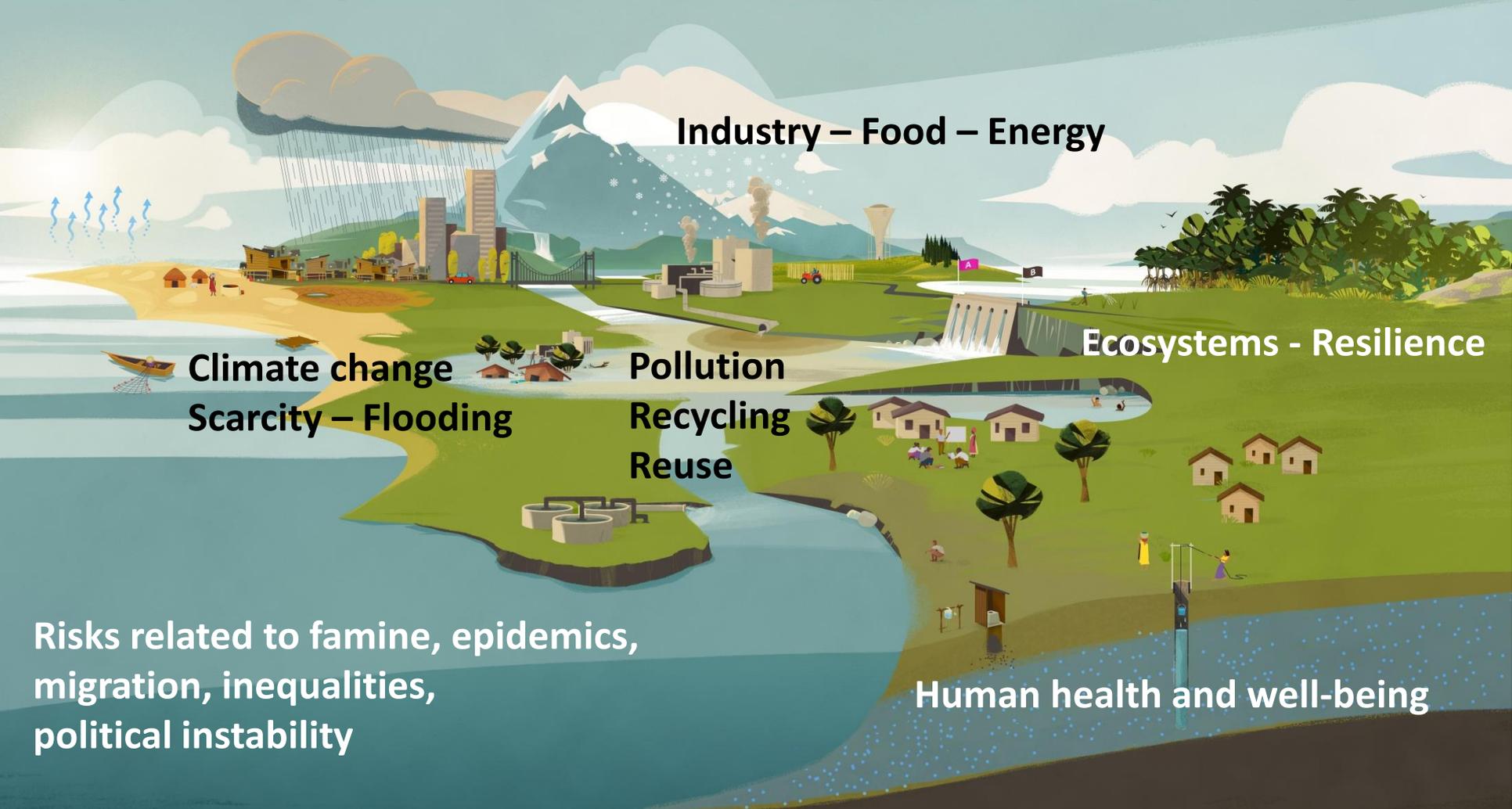
# Sustainable Development Goals SDGs

- Country-led
- 17 goals and 169 targets, focusing on the three pillars of sustainable development
- Relevant to all countries
- 8 water and sanitation targets under SDG 6 + 1 under SDG 11
- 12 core indicators on water and sanitation
- Monitoring by national authorities, feeding into regional and global reporting



# Water and sanitation at the core of sustainable development

Integrated management – across sectors and regions – balancing competing needs



Industry – Food – Energy

Ecosystems - Resilience

Pollution  
Recycling  
Reuse

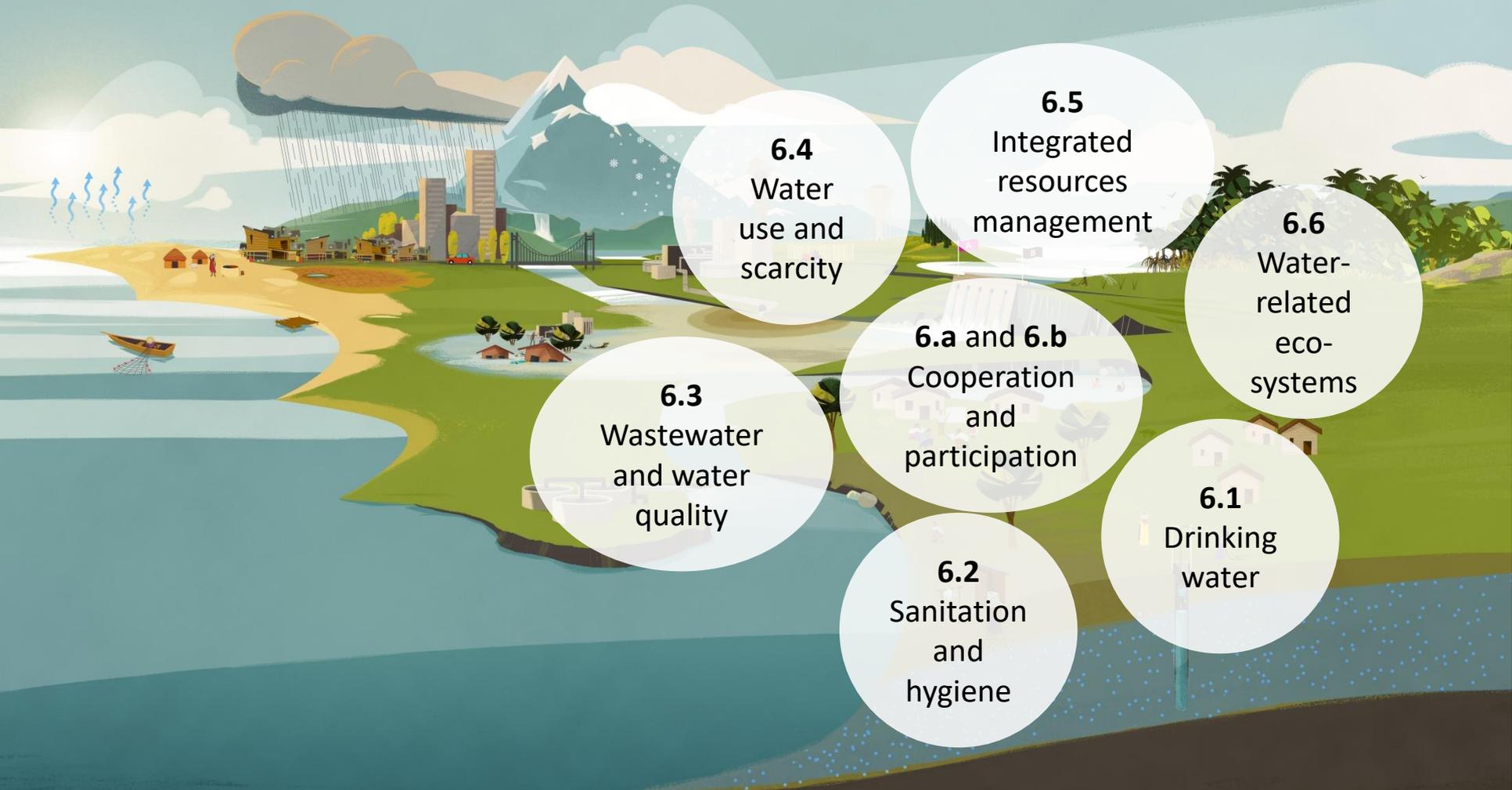
Climate change  
Scarcity – Flooding

Human health and well-being

Risks related to famine, epidemics,  
migration, inequalities,  
political instability

# SDG 6 global indicators and methodologies

“Ensure availability and sustainable management of water and sanitation for all”



**6.4**  
Water  
use and  
scarcity

**6.5**  
Integrated  
resources  
management

**6.6**  
Water-  
related  
eco-  
systems

**6.a and 6.b**  
Cooperation  
and  
participation

**6.3**  
Wastewater  
and water  
quality

**6.1**  
Drinking  
water

**6.2**  
Sanitation  
and  
hygiene

# Interlinkages

**Focus:** target-level interlinkages

**Framework:** social – economic – environmental dimensions

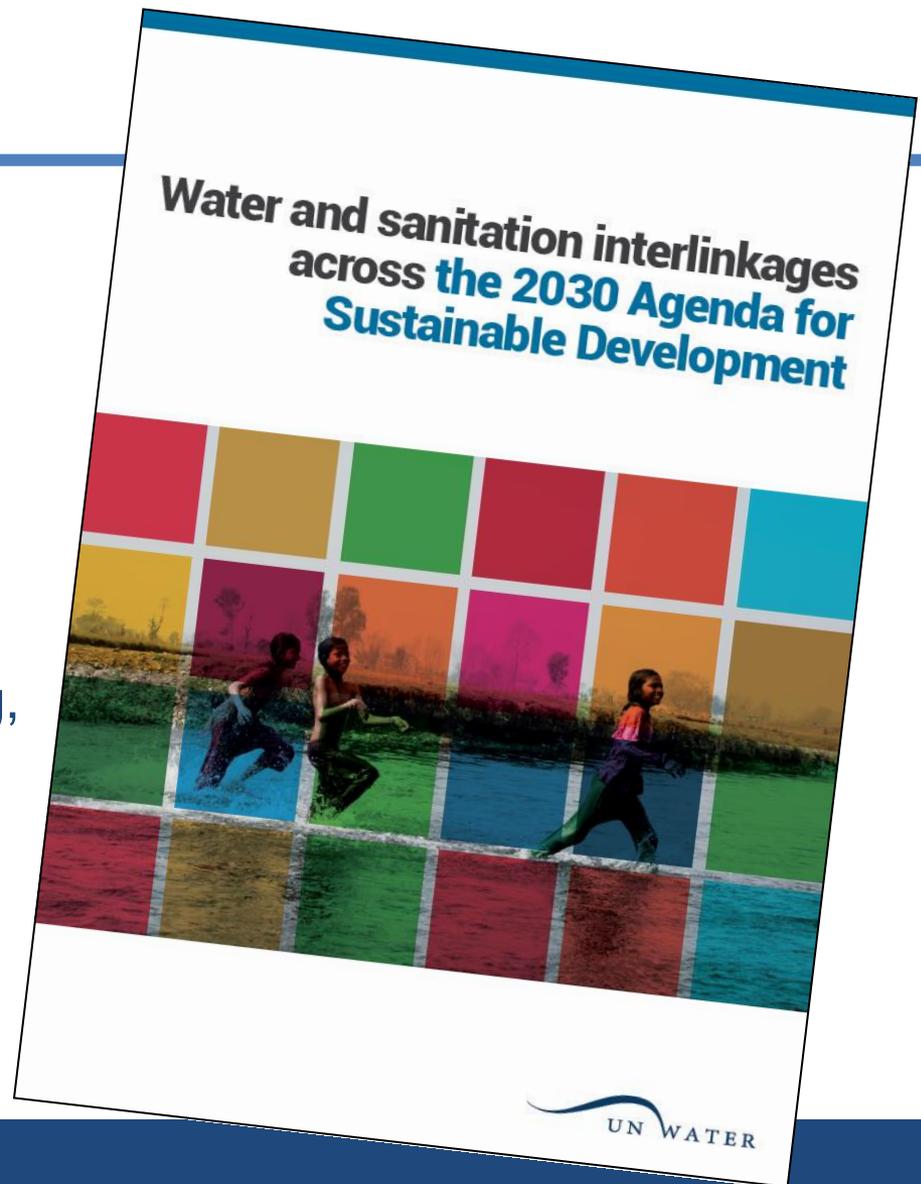
**Types of links:**



**Synergies:** mutually reinforcing, positive interdependencies



**Potential conflict:** positive aspects, but also potential conflicts

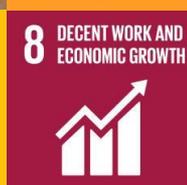


# Social dimension interlinkages



- WASH → reduced burden of disease and malnutrition / time for, and access to, education, economics activities, politics
- Water and ecosystem resources → access to basic services → increased pressure on natural resources ← IWRM
- IWRM ↔ institutional capacity, participation, transparency

→ Reduced poverty and inequalities, increased resilience



# Economic dimension interlinkages

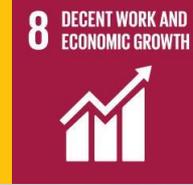
- Water and ecosystem resources → economic growth and development → pressure on natural resources ← IWRM and sustainable practices
  - WASH → healthy workforce → economic growth and development
  - Disaster risk reduction → resilient economies
- Reduced poverty and inequalities + resources for WASH, ecosystem protection, disaster risk reduction



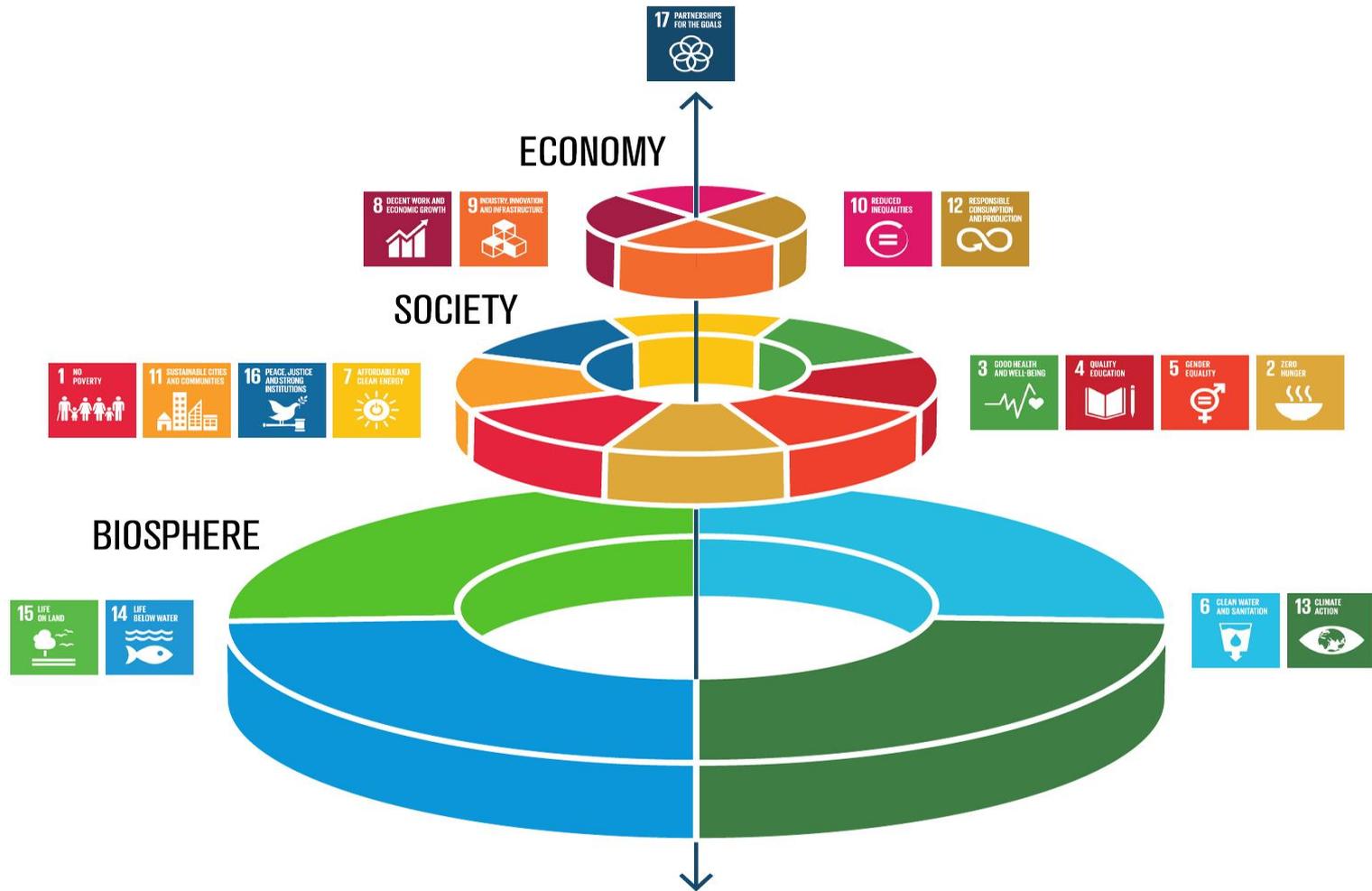
# Environmental dimension interlinkages



- Ecosystem protection and climate change mitigation  $\leftrightarrow$  improved water quality and quantity, disaster protection
- Wastewater treatment and water use efficiency  $\rightarrow$  resilient terrestrial and marine ecosystems
- Social and economic development  $\rightarrow$  pressure on natural resources  $\leftarrow$  IWRM and sustainable practices

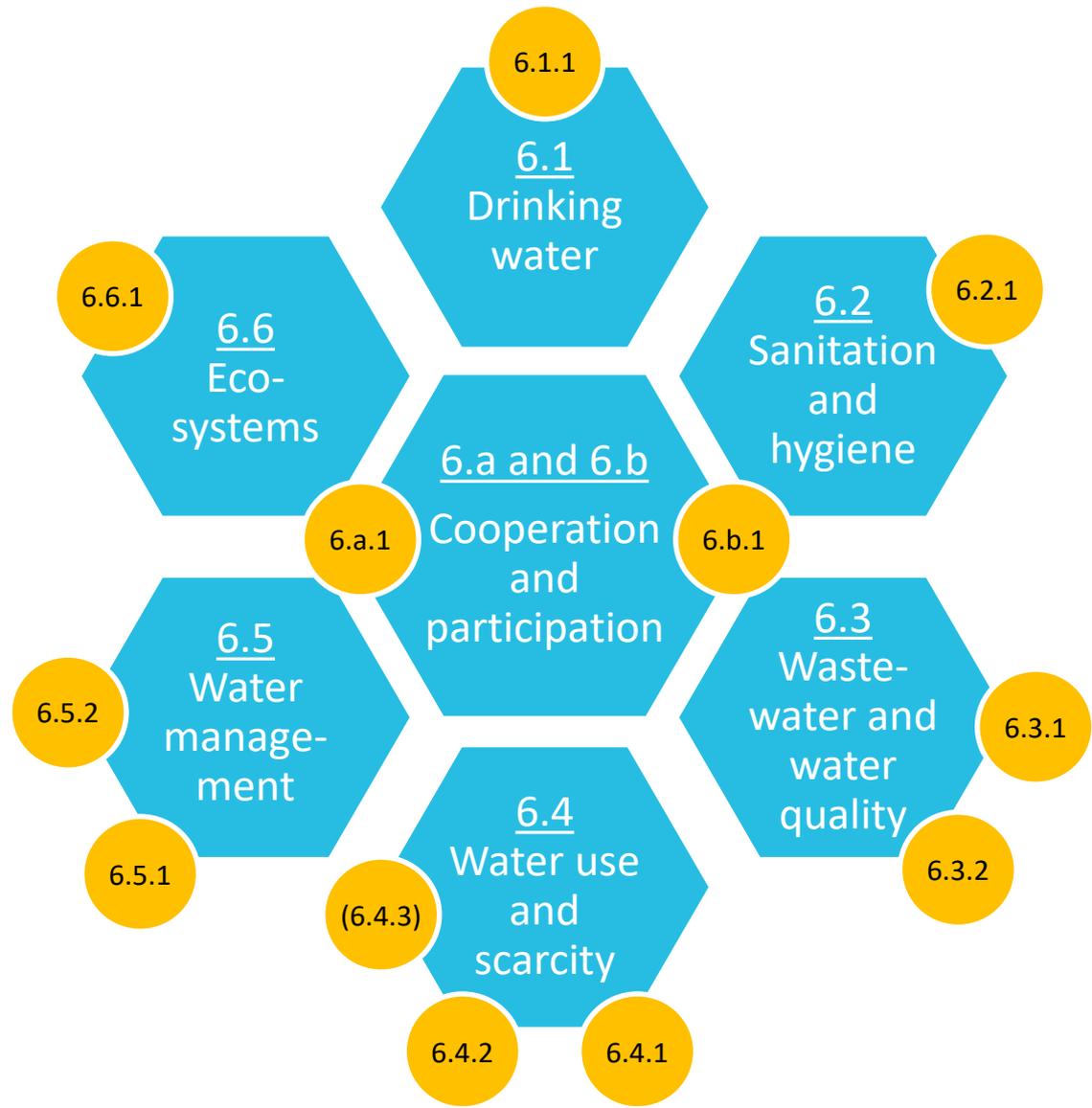


# Sustainable development in Agenda 2030



Source: EAT 2016 Conference – Presentation by Professor Johan Rockström, Executive Director - Stockholm Resilience Centre, and Pavan Sukhdev, Founder & CEO GIST Advisory, UN Goodwill Ambassador

# SDG 6 global indicators



|       |  |
|-------|--|
| 6.1.1 | Safely managed drinking water services (WHO, UNICEF)   |
| 6.2.1 | Safely managed sanitation and hygiene services (WHO, UNICEF)   |
| 6.3.1 | Wastewater safely treated** (WHO, UN-Habitat)  |
| 6.3.2 | Good ambient water quality** (UNEP)  |
| 6.4.1 | Water use efficiency** (FAO)   |
| 6.4.2 | Level of water stress* (FAO)   |
| 6.5.1 | Integrated water resources management (UNEP)   |
| 6.5.2 | Transboundary basin area with water cooperation** (UNECE, UNESCO)  |
| 6.6.1 | Water-related ecosystems** (UNEP)  |
| 6.a.1 | Water- and sanitation-related official development assistance that is part of a government coordinated spending plan (WHO, UNEP, OECD) |
| 6.b.1 | Participation of local communities in water and sanitation management (WHO, UNEP, OECD)  |



# Water research priorities – a simple typology

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## A) Track status/progress:

- Reliable monitoring tools
- Filling data gaps
- Scaling global-national-local
- Disaggregation

## B) Understand causes and effects:

- Drivers, barriers
- Impacts
- Interlinkages

# Water research priorities – a simple typology

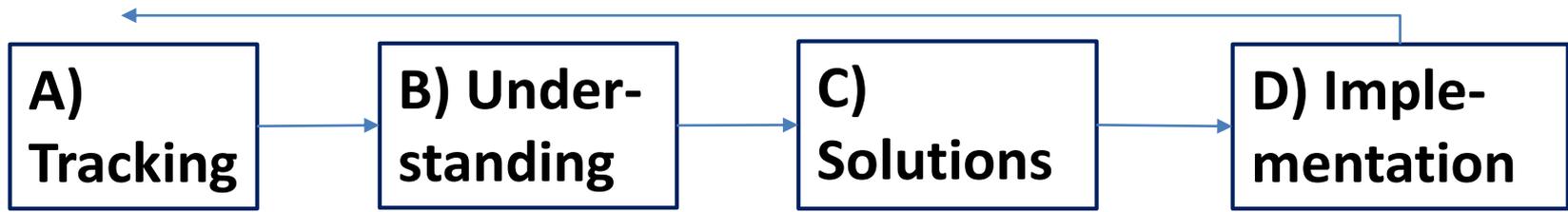
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## C) Provide solutions:

- Technological innovation
- Applicability, simplification
- Mobilize indigenous know-how

## D) Accelerate implementation:

- Financing, cost recovery
- Capacity development
- Incentives for positive change
- Fast-tracking innovative solutions



- So, how does that look for each of the SDG-6 target areas?
- Examples of specific research priorities
- Level of urgency:

Adequate

Improve

Critical

# Target 6.1

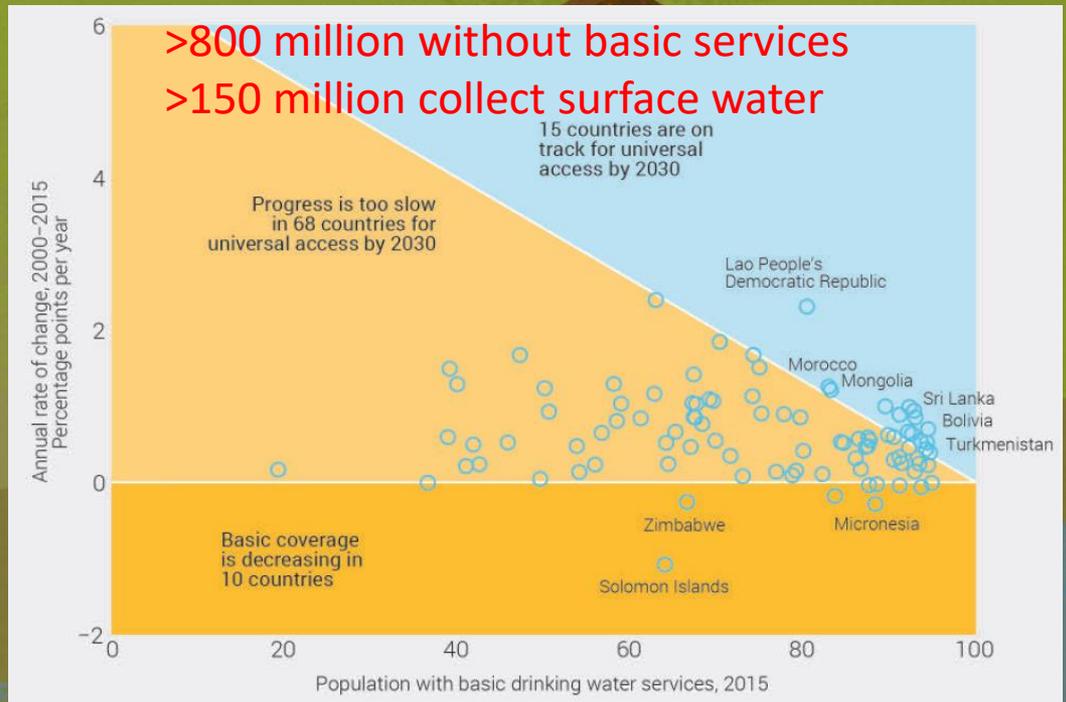
## Drinking water

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

6.1.1 Proportion of population using safely managed drinking water services

6.1 Implementation:

- Cost recovery



6.1 Solutions:

- off-grid water collection,
- household water purification

# Target 6.2

## Sanitation and hygiene

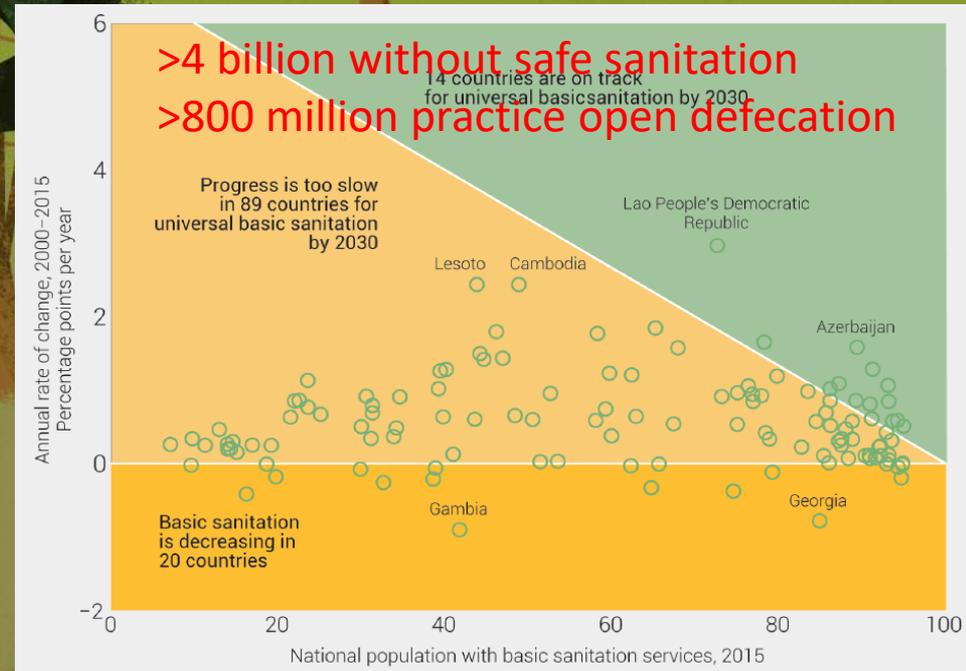
“By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, ....”

6.2.1 Proportion of population using safely managed sanitation services, ...

Understand interlinkages bt WASH and water quality

6.2 Implementation:

- behavioural change,
- overcome taboos



6.2 Solutions:

- dry sanitation,
- separate feces and urine,
- use nutrients

# Target 6.3

## Water quality and wastewater

“By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, ...”

Understand new pollutants, impacts, fate. Integrate WQ in hydrological models

6.3.1 Proportion of wastewater safely treated

6.3.2 Proportion of bodies of water with good ambient water quality

6.3 Solutions:

- Nature-based solutions (CNP)
- Product replacement

6.3 Implementation:

- Incentives, cost recovery
- Feed-back from down to up-stream

Trend of BOD in-stream concentration

- not computed
- not increasing
- increasing trend
- increasing trend of particular concern



# Target 6.4

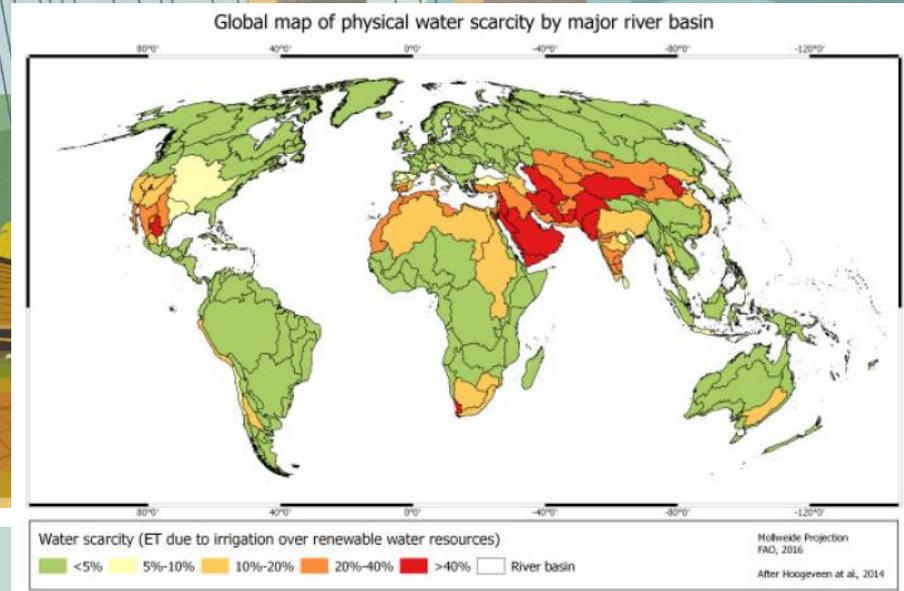
## Water use and scarcity

“By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity ...”

6.4.1 Change in water use efficiency over time

6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources

Water foot print and virtual water  
Scarcity in rel. to the hydrological cycle and climate change/variability



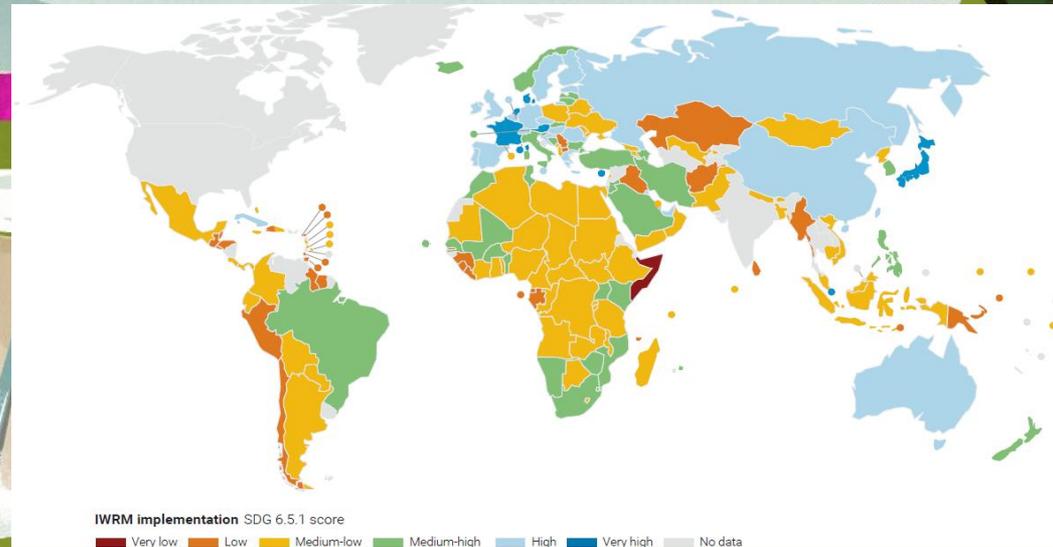
6.2 Solutions: WE technologies for irrigation, industry and households

6.2 Implementation:  
Water pricing/valuation

# Target 6.5

## Water resources management

“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)

6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation

IWRM: Understand “Integrated”

6.5 Solutions:  
e-governance, Water Information Systems

6.5 Implementation:  
Basin vs admin boundaries (WR vs IM)

# Target 6.6

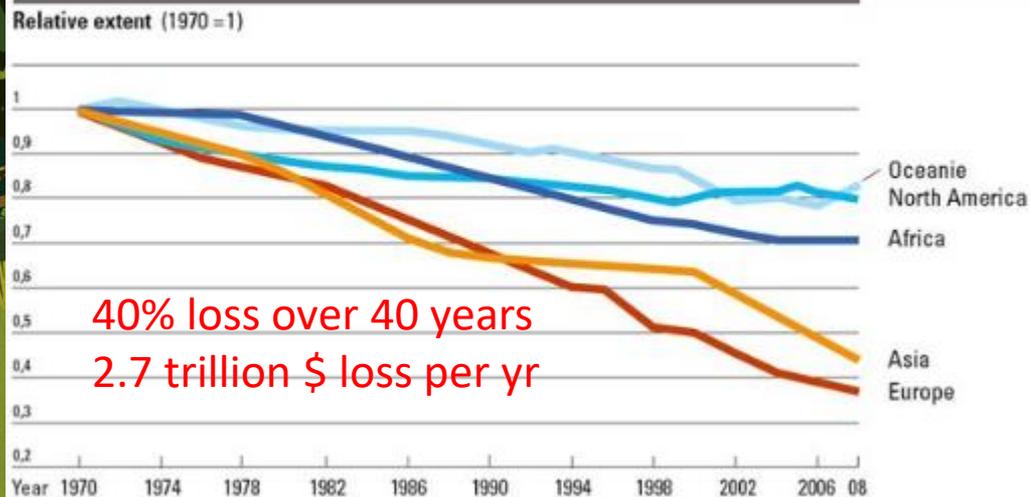
## Water-related ecosystems

“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

Understand: multiple stresses, tolerance limits, tipping points, fragmentation.  
Ecosystem services (valuation)

### Wetlands Extent Index 1970-2008



- Nature-Based Solutions
- Ecosystem restoration
- Payment for Ecosystem Services

**'Score card'  
for  
discussion**

Adequate

Improve

Critical

*Tracking*

*Understand*

*Solutions*

*Implement*

|                                  | <i>Tracking</i> | <i>Understand</i> | <i>Solutions</i> | <i>Implement</i> |
|----------------------------------|-----------------|-------------------|------------------|------------------|
| <b>6.1 Drinking water supply</b> | Adequate        | Adequate          | Improve          | Improve          |
| <b>6.2 Sanitation</b>            | Adequate        | Adequate          | Improve          | Critical         |
| <b>6.3 Water quality</b>         | Critical        | Improve           | Improve          | Improve          |
| <b>6.4 Productive uses</b>       | Improve         | Improve           | Improve          | Critical         |
| <b>6.5 Water management</b>      | Adequate        | Improve           | Improve          | Improve          |
| <b>6.6 Ecosystems</b>            | Critical        | Critical          | Improve          | Improve          |

Missing: 6.a (cooperation) and 6.b (participation) – both linked to target 6.5 IWRM  
 Interlinkages and Nexes: Food, Energy, Health, Climate, Source-to-Sea, .....

# Thank you

[www.unwater.org](http://www.unwater.org)

[www.sdg6monitoring.org](http://www.sdg6monitoring.org)



UN HABITAT



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization



**'Score card'  
for  
discussion**

|          |
|----------|
| Adequate |
| Improve  |
| Critical |

*Tracking*

*Understand*

*Solutions*

*Implement*

|                           |          |          |         |          |
|---------------------------|----------|----------|---------|----------|
| 6.1 Drinking water supply | Adequate | Adequate | Improve | Improve  |
| 6.2 Sanitation            | Adequate | Adequate | Improve | Critical |
| 6.3 Water quality         | Critical | Improve  | Improve | Improve  |
| 6.4 Productive uses       | Improve  | Improve  | Improve | Critical |
| 6.5 Water management      | Adequate | Improve  | Improve | Improve  |
| 6.6 Ecosystems            | Critical | Critical | Improve | Improve  |

Missing: 6.a (cooperation) and 6.b (participation) – both linked to target 6.5 IWRM  
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