# World Health Organization

# SDGs: Linking water and health

Workshop: Reducing water pollution from pharmaceuticals

Zaragoza, Spain, 13 December 2013

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# 6 CLEAN WATER AND SANITATION

"Ensure availability and sustainable management of water and sanitation for all"

**6.1** on drinking water

**6.2** on sanitation

**6.3** on fresh water quality

**6.A** on international cooperation

**6.B** on community participation

# 3 GOOD HEALTH AND WELL-BEING

Universal WASH is fundamental for achieving several health-related SDGs including:

**3.1** reducing maternal mortality

**3.2** ending preventable deaths of newborns and children under 5 years of age

**3.3** ending NTDs and combating waterborne disease

**3.8** achieving universal health coverage

**3.9** reducing deaths and illness from water contamination

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# SDG 6: Good news for health?

- Aspiration for universal WASH access
- Focus on reducing inequalities
- Focus on safely managed services (rather than infrastructure)
- Hygiene is included in targets
- Institutional settings (health facilities, schools) are monitored
- Emphasis on the enabling environment

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# Global inequalities in WASH services



**Seven out of ten people used safely managed drinking water services in 2017**

Legend:
- Surface water
- Unimproved
- Limited
- Basic
- Safely managed

2000: Surface water 4, Unimproved 12, Limited 3, Basic 20, Safely managed 61
2017: Surface water 2, Unimproved 6, Limited 3, Basic 19, Safely managed 71

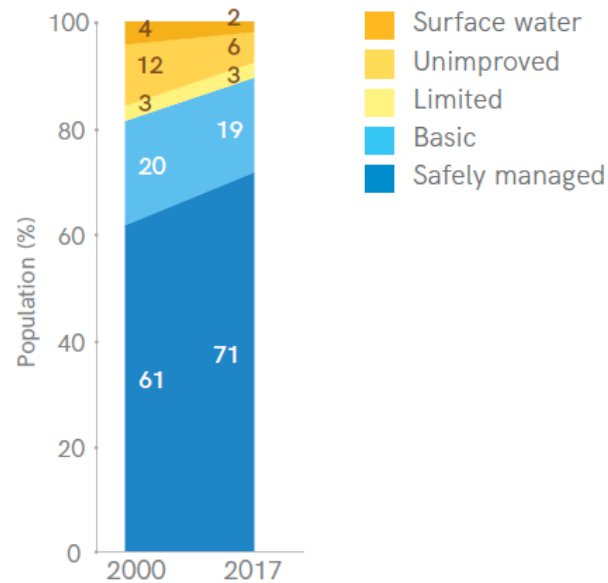FIGURE 1 ▶ Global drinking water coverage, 2000-2017 (%)

**Four out of ten people used safely managed sanitation services in 2017**

Legend:
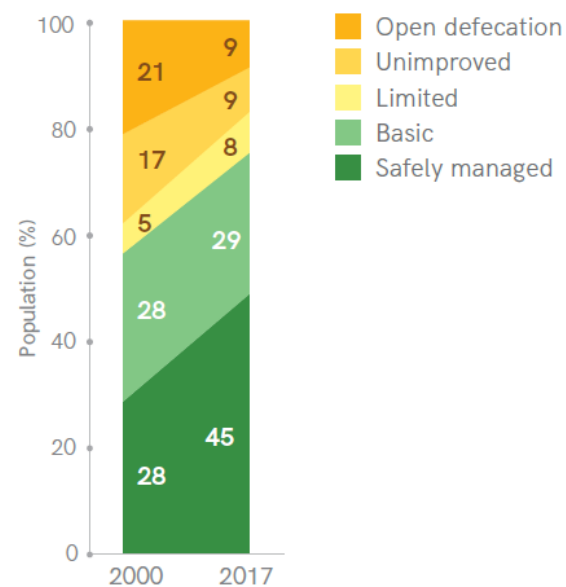- Open defecation
- Unimproved
- Limited
- Basic
- Safely managed

2000: Open defecation 21, Unimproved 17, Limited 5, Basic 28, Safely managed 28
2017: Open defecation 9, Unimproved 9, Limited 8, Basic 29, Safely managed 45

FIGURE 4 ▶ Global sanitation coverage, 2000-2017 (%)

**Three out of five people had basic handwashing facilities in 2017**

Legend:
- No Facility
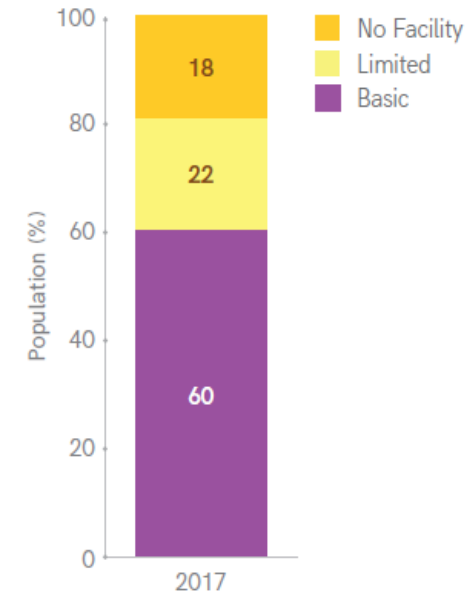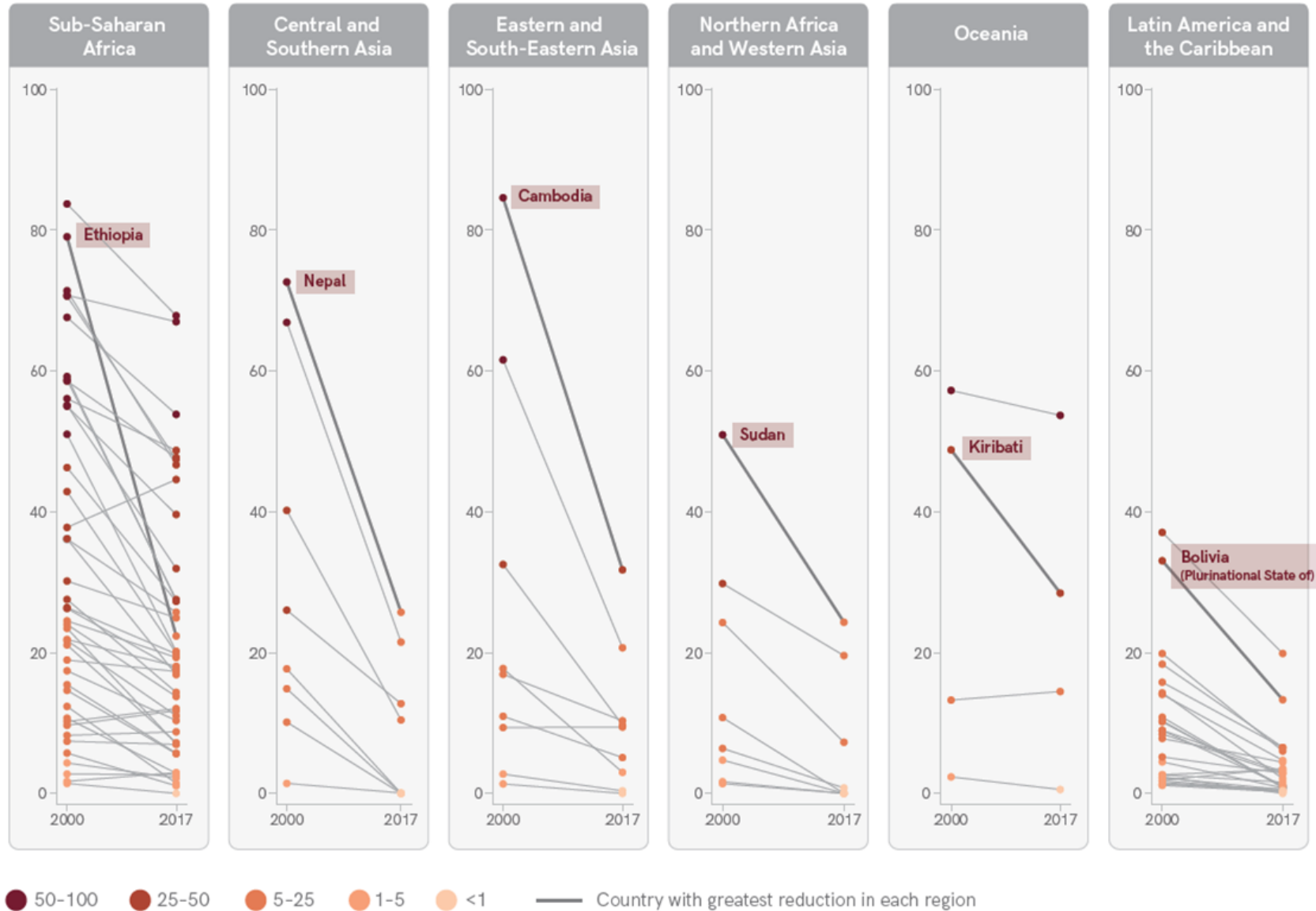- Limited
- Basic

2017: No Facility 18, Limited 22, Basic 60

FIGURE 7 ▶ Global handwashing coverage, 2017 (%)

World Health Organization    WHO UNICEF JMP    unicef

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# Eliminating open defecation



Rates of reduction in open defecation vary widely between countries in SDG regions

# Inequalities in progress towards universal access



**40 out of 152 countries are on track to achieve 'nearly universal' basic sanitation services by 2030, but progress is slower in rural areas and among the poorest wealth quintile**
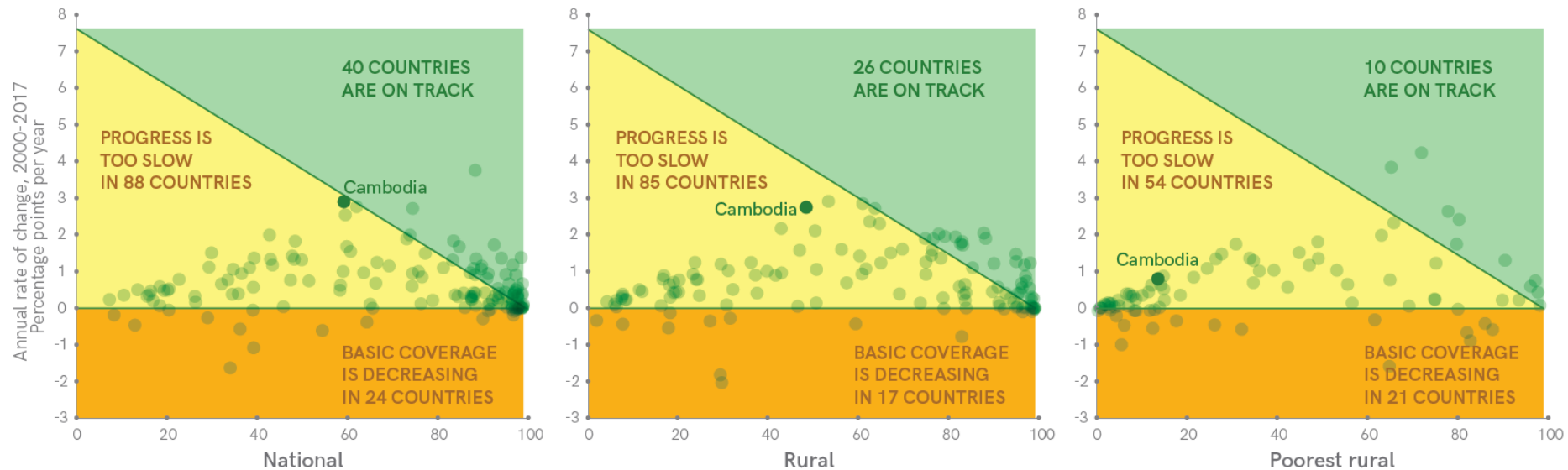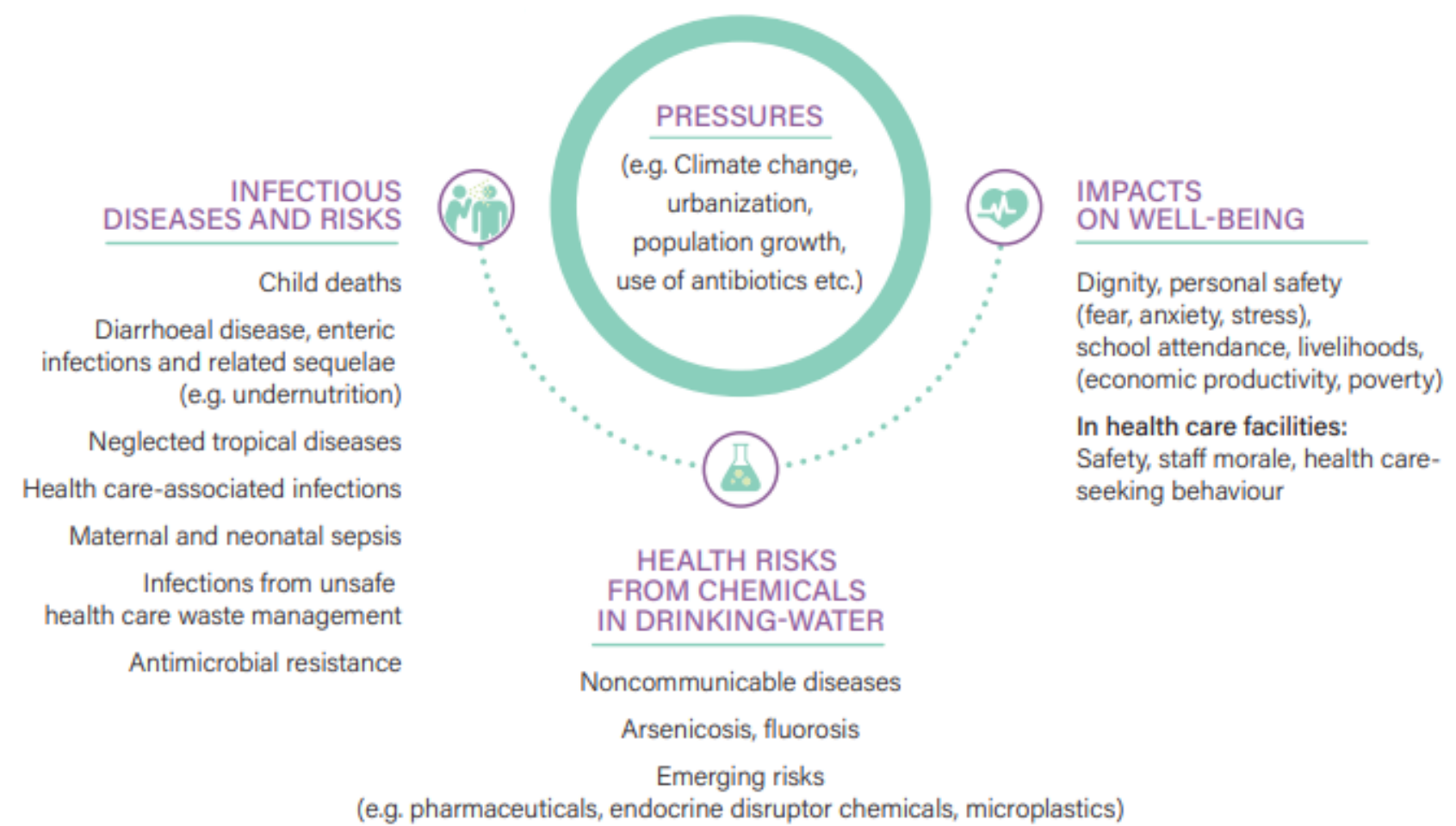
National / Rural / Poorest rural

FIGURE 38 ▶ Progress towards universal basic sanitation services by national, rural and poorest wealth quintile (2000-2017) among countries with <99% coverage in 2017
Note: Includes countries with trend data available and with >1% national (n=152), rural (n=128) and poorest rural (n=85) lacking basic services in 2017

# WASH in health care facilities

- 1 in 4 health care facilities in sub-Saharan Africa have no water services, and 1 in 3 have no sanitation service

- More than <u>1 million </u>deaths each year are associated with unclean births - most of these deaths occur in low- and middle-income countries

- Up to 20% of women in sub-Saharan Africa get a wound infection after a caesarean section

- 2019 World Health Assembly resolution lays out concrete steps to address this issue:

  - Develop national action plans
  - Set and implement environmental health standards for health care facilities
  - Strengthen health workforce
  - Use tools such as WASH- FIT to help identify and prioritize risks and develop improvement plans

# WASH-related diseases and risks



**PRESSURES** (e.g. Climate change, urbanization, population growth, use of antibiotics etc.)

**INFECTIOUS DISEASES AND RISKS**

Child deaths

Diarrhoeal disease, enteric infections and related sequelae (e.g. undernutrition)

Neglected tropical diseases

Health care-associated infections

Maternal and neonatal sepsis

Infections from unsafe health care waste management

Antimicrobial resistance

**HEALTH RISKS FROM CHEMICALS IN DRINKING-WATER**

Noncommunicable diseases

Arsenicosis, fluorosis

Emerging risks (e.g. pharmaceuticals, endocrine disruptor chemicals, microplastics)

**IMPACTS ON WELL-BEING**

Dignity, personal safety (fear, anxiety, stress), school attendance, livelihoods, (economic productivity, poverty)

**In health care facilities:** Safety, staff morale, health care-seeking behaviour

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# Disease burden from inadequate WASH, 2016

| DISEASE | DEATHS | DALYS (THOUSANDS) | POPULATION-ATTRIBUTABLE FRACTION |
|---|---|---|---|
| Diarrhoeal diseases | 828 651 | 49 774 | 0.60 |
| Soil-transmitted helminth infections | 6 248 | 3 431 | 1 |
| Acute respiratory infections | 370 370 | 17 308 | 0.13 |
| Malnutrition[b] | 28 194 | 2 995 | 0.16 |
| Trachoma | <10 | 244 | 1 |
| Schistosomiasis | 10 405 | 1 096 | 0.43 |
| Lymphatic filariasis | <10 | 782 | 0.67 |
| *SUBTOTAL: drinking-water, sanitation and hygiene* | 1 243 869 | 75 630 | NA |
| Malaria | 354 924 | 29 708 | 0.80 |
| Dengue | 38 315 | 2 936 | 0.95 |
| Onchocerciasis | <10 | 96 | 0.10 |
| *SUBTOTAL: water resource management* | 393 239 | 32 740 | NA |
| Drownings | 233 890 | 14 723 | 0.73[c] |
| *SUBTOTAL: safety of water environments* | 233 890 | 14 723 | NA |
| **TOTAL: inadequate water, sanitation and hygiene** | **1 870 998** | **123 093** | **NA** |

DALYs, disability-adjusted life-years; NA, not applicable.

[a] Disease burden estimates are for low- and middle-income countries (LMICs); diarrhoea, acute respiratory infections and drownings include disease burden in high-income countries (HICs).

[b] Includes disease burden from protein–energy malnutrition and consequences in children aged under 5 years only.

[c] Population-attributable fraction is 0.74 for LMICs, 0.54 for HICs.

## DIARRHOEAL DISEASE

## 829 000

WASH-related deaths
are from diarrhoeal
disease.[1]

- Diarrhoea is the **second leading cause of death** among children aged under 5 years.

- **Just 2 pathogens**, rotavirus and *Escherichia coli*, are responsible for most cases of moderate-to-severe diarrhoea in low-income countries. Other important pathogens include *Cryptosporidium* and *Shigella*.[2]

- **Cholera can kill within hours if left untreated.** Cholera is still endemic in 69 countries, resulting in an estimated 2.9 million cases and 95 000 deaths per year worldwide.[3]

# Nutrition, NTDs and WASH

## ENTERIC INFECTIONS AND UNDERNUTRITION ······························

- Poor WASH contributes to undernutrition through diarrhoea, intestinal parasite infections, and possibly through environmental enteric dysfunction (inflammation of the gut lining).

- In 2018, **149 million (21.9%) children aged under 5 years** had stunted growth and 49.5 million (7%) globally were at risk of wasting.[8]

NTDs affect more than

## 1 billion people

in 149 countries.
All NTDs require WASH
to sustain elimination
and control efforts and for
morbidity management.

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# *Pharms in Water (1)*
## *Occurrence*

- Pharmaceuticals have been identified in surface and ground water primarily impacted by human, industrial and animal wastewater discharges

- Available studies show traces of few pharmaceuticals in the low ng/L range, typically more than 1000 fold less than the lowest therapeutic dose.

- Pharmaceuticals are not unusual organic chemicals. Treatment effectiveness is reasonably predictable based upon physical and chemical properties of the compounds.

# *Pharms in Water (2)*
## *Human Health Risk*

- Based on current evidence on margins of exposure to individual compounds, the development of global drinking water quality guideline values for pharmaceuticals is not warranted.

- When local circumstances, for example based on catchment surveys, indicate a potential for elevated concentrations, screening values can be developed.

# Pharms in Water (3)
## Recommendations

- Concerns over pharmaceuticals should not divert water suppliers and regulators from pathogenic microbial water quality issues.

- Routine monitoring is not recommended, but targeted well designed and quality controlled investigative studies could provide more information on potential human exposure from drinking water.

- Chemical risk assessment methodologies for low level chronic exposure to mixtures would benefit from further research for all life stages.

- Current evidence does not support a general requirement for additional or specialised drinking water treatment to reduce concentrations of pharmaceuticals from water sources.

- Methods for prioritising pharmaceuticals should be refined.

- Enhanced preventive measures including education for prescribers and the public can reduce disposal and discharges to the environment and will reduce human exposure.

# WASH policy and scaling up efforts

- Robust WASH policies and plans exist, but

  - implementation is constrained by inadequate human and financial resources: **80%** of countries (n=70) have insufficient financing to meet national WASH targets

  - rural WASH services receive a smaller share of funding than urban services

  - institutions tasked with regulatory oversight for WASH service delivery are stretched and unable to undertake the required surveillance

- More effort is needed to:

  - strengthen national financial systems to support decision-making, including targeting WASH financing and service delivery in rural areas

  - strengthen regulatory oversight for WASH service delivery

Thank you

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