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# Monitoring Climate-Resilient WASH JMP/GLAAS

Wednesday 5 November  
09:00-10:00 CET  
16:00-17:00 CET



# Housekeeping



Please **turn off your microphones** (except for the final discussion/Q&A).



In case of **technical problems**, feel free to **ask for assistance in the chat**.



Please **use the chat** for questions and comments – which will be address at the end of the webinar, or later by email.



**Webinar will be recorded** – recording and slides will be shared with attendees.



Please keep your **questions relevant to the topic of the webinar**.

**If you'd like subtitles, go to More (...) → Language & speech → Turn on live captions, then choose Caption settings → Translate to and select your preferred language.**

# Introduction to WHO/UNICEF JMP/GLAAS Secretariat

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**Marina Takane**  
WASH accounts Project  
Manager  
WHO



**Betsy Engebretson**  
GLAAS team  
WHO



**Janet Atim**  
GLAAS team  
UNICEF



**Tom Slaymaker**  
JMP Team Lead  
UNICEF



**Rick Johnston**  
JMP Team Lead  
WHO



**Fiona Gore**  
GLAAS Team Lead  
WHO

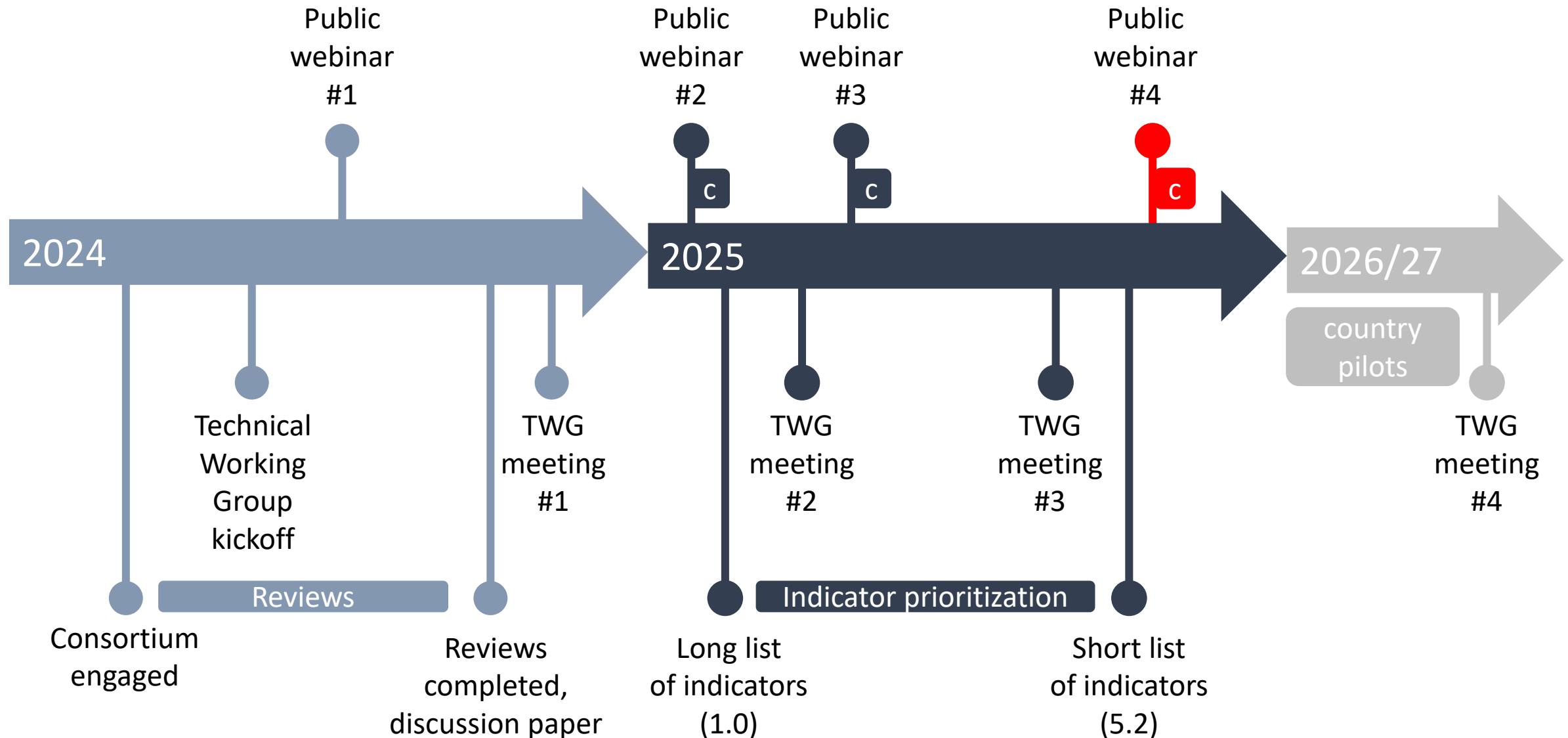
# Review process: monitoring climate resilience and WASH

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- GLAAS and JMP are conducting a review of monitoring climate resilience and WASH:
  - Identifying frameworks, indicators, data collection opportunities, and data describing links between climate resilience and WASH.
  - A consortium of research partners (Leeds, Bristol, Oxford, UTS) were selected to support the work.
  - A Technical Working Group (TWG) provides inputs and reviews outputs.
  - Outputs will identify areas where GLAAS and JMP could focus future monitoring efforts.
- Engaging with multiple stakeholders
- Feeding into work on Global Goal on Adaptation
  - Identification of indicators for GGA Water target 9a



# Timeline and milestones



# Reviews and conceptual framework

# The academic support team

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Prof Barbara Evans



Dr Miller Alonso  
Camargo-Valero



Dr Anisha Nijhawan



Prof Guy Howard



Prof Juliet Willetts



Dr Jeremy Kohlitz



Freya Mills



Prof Katrina Charles



Kelly Moon

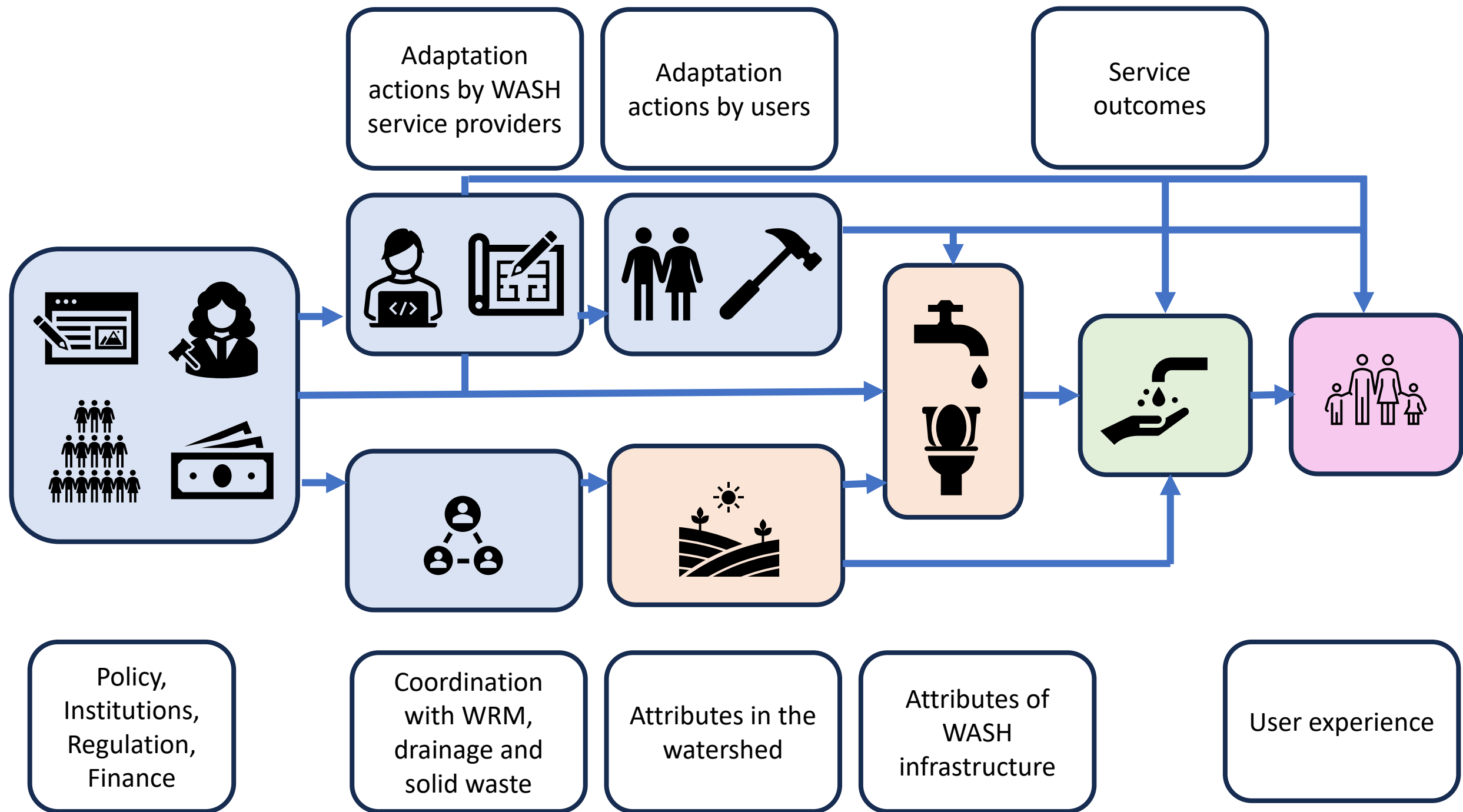


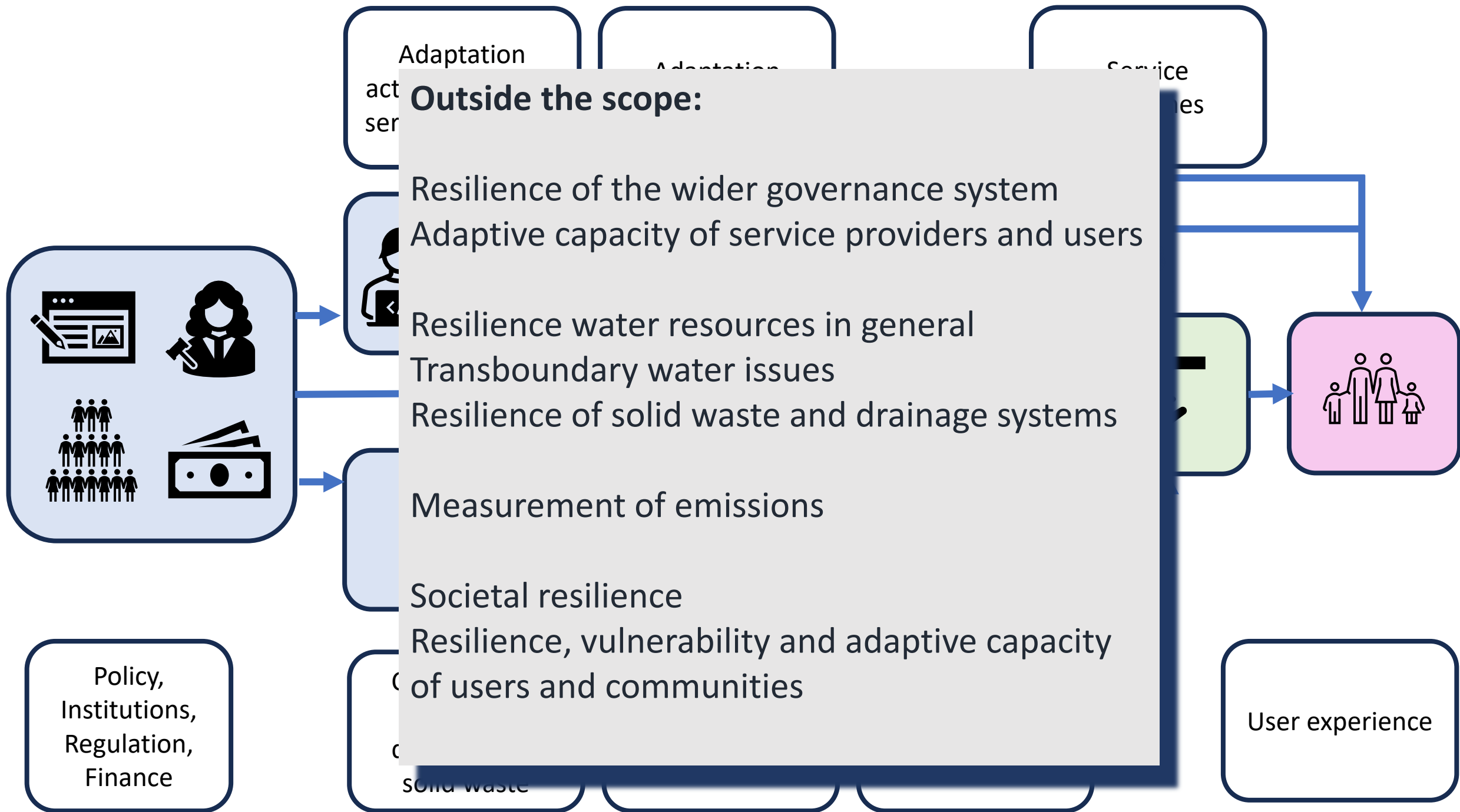
James Wallace



Prof Evangelos  
Pournaras

Lily King





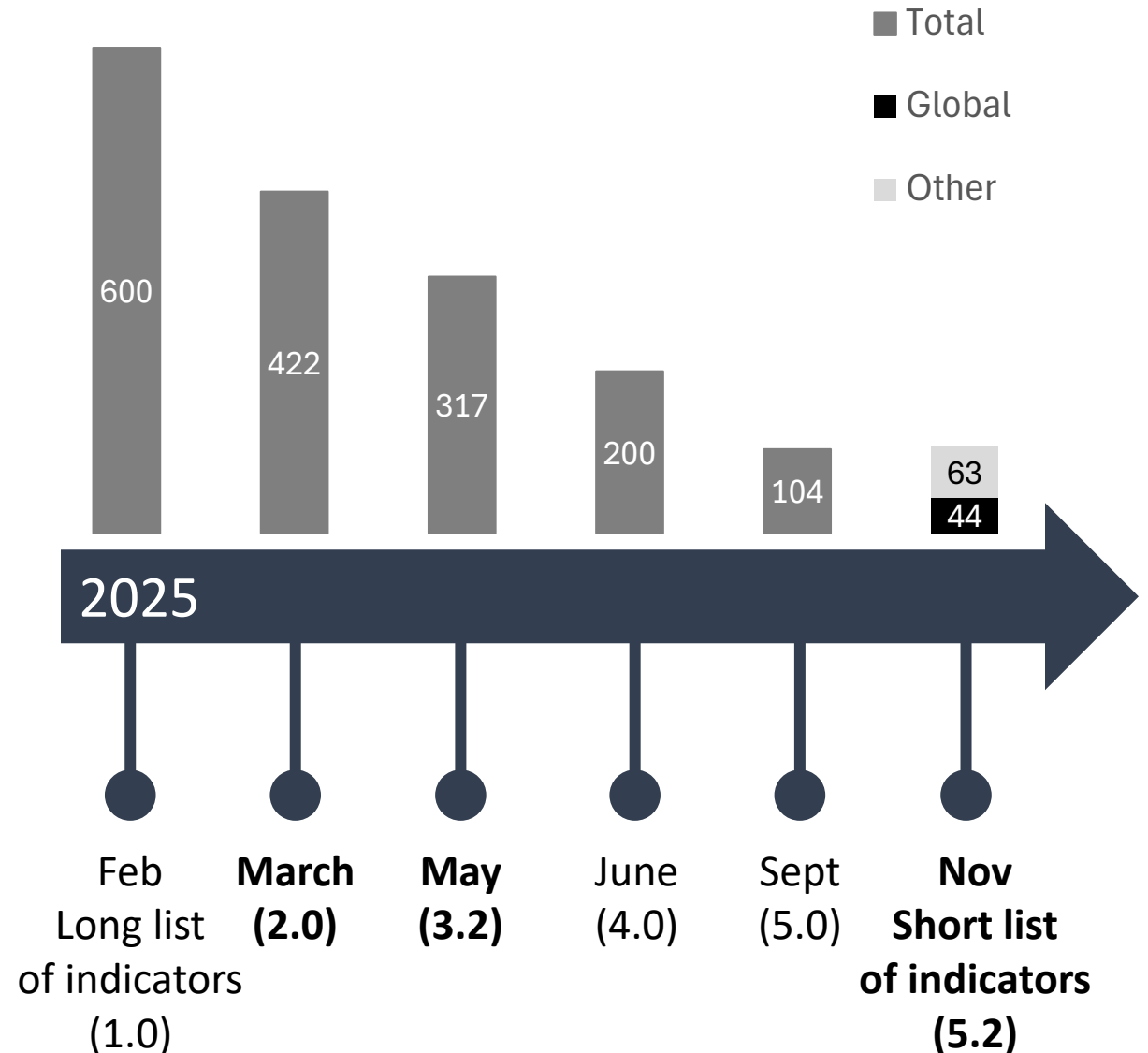
# Where did the list of candidate indicators come from?

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- Using our framework we carried out 3 systematic reviews looking for adaptation actions or attributes that have been linked to climate-resilient WASH outcomes in the academic literature and in sector documents:
  - Sanitation
  - Hygiene
  - WASH in general
- We carried out 2 further reviews looking for adaptation actions or attributes that have been linked to climate resilience:
  - An umbrella (review of reviews) for water supply
  - A scoping review on how resilience is conceptualised in WASH and adjacent sectors
- We identified key **objectives** which could be achieved in each component of the framework which are likely to *lead to* or be an *outcome of* climate resilient WASH
- We then mapped more than 600 **candidate indicators** that had been identified from our research to each objective

# Towards a short(er) list

- Long list derived from reviews
  - ~600 candidate indicators (February, 1.0)
- Public consultation
  - April (2.0)
- Technical working group meetings
  - March (2.0), September (5.0)
- Combination/synthesis of related proposed indicators
- Mapping to conceptual framework, indicator objectives
- Examining balance
  - Across framework components
  - Rapid and slow onset events
  - Water, sanitation, hygiene



# **Proposed shortlist of indicators to develop for global monitoring by JMP and GLAAS teams**

# Policy: 1 and 2 (of 5)



| Objective                                                                       | All WASH                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WASH policy and planning</b><br>incorporates current and future climate risk | 101: <b>WASH sector policy and plans</b> which integrate climate adaptation measures for households and institutions *:<br>(a) are in place;<br>(b) align with national adaptation plans; and<br>(c) are regularly revised using updated climate projections |
| <b>Management</b> is appropriate to ensure and advance climate resilience       | 102: WASH Sector policy mandates the use of <b>risk-based management plans</b> that take into account current and future climate                                                                                                                             |

\* And which (i) identify current and future climate risks to WASH, (ii) identify at risk populations, (iii) include costed climate adaptation measures and (iv) mandate 'build-back-better' principles for post climate-event recovery

## Policy: 3 and 4 (of 5)



| Objective                                                                       | All WASH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| National <b>climate resilience planning</b> incorporates climate resilient WASH | <p>103: <b>National adaptation plans</b> are in place and include:</p> <ul style="list-style-type: none"><li>(a) targeted WASH objectives for households and institutions;</li><li>(b) and a strategy for WASH adaptation for households and institutions;</li><li>(c) or a costed strategy for WASH adaptation for households and institutions</li></ul> <p>106: <b>National mitigation plans</b> are in place and include:</p> <ul style="list-style-type: none"><li>(a) a national protocol for measuring and reporting emissions from WASH;</li><li>(b) and an estimate of the contribution of WASH to NDCs;</li><li>(c) and a strategy for mitigating emissions from WASH;</li><li>(d) or a costed strategy for mitigating emissions from WASH</li></ul> |

## Policy: 5 (of 5)



### Objective

### All WASH

Climate resilient  
WASH strategy is  
**equitable**

105: Sector strategies include measures to ensure climate resilient WASH investments are focused on populations vulnerable to and disproportionately affected by climate change

### Not shortlisted (an example):

### Objective

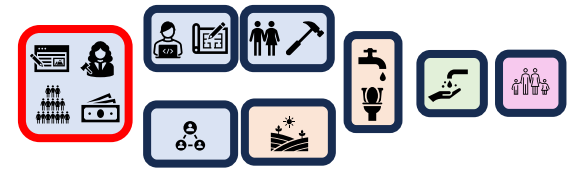
### Water supply

Access to a minimum  
service level is  
maintained

104: Regulation mandates that sufficient quantities of domestic water supply be provided as a priority before allocations to other water uses are made



# Institutions: 2 and 3 (of 3)



## Objective

## All WASH

**Early warning systems** in place that support actions to reduce impact of climate events

202: Multi-hazard **early warning systems** are:  
(a) accessible to WASH sector stakeholders;  
(b) and include information directly relevant to the delivery of WASH services;  
(c) and are reviewed and updated regularly;  
(d) and are used to inform updates to WASH policies and plans

National **WASH monitoring systems** collect information on impacts of climate on WASH services

203: WASH **monitoring systems** collect data on the impact of climate on WASH services in households/ schools/ health care facilities disaggregated by service levels, geography, and population subgroups

# Regulation: (3)



## Objective

## All WASH

**Design and construction standards** and guidance exist for CR WASH

301: Standards and regulations that take into account current and future climate are available to support the **design and construction** of resilient infrastructure

**Operation and maintenance standards** and guidance exist for CR WASH

302: Standards and regulations that take into account current and future climate are available to support the **operation and maintenance** of resilient infrastructure

303: Standards and guidance exist for **restoration of services** during and following a climate event

## Finance: (2)



| Objective                                                       | All WASH                                                                                                                    |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Sufficient <b>budget</b> allocation for WASH climate adaptation | 401: Ratio of <b>total annual budget</b> available (all sources) to total annual costs identified for WASH climate adaption |
| Funds for WASH climate adaptation are <b>utilized</b>           | 403: Ratio of <b>total annual expenditure</b> (all sources) to total annual costs identified for WASH climate adaption      |

# Adaptation actions by hygiene promoters & supply chain actors (1)



| Objective                                                                                   | Water supply | Sanitation | Hygiene                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------|--------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support to <b>households</b> provided to undertake actions for climate resilience/ recovery | -            | -          | 503: Proportion of population covered by <b>well-defined, event-specific preparedness plans</b> which include:<br>(a) education/ messaging on hygiene behaviour; and<br>(b) stockpiling, storing, and distribution of hygiene products |

# Adaptation actions by service providers: 1 and 2 (of 4)



| Objective                                                                 | Water supply                                                                                                                                                                                                                             | Sanitation                                                                                                                                                                                                                                                     | Hygiene |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Management</b> is appropriate to ensure and advance climate resilience | 602: Proportion of population/ schools/ healthcare facilities served by water service providers that implement <b>risk management plans</b> which consider current and future climate (for example climate-resilient water safety plans) | 702: Proportion of population/ schools/ healthcare facilities served by sanitation service providers that implement <b>risk management plans</b> which consider climate variability and climate projections (for example flood and drought preparedness plans) | -       |

# Adaptation actions by service providers

## 3 and 4 (of 4)



| Objective                                                                             | Water supply                                                                                                                                                                                                                             | Sanitation                                                                                                                                                                                                                              | Hygiene |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Operation and maintenance standards</b> for climate resilient WASH are implemented | 604: Proportion of population/ schools/ healthcare facilities served by water supply services that conform to <b>national regulations and standards for operations and maintenance</b> that take into account current and future climate | 703: Proportion of population / schools/ healthcare facilities served by sanitation services that conform to <b>national regulations and standards for operations and maintenance</b> that take into account current and future climate | -       |

# Coordination with Water Resources Management (2)



| Objective                                                                              | Water supply and Sanitation                                                                                                                                             | Hygiene |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Coherence and cooperation</b><br>between agencies to deliver climate resilient WASH | 1101: Investment and operational plans for <b>WRM are referenced in investment and operational plans for</b><br>(a) Water supply<br>(b) Sanitation and wastewater       | -       |
|                                                                                        | 1102: Proportion of population in catchments where <b>water resource management plans address climate risks to</b><br>(a) Water supply<br>(b) Sanitation and wastewater | -       |

# Coordination with Drainage and Solid Waste Management (1)

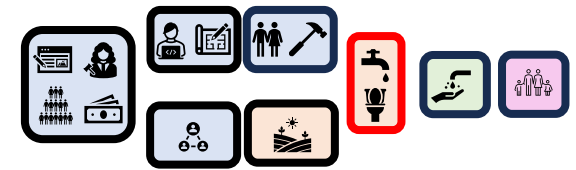


| Objective                                                                              | Water supply and Sanitation                                                                                                                                    | Hygiene |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Coherence and cooperation</b><br>between agencies to deliver climate resilient WASH | 1202: Investment and operational plans for<br>(a) Water supply<br>(b) Sanitation and wastewater<br><b>reference drainage investment and operational plans.</b> | -       |

# Attributes of water resources for water supply and receiving waters (3)



| Objective                    | Water supply                                                                                                                             | Sanitation                                                                                                  | Hygiene |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------|
| Water quality is maintained  | 1301: Proportion of raw water intakes/boreholes which <b>meet design quality standards</b> , disaggregated by groundwater/ surface water | 1302: Number of incidents of <b>water quality non-compliance</b> downstream of a wastewater treatment plant | -       |
| Water quantity is maintained | 1303: Proportion of raw water intakes/boreholes which <b>meet design production rates</b> , disaggregated by groundwater/ surface water  |                                                                                                             |         |

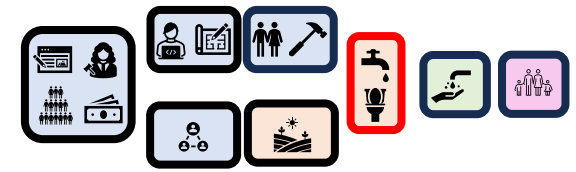


# Attributes of infrastructure: 1 and 2 (of 4)

| Objective                                                                           | Water supply                                                                                                                                                                                                                     | Sanitation                                                                                                                                                                                                                             | Hygiene  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Construction and design standards</b> for climate resilient WASH are implemented | 1401: Proportion of population/ schools/ healthcare facilities served by water supplies that <b>conform to national regulations and standards</b> for design and construction that take into account current and future climate* | 1501: Proportion of population/ schools/ healthcare facilities served by sanitation services that <b>conform to national regulations and standards</b> for design and construction that take into account current and future climate** | See next |

\* water supply source, water treatment, water storage and distribution

\*\* capture and containment, conveyance, treatment



## Attributes of infrastructure: 3 and 4 (of 4)

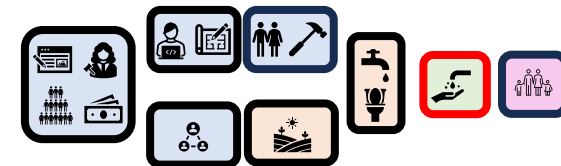
| Objective                                                                                   | Water supply | Sanitation   | Hygiene                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------|--------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction and design standards</b> for climate resilient WASH are implemented (cont.) | See previous | See previous | 1601: Proportion of <b>schools</b> where hygiene services conform to national regulations and standards for design and construction that take into account current and future climate*<br><br>1602: Proportion of <b>healthcare facilities</b> where hygiene services conform to national regulations and standards for design and construction that take into account current and future climate* |

\* Hand hygiene and menstrual hygiene



| Objective                                              | Water supply                                                                                                                                                                | Sanitation                                                                                                                                                             | Hygiene |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Access to <b>safely managed services</b> is maintained | 1704: Proportion of population / schools/ healthcare facilities <b>within nationally determined climate hazard zones using basic/safely managed drinking water services</b> | 1805: Proportion of population/ schools/ healthcare facilities <b>within nationally determined climate hazard zones using basic/safely managed sanitation services</b> | -       |

## Service functioning: 3 (of 8)



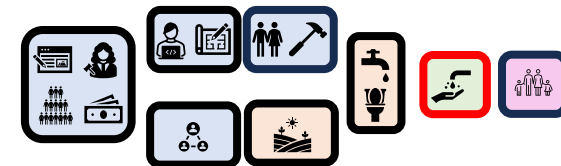
| Objective                                               | Water supply | Sanitation | Hygiene                                                                                                                                                                           |
|---------------------------------------------------------|--------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access to <b>basic hygiene facilities</b> is maintained | -            | -          | 1905: - Proportion of population/ schools/ healthcare facilities <b>with access to soap and water at a handwashing facility within nationally determined climate hazard zones</b> |

## Service functioning: 4 and 5 (of 8)



| Objective                                        | Water supply                                                                                                                                        | Sanitation                                                                                                                                       | Hygiene |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Access to a <b>minimum service</b> is maintained | 1701: Proportion of population/ schools/ healthcare facilities whose <b>domestic water supply infrastructure is damaged</b> due to a climate event. | 1801: Proportion of population/ schools/ healthcare facilities whose <b>domestic sanitation infrastructure is damaged</b> due to a climate event | -       |

## Service functioning: 6, 7 and 8 (of 8)



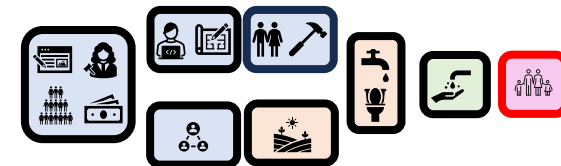
| Objective                                                | Water supply                                                                                                                                                                 | Sanitation                                                                                                                                                                  | Hygiene                                                                                                                                                                                                         |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access to a minimum service</b> is maintained (cont.) | 1703: Proportion of population/ schools/ healthcare facilities reporting <b>at least 1 period of disruption</b> to water supply at home in the last Y due to a climate event | 1803: Proportion of population / schools/ healthcare facilities reporting <b>at least 1 period of disruption</b> to sanitation at home in the last Y due to a climate event | 1902: Proportion of population/schools/ healthcare facilities reporting <b>at least 1 period of disruption</b> to access to a soap and water for hygiene practices at home in the last Y due to a climate event |

# User experiences: 1 and 2 (of 8)

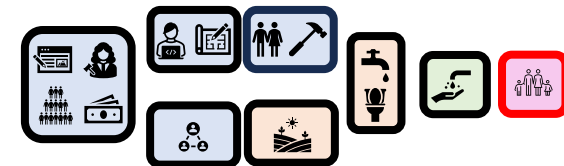


| Objective                                       | Water supply                                                                                                                                                                                                                                               | Sanitation                                                                                                                                                                                                                                                | Hygiene |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Access to a minimum service level is maintained | 2005: Proportion of population/ schools/ healthcare facilities who report <b>easy access to alternative water supply facilities</b> that meet minimum national/local standards of service when needed during a period of disruption due to a climate event | 2104: Proportion of population/ schools/ healthcare facilities who report <b>easy access to alternative sanitation facilities</b> that meet minimum national/local standards of service when needed during a period of disruption due to a climate event. | -       |

## User experiences: 3 and 4 (of 8)

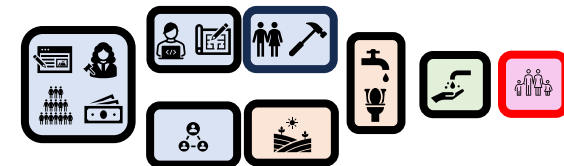


| Objective                                 | Water supply | Sanitation | Hygiene                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|--------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access to hygiene materials is maintained | -            | -          | <p>2203: Proportion of women, girls, and menstruators that report <b>having enough MHM materials to change as often as they wanted</b> before, during, and following climate events</p> <p>2205: Proportion of population that report <b>having enough soap and water to practice hand hygiene behaviours as often as they wanted</b> before, during, and following climate events</p> |



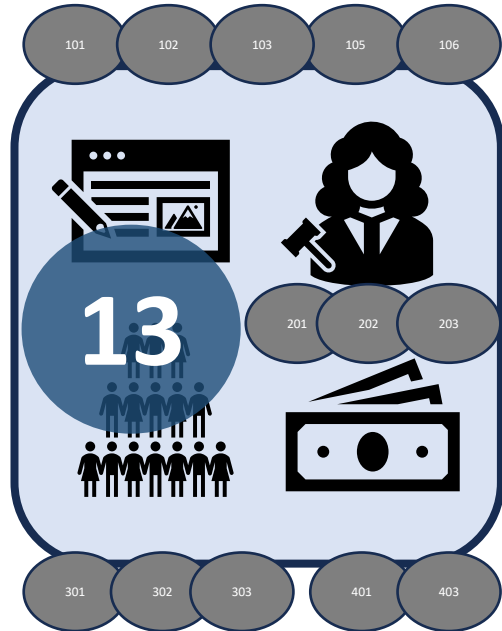
## User experiences: 5 and 6 (of 8)

| Objective                                                               | Water supply                                                                                                                                   | Sanitation                                                                                                                                                   | Hygiene |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Users are <b>protected from distress</b> related to service disruptions | 2001: Proportion of population <b>reporting that they worried</b> about not having enough water for all household needs due to a climate event | 2101: Proportion of population <b>who felt safe</b> at the sanitation locations they used most before, during, and following a climate event in the [last Y] | -       |



## User experiences: 7 and 8 (of 8)

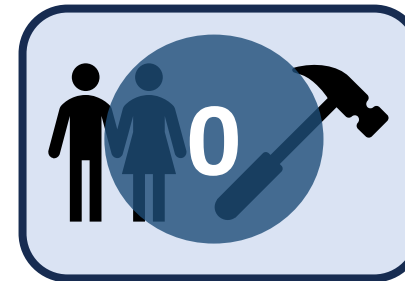
| Objective                                                                          | Water supply                                                                                                                                                                                                                                                                                                                               | Sanitation                                                                                                                                                                                                                                                                                                                     | Hygiene |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| User <b>complaints</b> / requests for assistance are dealt with in a timely manner | 2004: <b>Total complaints</b> per 1000 customers before, during, and following a climate event<br>(a) received by drinking water service providers or regulators<br>(b) received and analysed by drinking water service providers or regulators<br>(c) received, analysed and acted upon by drinking water service providers or regulators | 2103: <b>Total complaints</b> per 1000 customers before, during, and following a climate event<br>(a) received by sanitation service providers or regulators<br>(b) received and analysed by sanitation service providers or regulators<br>(c) received, analysed and acted upon by sanitation service providers or regulators | -       |



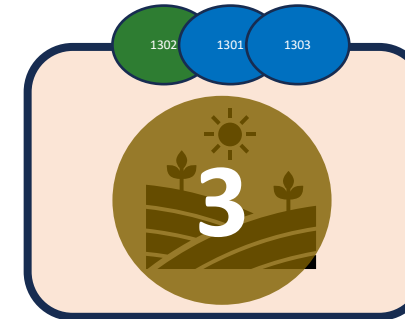
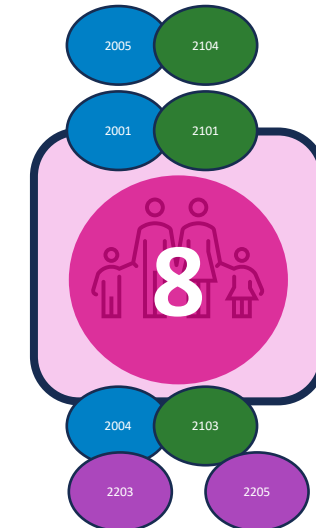
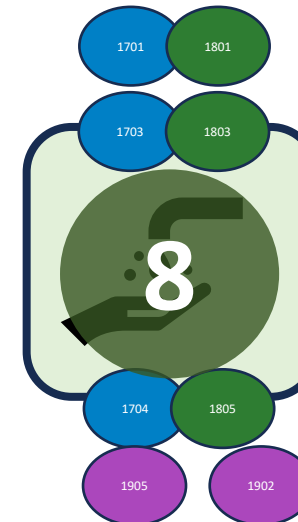
Adaptation  
actions by WASH  
service providers



Adaptation  
actions by users



Service  
outcomes



Attributes of  
WASH  
infrastructure

User experience

Policy,  
Institutions,  
Regulation,  
Finance

Coordination  
with WRM,  
drainage and  
solid waste

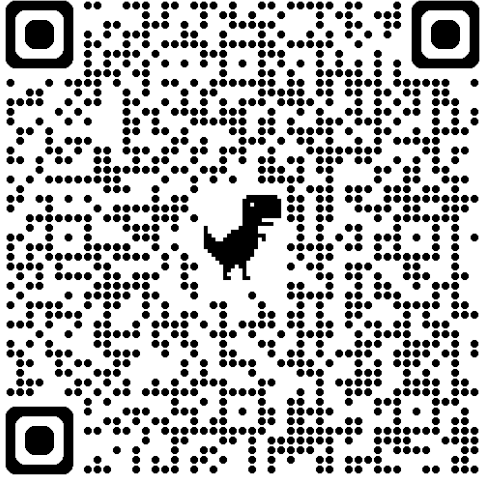
Attributes in the  
watershed

# Consultation objectives and timeline

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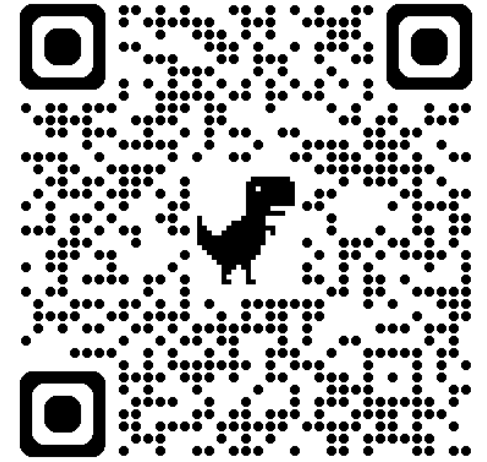
- We are seeing your feedback on the proposed shortlist (44 candidates)
  - Is the proposed shortlist too long? If so, what could be reduced?
  - Is anything critical missing?
  - Is the shortlist well balanced among...
    - Framework components, from policies through to user experiences
    - Water, sanitation and hygiene
    - Rapid onset and slow onset events
    - Anticipate, Respond, Cope, Recover, Adapt, Transform (SWA definition)
  - Any opportunities for piloting?
- Provide feedback by 30 November, 2025
  - Email to [washmonitoring@who.int](mailto:washmonitoring@who.int)
  - Microsoft Form

**Q & A**



Project website

UNICEF and WHO gratefully acknowledge the financial support provided by the Directorate-General for International Cooperation (Kingdom of the Netherlands) and the Foreign, Commonwealth & Development Office (United Kingdom).



Sign up here to receive updates!

**Thank you!**

[washmonitoring@who.int](mailto:washmonitoring@who.int)

