World Health Organization
REGIONAL OFFICE FOR Europe

Organisation mondiale de la Santé
BUREAU RÉGIONAL DE L' Europe

Weltgesundheitsorganisation
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Всемирная организация здравоохранения
Европейское региональное бюро

The WHO water safety plan approach

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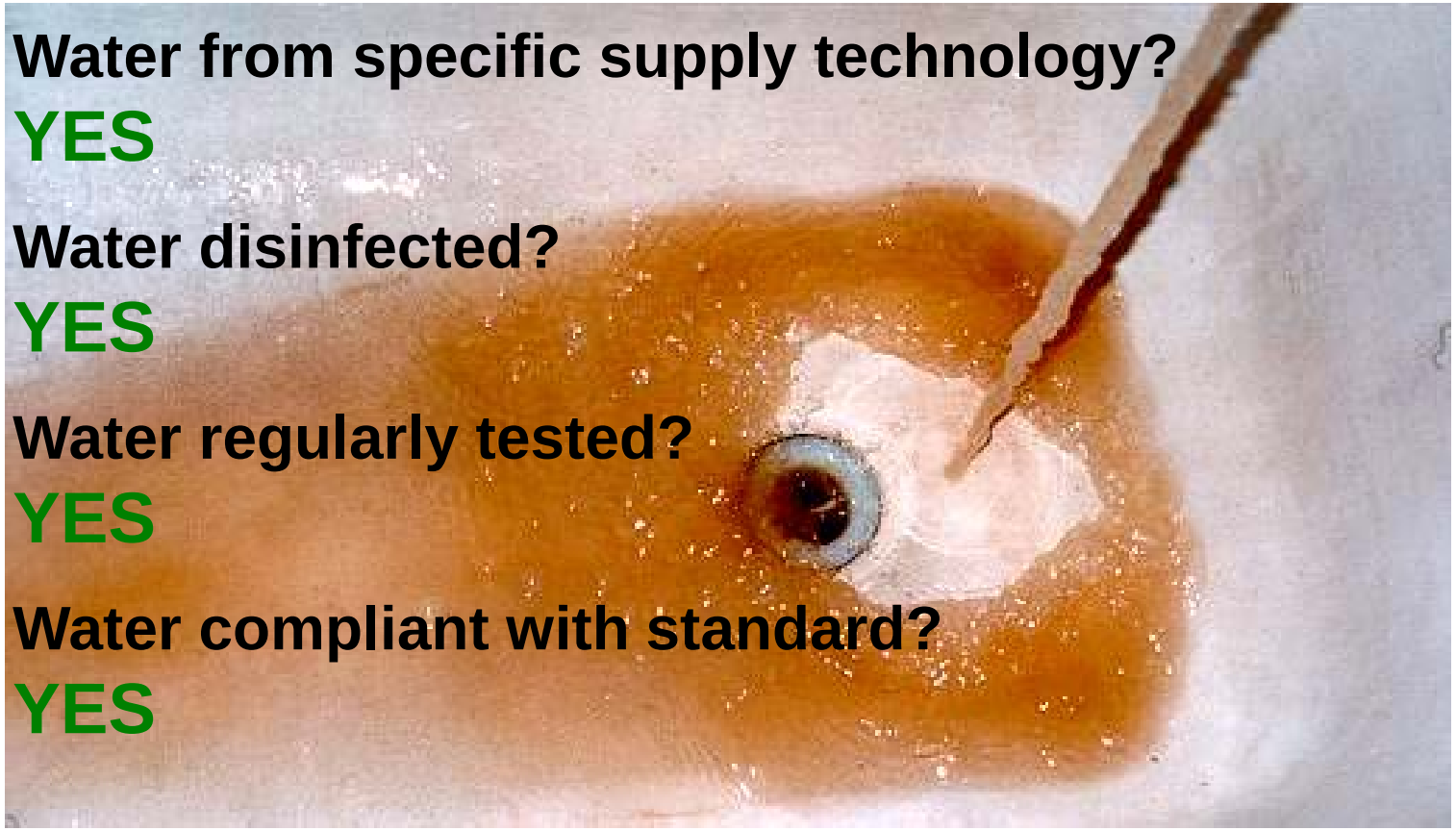
Tashkent, Uzbekistan
24 June 2015

What does “safe” drinking-water mean?



- **Water from specific supply technology?**
  YES
- **Water disinfected?**
  YES
- **Water regularly tested?**
  YES
- **Water compliant with standard?**
  YES

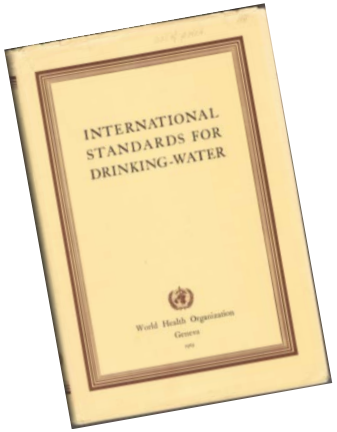
Compliance testing

- Over-reliance on **microbiological end-product testing** is "*too little to late*":
  - Outbreaks in absence of fecal indicators
  - No early warning capability
  - No capability to detect short term fluctuations

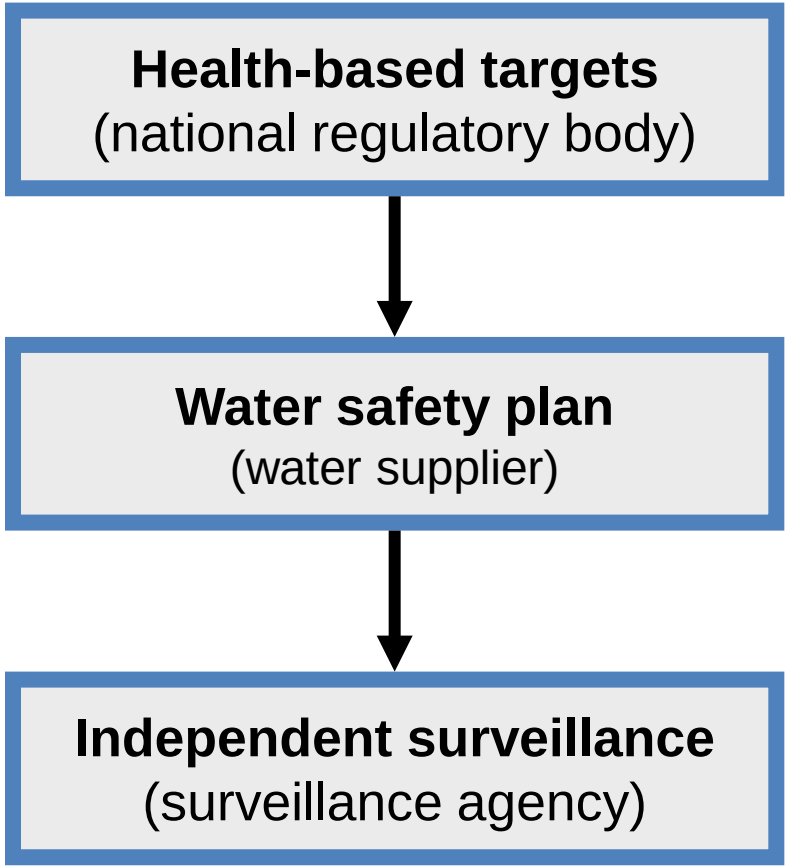
- Need for **holistic and proactive** approach with emphasis on prevention and process control

WHO Guidelines for drinking-water quality

- **4th edition** published in 2011 (since 1958)
- International **point of reference** for drinking-water regulation
- **Public health benchmark** for delivery of safe drinking-water
- Rigorous health **assessment of agents** in drinking-water (guideline values)



Framework for safe drinking-water



Framework for safe drinking-water

Health-based targets

- Targets based on **public health protection** and disease prevention
- **Quantitative benchmark** for water suppliers
- **Different types** for different purposes:
  - Water quality
  - Specified technology
  - Specified performance
  - Health outcome

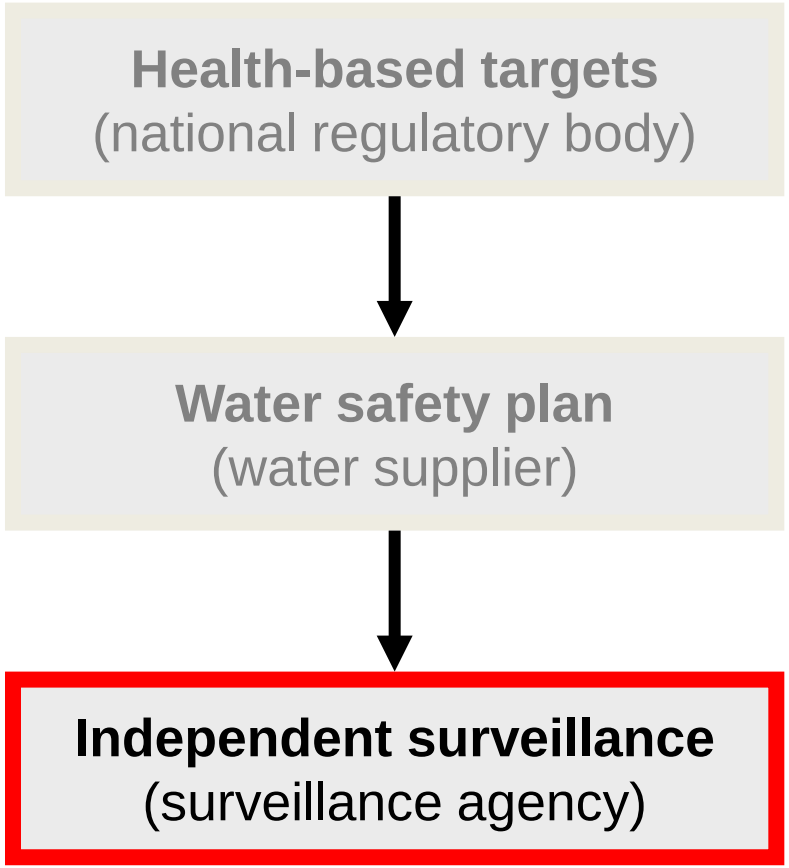
Framework for safe drinking-water

Water safety plans

"The **most effective means** of consistently ensuring the safety of a drinking-water supply is through the use of a comprehensive **risk assessment and risk management** approach that encompasses all steps in water supply from **catchment to consumer**. In these Guidelines, such approaches are called **water safety plans**."

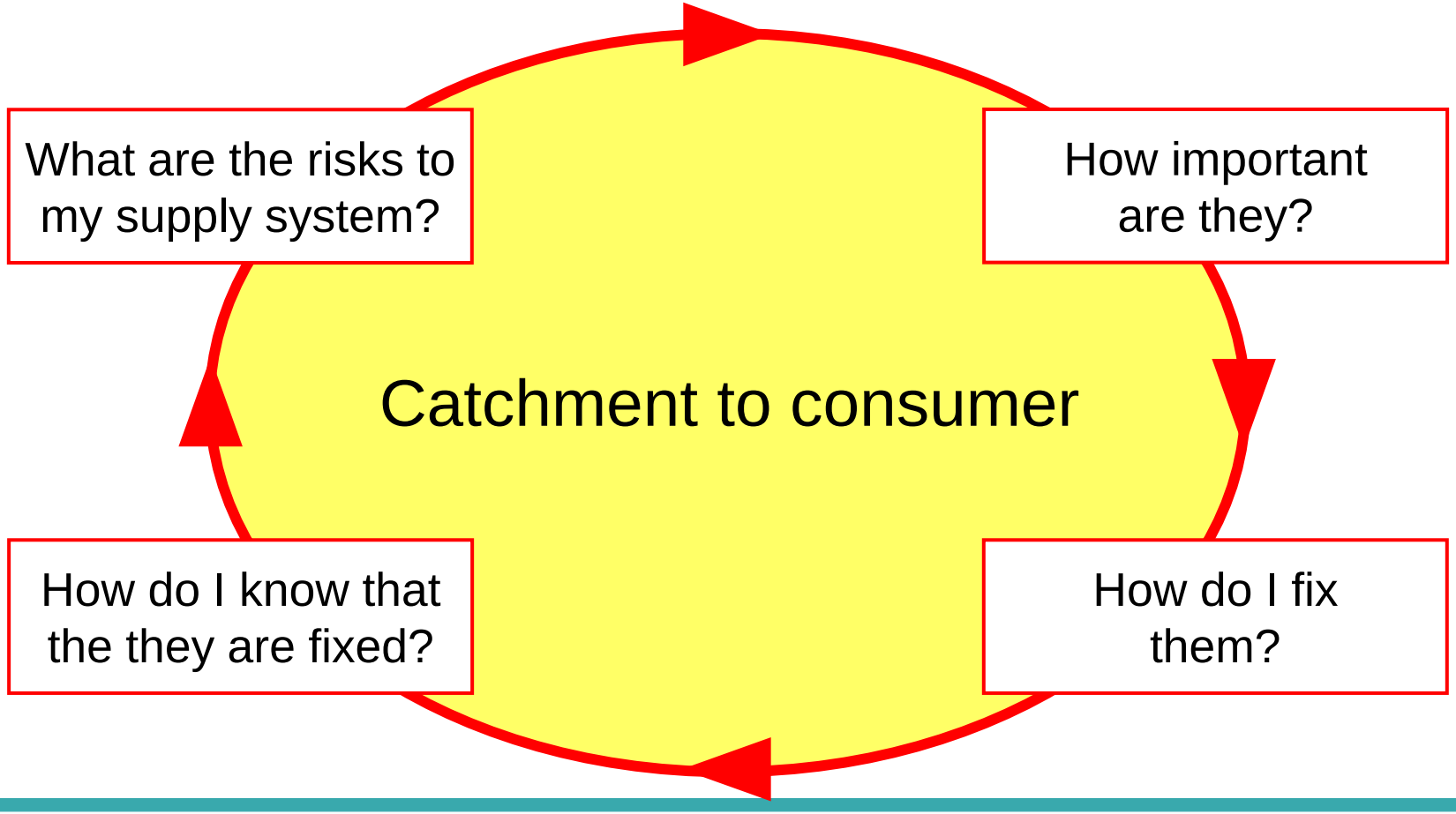
Framework for safe drinking-water

Independent surveillance

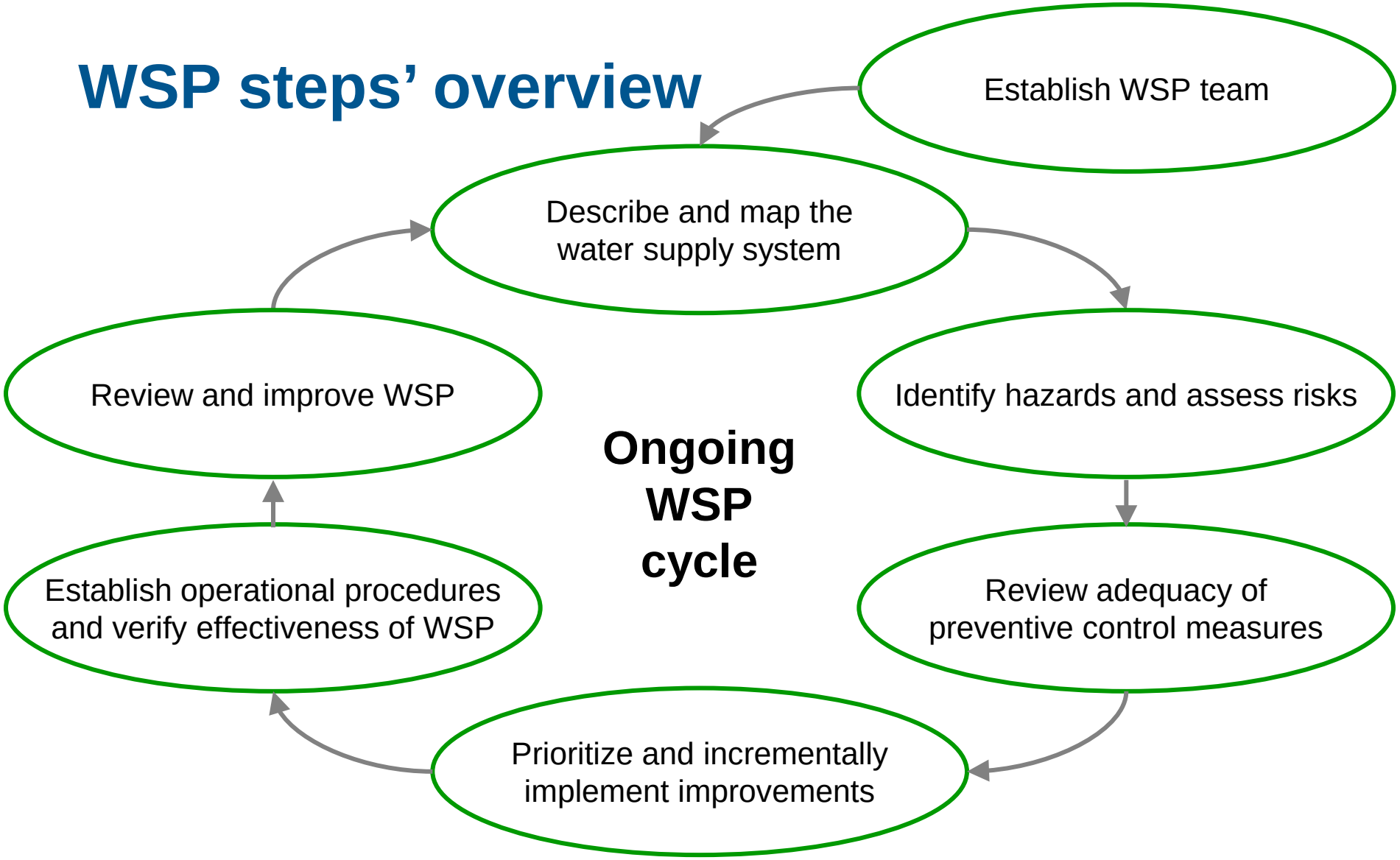


- Systematic surveillance for **verifying** the WSP is operating properly
- **Final check** of end product quality
- **Audit** of WSP

WSP is a piece of thinking

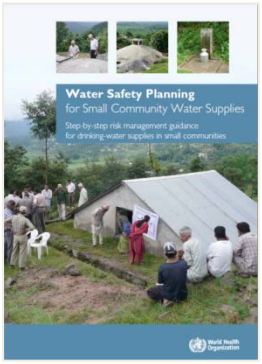


WSP steps' overview

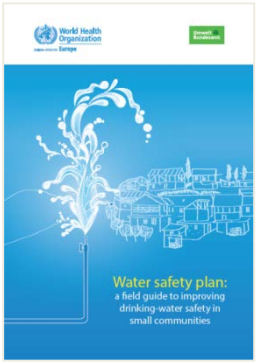


WSP resource materials

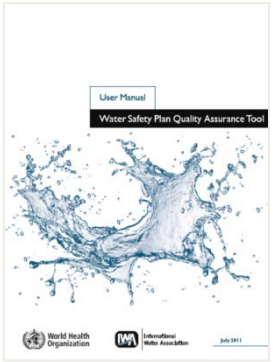
www.who.int/water_sanitation_health/publication_9789241562638/en



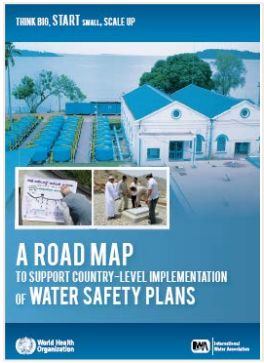
www.who.int/water_sanitation_health/publications/2012/water_supplies/en



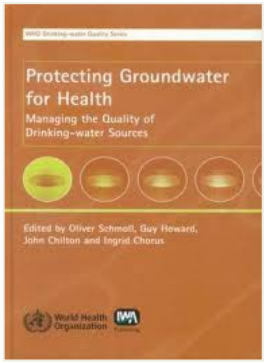
www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/publications/2014/water-safety-plan-a-field-guide-to-improving-drinking-water-safety-in-small-communities



www.who.int/water_sanitation_health/publications/wsp_qa_tool/en/index1.html



www.who.int/water_sanitation_health/dwq/thinkbig_small.pdf?ua=1



www.who.int/water_sanitation_health/publications/protecting_groundwater/en

Field guidance for small systems

Source: WHO/Europe 2014

Templates to support you

Template 1-A. WSP tea
Template 1-B. Protocol
Template 2-A. Map of w
Template 2-B. Descripti
Template 3-A. Hazard a
Template 3-B. Sanitary
Template 4. Improve
Template 5-A. Complia
Template 5-B. Operatio
Template 6-A. Instruct
Template 6-B. Emergen

Template 3-B
Sanitary inspecti

The sanitary inspection forms provi
documenting WSP task 3.

Sanitary inspections provide useful
team in identifying problems with t
performed regularly, sanitary inspecti
conditions. Sanitary inspection results

This template offers a variety of releva
forms will be relevant for your systen
applicable to the local water supply se
the following abstraction technologie

- dug well with hand pump (SI for
- dug well with windlass (SI form 2
- borehole with mechanized pump
- spring source (SI form 4)
- storage reservoirs (SI form 5)
- public/yard taps and piped distri
- collection and household contain

Page 1 of each inspection form presen
typical risk factors associated with a
as presence of animals, accumulatio
infrastructures). The questions are st
and a "No" answer indicates no or a ve
observation and interviewing of con

Page 2 of each inspection form provi
by the list of questions, as well as furth

Each sanitary inspection form is acc
and 4 of each inspection form provid
to assist your understanding of each
your local health office or local water
the inspections.

The WSP team should carry out sanita
and regular inspection not only suppo
as monitoring your control measures

All completed sanitary inspection for

SANITARY INSPECTION FO
DUG WELL WITH HAND PU

I. General information

a. Name of village or town: .....
b. Location and/or name of dug
c. Date of inspection: .....
d. Weather conditions during in

*Note. If there is more than one dug wel
(such as springs or boreholes), carry ou
Note. If consumers store water in home
the sanitary inspection form "Collection*

II. Specific questions for assessme

1. Is there a latrine uphill and/o
2. Is the fence absent, inadequa
3. Can animals have access with
4. Is there any other source of
animal breeding, cultivation,
5. Is stagnant water ponding wi
6. Is the drainage channel abse
7. Is the cement floor or slab le
top of the well?
8. Are there cracks in the ceme
9. Is the hand pump loose at th
pumps, is the pump cover mi
10. Is the well cover absent, crac

Total score of risk factors as total

III. Results and comments

a. Sanitary inspection risk score
☐ *Very high risk* ☐ *Hig*
Risk score: 9–10 *Risk*

b. Important points of risk noted
- list according to question
- additional comments

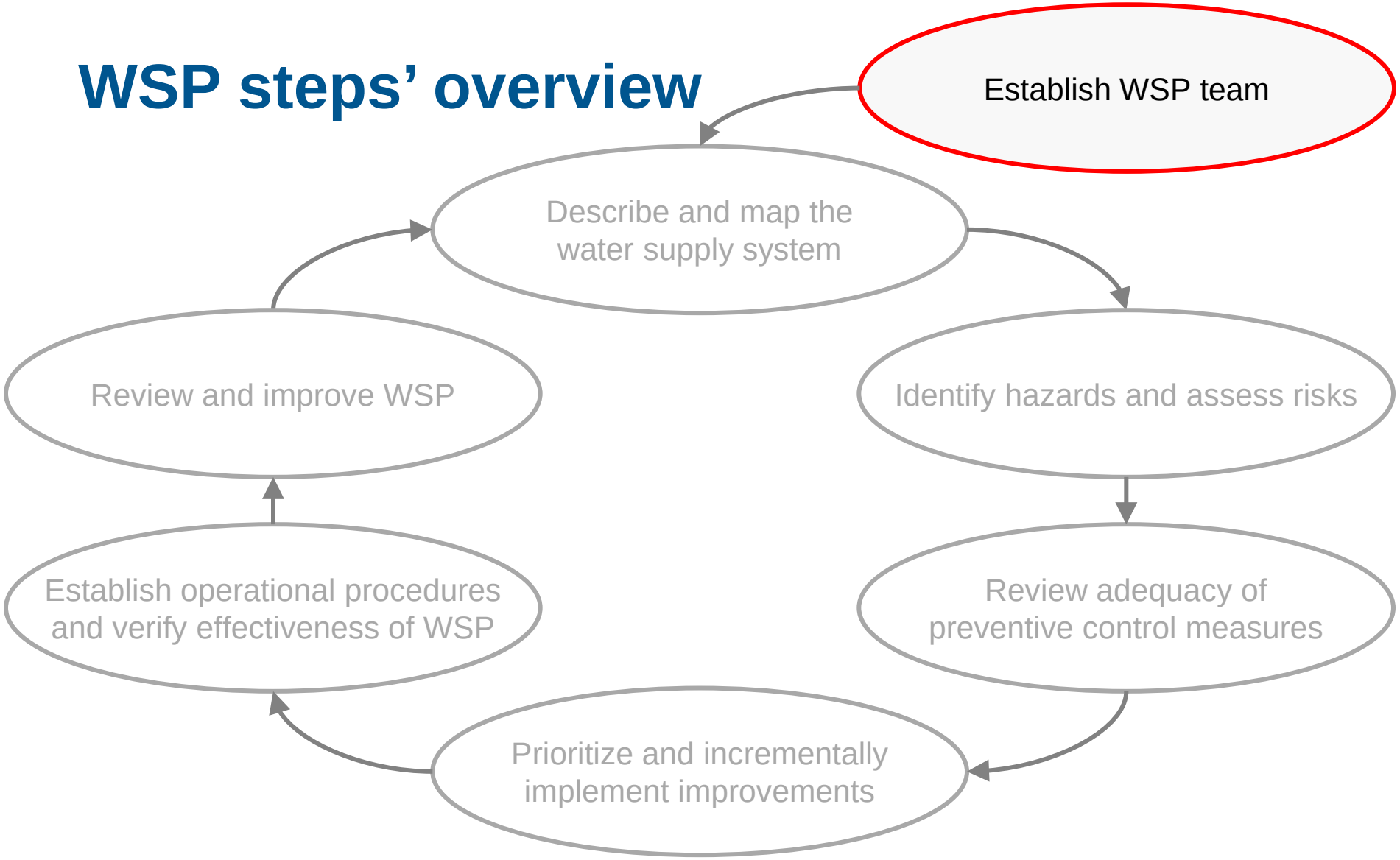
IV. Names and signatures of assess

Date: .....

Sampling frequency	
Parameter(s) tested and target value(s)	
Sampler	
Sampling locations	
Laboratory at which samples are tested	
WSP team member to whom the results are reported	

Source: WHO/Europe 2014

WSP steps' overview



WSP team

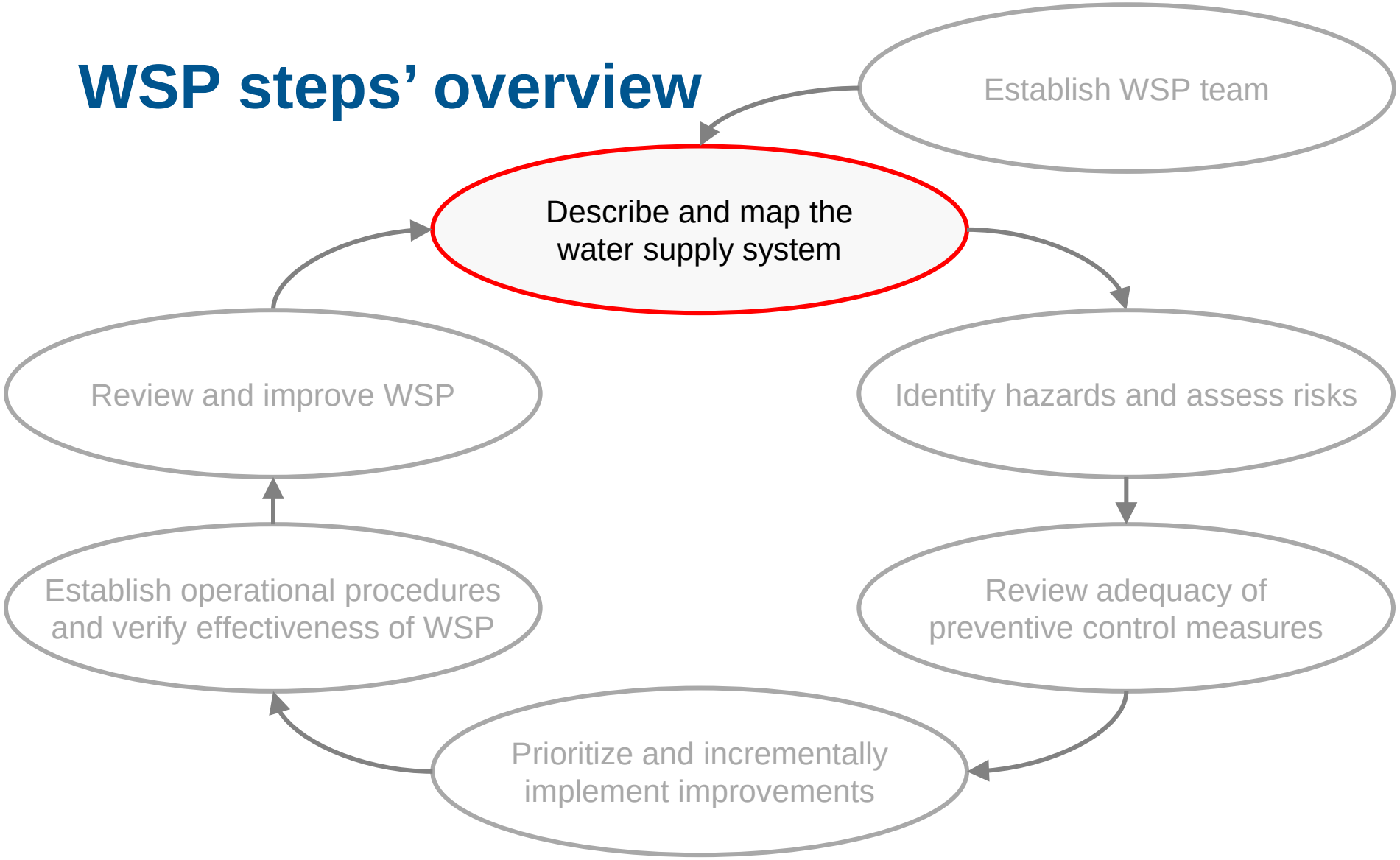
- **Convene interdisciplinary team** with collective responsibility for WSP
- **Qualifications** of team members should cover entire supply chain
- Build team into **existing structures**

Local WSP teams

- **Team effort** who share interest and responsibility in community water supply:
  - Leader of community
  - Technicians or caretakers *(i.e. system O & M)*
  - Teachers and women association *(i.e. hygiene education, community involvement)*
  - Local health and water offices *(i.e. water quality)*

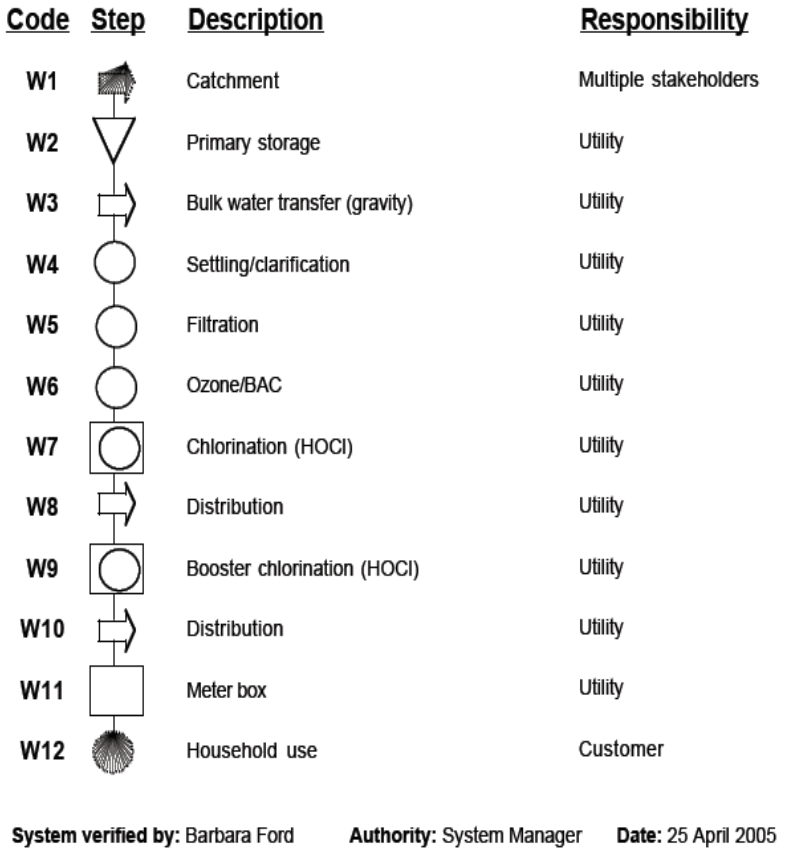
Photos: Oliver Schmoll

WSP steps' overview



System description

- Bring information and knowledge **into one place:**
  - General information
  - Describe processes
  - Information for all supply steps
  - Water quality information
  - Management procedures
  - Regulatory requirements
- Construct and validate **flow diagram**

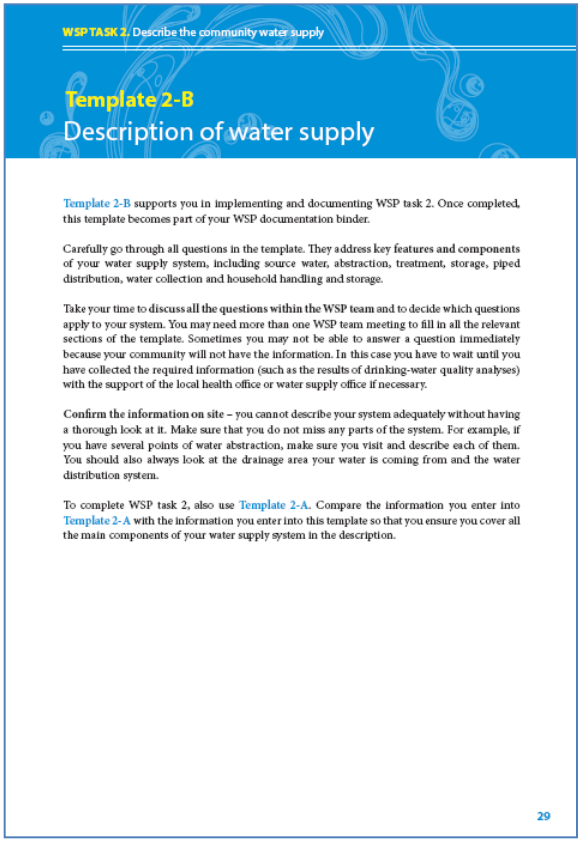


Code	Step	Description	Responsibility
W1		Catchment	Multiple stakeholders
W2		Primary storage	Utility
W3		Bulk water transfer (gravity)	Utility
W4		Settling/clarification	Utility
W5		Filtration	Utility
W6		Ozone/BAC	Utility
W7		Chlorination (HOCl)	Utility
W8		Distribution	Utility
W9		Booster chlorination (HOCl)	Utility
W10		Distribution	Utility
W11		Meter box	Utility
W12		Household use	Customer

System verified by: Barbara Ford **Authority:** System Manager **Date:** 25 April 2005

Map and describe the supply

- Use of standardised **form**:
  - General information
  - Management
  - Catchment, source water and abstraction
  - Treatment, storage and distribution
  - Collection, water use and household treatment
  - Water quality



WSP TASK 2. Describe the community water supply

Template 2-B

Description of water supply

Template 2-B supports you in implementing and documenting WSP task 2. Once completed, this template becomes part of your WSP documentation binder.

Carefully go through all questions in the template. They address key features and components of your water supply system, including source water, abstraction, treatment, storage, piped distribution, water collection and household handling and storage.

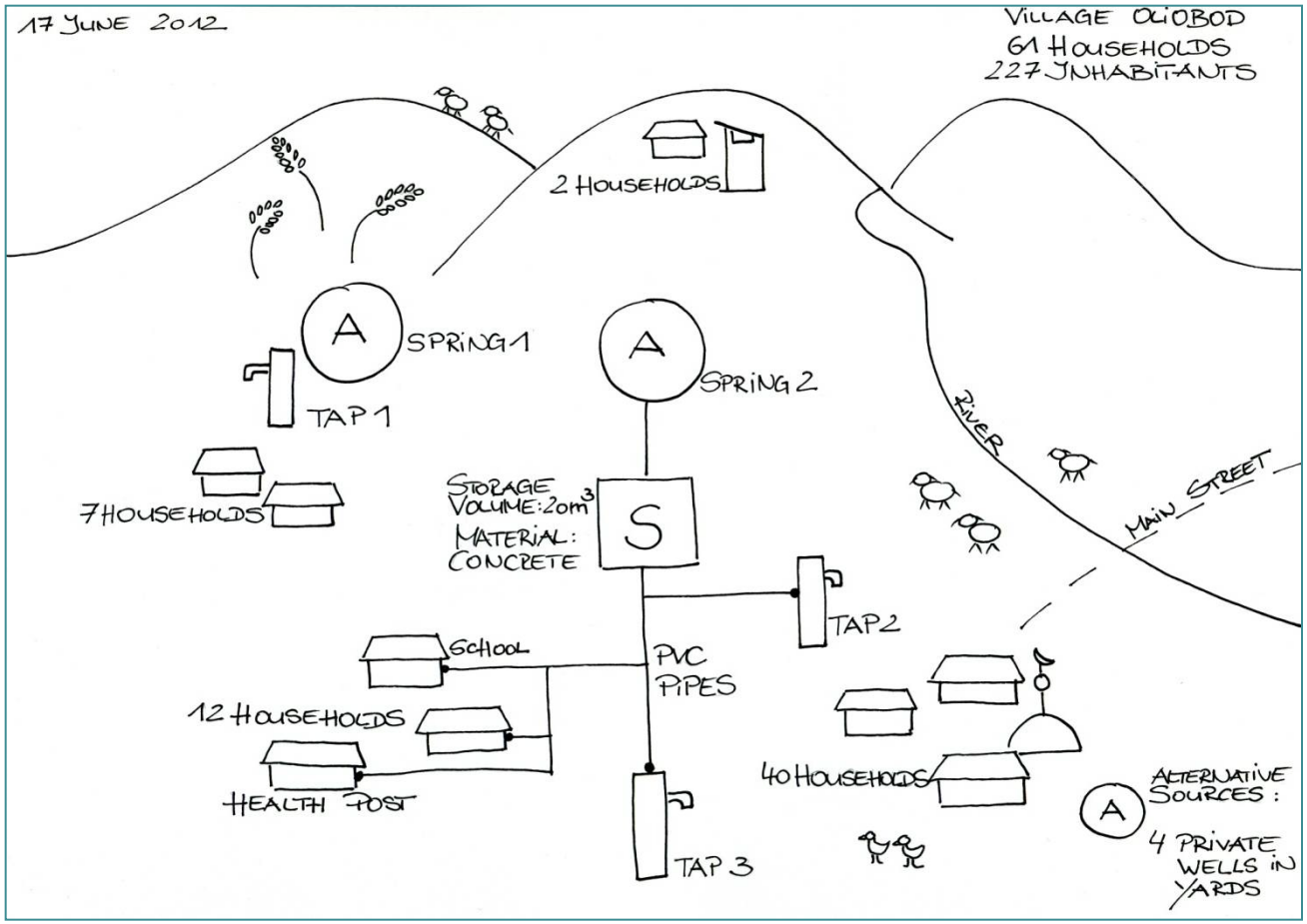
Take your time to discuss all the questions within the WSP team and to decide which questions apply to your system. You may need more than one WSP team meeting to fill in all the relevant sections of the template. Sometimes you may not be able to answer a question immediately because your community will not have the information. In this case you have to wait until you have collected the required information (such as the results of drinking-water quality analyses) with the support of the local health office or water supply office if necessary.

Confirm the information on site – you cannot describe your system adequately without having a thorough look at it. Make sure that you do not miss any parts of the system. For example, if you have several points of water abstraction, make sure you visit and describe each of them. You should also always look at the drainage area your water is coming from and the water distribution system.

To complete WSP task 2, also use Template 2-A. Compare the information you enter into Template 2-A with the information you enter into this template so that you ensure you cover all the main components of your water supply system in the description.

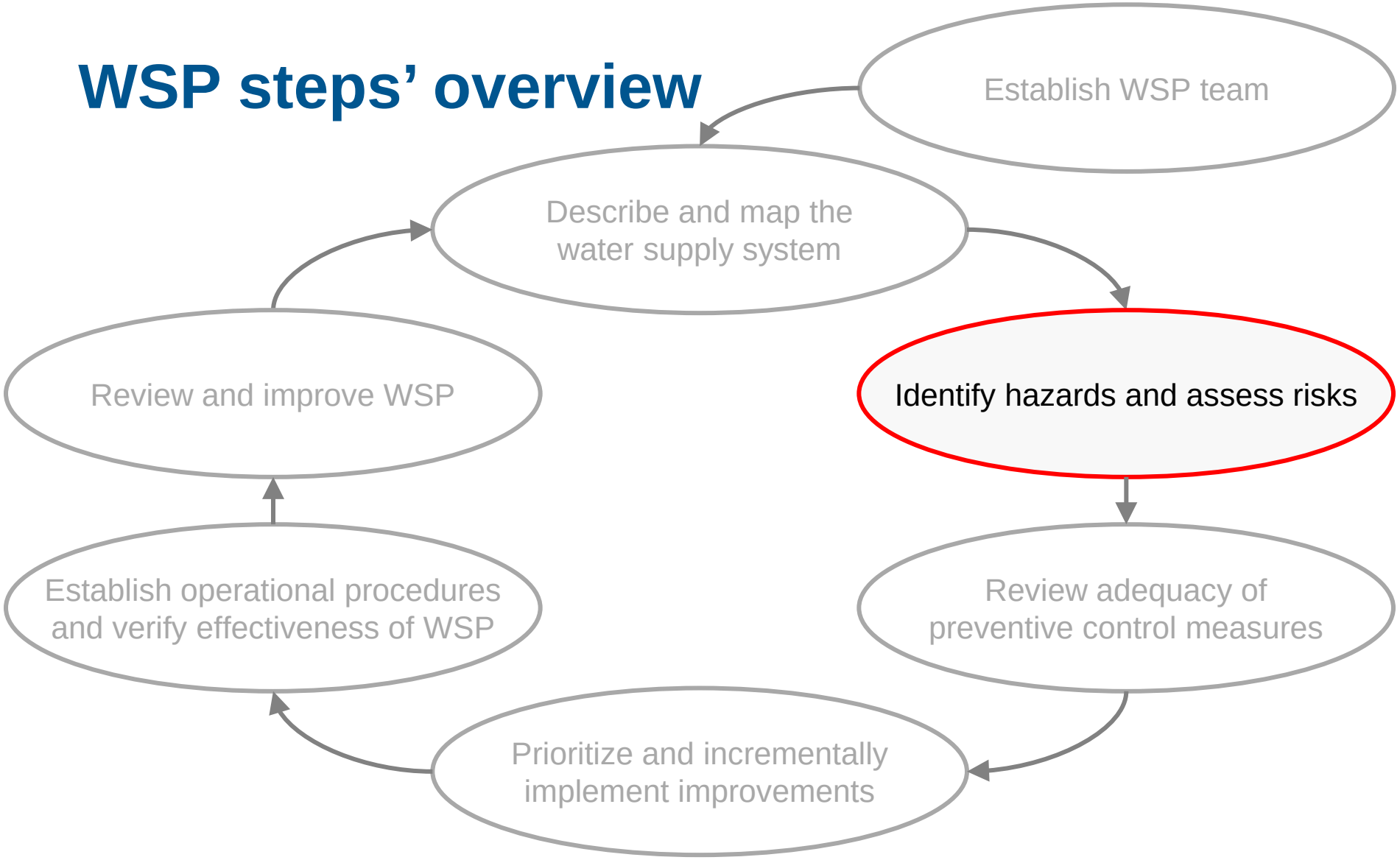
29

Map and describe the supply



Source: Esther Melhorn

WSP steps' overview



Hazard analysis

Photo: Oliver Schmoll

Photo: Bettina Rickert

Photo: Oliver Schmoll

Photo: Oliver Schmoll

Hazard analysis

Hazard analysis

- Identify **hazardous events** that introduce hazards to supply system or fail to remove them
  - Technical defects (e.g. disturbance of treatment)
  - Malpractices (e.g. inadequate use of manure)
  - Accidents (e.g. spill of chemicals)
  - Improper procedures (e.g. inadequate filter washing)
  - Natural causes (e.g. heavy rainfall causing rapid runoff)
- Identify microbial, chemical and physical **hazards** that cause harm to public health

Hazard analysis

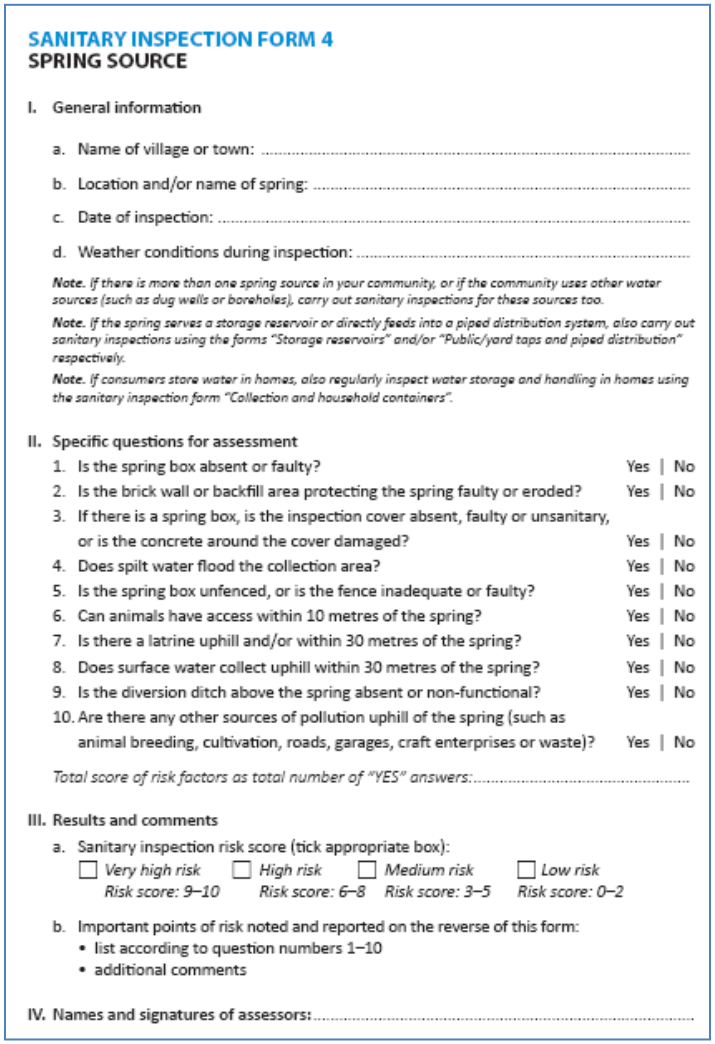
Hazard	Supply step	Hazardous event
MICRO	Catchment	Runoff and ingress of manure in heavy rain events
MICRO	Abstraction	Ingress of contaminated runoff into inadequately protected wellhead
MICRO	Treatment	Concentration of flocculation medium not adapted to raw water quality
CHEM	Storage	Improper re-commissioning after cleaning activities
MICRO	Distribution	Cross-connections by human error
CHEM	Distribution	Leaching of chemicals from pipe materials, solders, jointing compounds

Hazard analysis

- **Step back, walk the system and ask:**
  What events could happen that may introduce hazards to your system and may make your drinking-water unsafe?
- No generic assumptions:
  supply system **specific**
- **Concrete** for each supply step
- Based on on-site **observation**

Hazard analysis
Sanitary inspections

- Focus on **on-site fact finding**:
  - Accumulation of faecal material
  - Animal presence / access
  - On-site sanitation
  - Design flaws / conditions of protective infrastructures *(e.g. fences, covers, screens, aprons, diversion ditch)*
  - Hygienic conditions
- **Standardised forms** for all supply steps



SANITARY INSPECTION FORM 4
SPRING SOURCE

I. General information

a. Name of village or town: .....

b. Location and/or name of spring: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

Note. If there is more than one spring source in your community, or if the community uses other water sources (such as dug wells or boreholes), carry out sanitary inspections for these sources too.

Note. If the spring serves a storage reservoir or directly feeds into a piped distribution system, also carry out sanitary inspections using the forms "Storage reservoirs" and/or "Public/yard taps and piped distribution" respectively.

Note. If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".

II. Specific questions for assessment

1.	Is the spring box absent or faulty?	Yes | No
2.	Is the brick wall or backfill area protecting the spring faulty or eroded?	Yes | No
3.	If there is a spring box, is the inspection cover absent, faulty or unsanitary, or is the concrete around the cover damaged?	Yes | No
4.	Does spilt water flood the collection area?	Yes | No
5.	Is the spring box unfenced, or is the fence inadequate or faulty?	Yes | No
6.	Can animals have access within 10 metres of the spring?	Yes | No
7.	Is there a latrine uphill and/or within 30 metres of the spring?	Yes | No
8.	Does surface water collect uphill within 30 metres of the spring?	Yes | No
9.	Is the diversion ditch above the spring absent or non-functional?	Yes | No
10.	Are there any other sources of pollution uphill of the spring (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)?	Yes | No

Total score of risk factors as total number of "YES" answers: .....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors: .....

Risk characterization

RISK MATRIX		Severity				
		Insignificant (Score: 1)	**Minor** (Score: 2)	**Moderate** (Score: 4)	**Major** (Score: 8)	**Catastrophic** (Score: 16)
Likelihood	**Almost certain** (Score: 5)	5	10	20	40	80
	Likely (Score: 4)	4	8	16	32	64
	Foreseeable (Score: 3)	3	6	12	24	48
	Unlikely (Score: 2)	2	4	8	16	32
	Most unlikely (Score: 1)	1	2	4	8	16

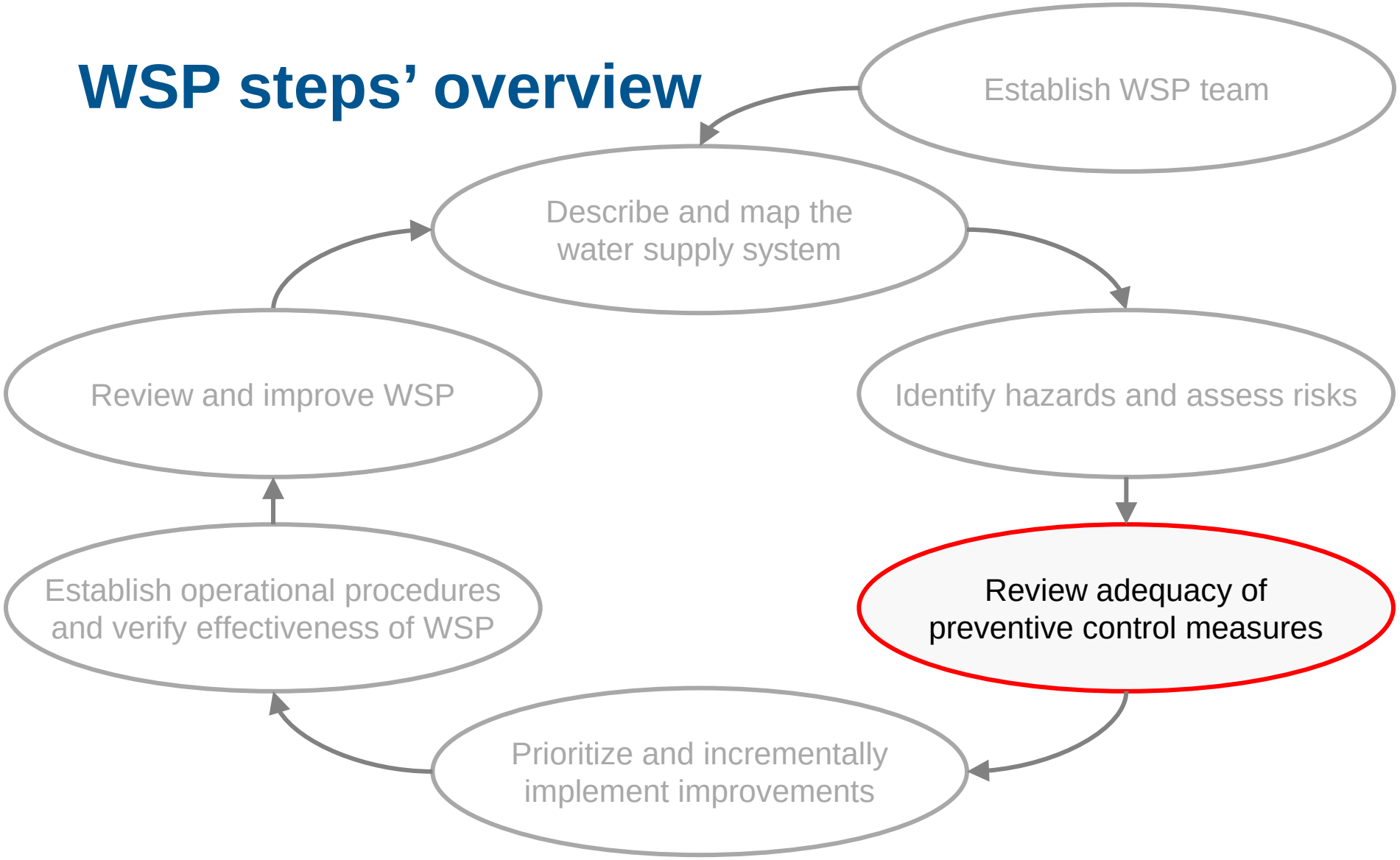
Risk characterization

- What is a risk to **public health**?
- In which areas elevated **management attention** is needed?
- What **improvements** are important?

Risk characterization

- Informed judgements in WSP team with possible conclusions:
  - **VERY IMPORTANT:** Requires urgent attention and action
  - **IMPORTANT:** Requires attention and action may be taken
  - **LESS IMPORTANT:** No action required at this time

WSP steps' overview



Identify and validate control measures

- **Control measure:** “barrier to contamination”
  - Preventing hazards gaining access to water (*catchment*)
  - Removing hazards from the water (*treatment*)
  - Preventing re-occurrence (*storage and distribution*)
- **Varying in nature**:
  - Planning (e.g. land use, protection zoning)
  - Educational (e.g. farming practices)
  - Infrastructural (e.g. fence, wellhead protection)
  - Technical processes (e.g. filtration, disinfection)
  - Repair and maintenance practices (e.g. in distribution system)

Example of control measures

Supply step	Catchment area
Hazard	Pathogens
Hazardous event	Run-off of manure into creek as a result of heavy rainfall and short-circuiting with aquifer
Control measure 1	Training programme for farmers on manure use *(periodical)*
Control measure 2	Purchase of vulnerable land plots *(one-off)*
Control measure 3	Extension of storage volumes for manure *(one-off)*
Control measure 4	Disinfection by UV *(continuously)*

Example of control measures

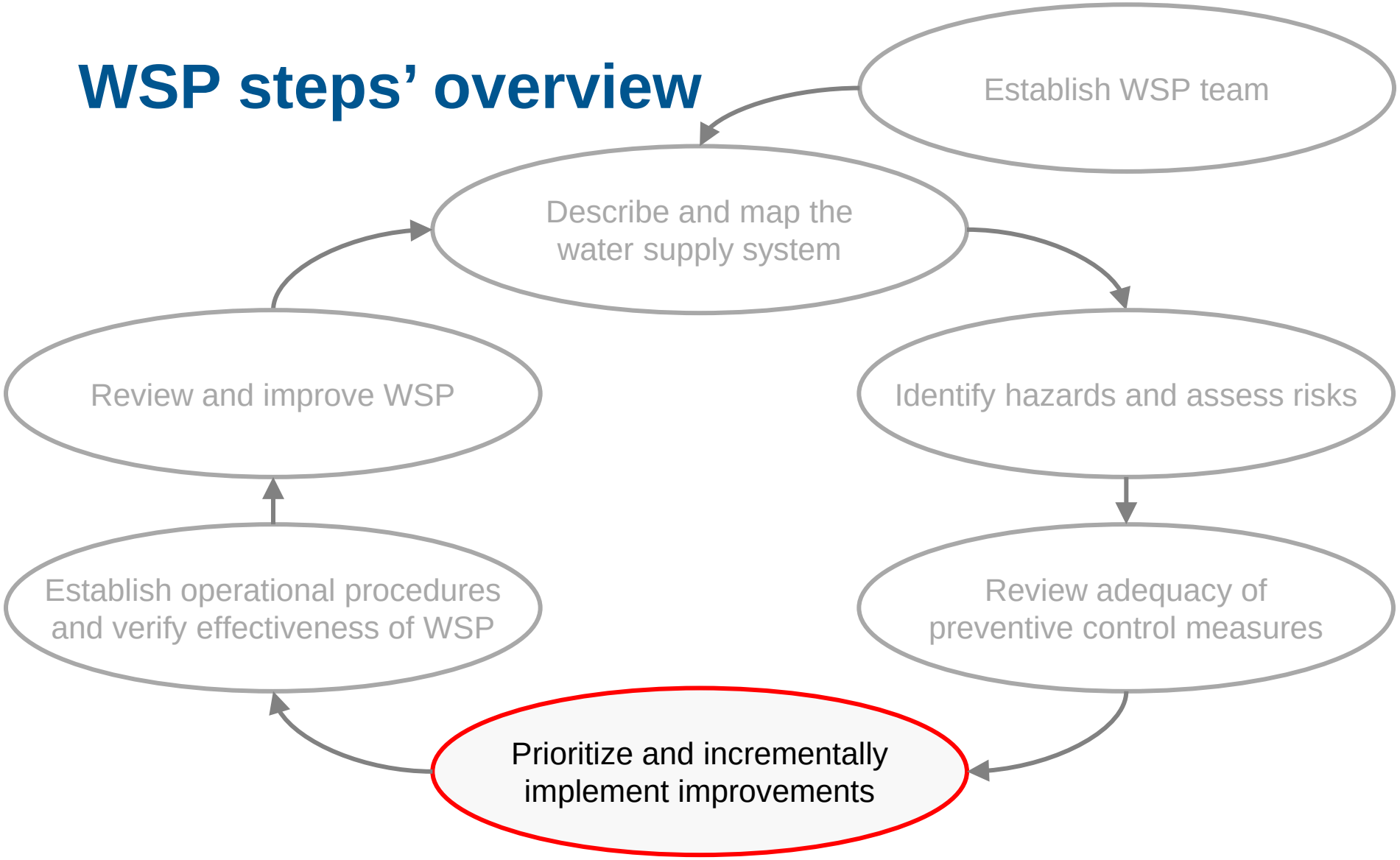
Supply step	Distribution system
Hazard	Pathogens
Hazardous event	Cross-contamination during repair or maintenance works due to insanitary working practices
Control measure 1	Work is to be contracted to certified company *(always)*
Control measure 2	Flushing and disinfection of network sections under repair in accordance with specified codes of good practice *(always)*
Control measure 3	Testing before commissioning of network section *(always)*

Validate control measures

- Actively **obtaining evidence**: check and confirm adequacy and effectiveness of existing control measures:
  - Targeted water quality investigations
  - Review of technical and scientific literature
  - Documented expert judgment

- **Core step** during WSP development and implementation:
  - Important in case of substantial changes
  - No day-to-day activity

WSP steps' overview



Improvement planning

- **Significant risks** identified require further investigation: additional or modified/improved control measures
- Documented **improvement and upgrade plan**
- **Incremental improvement** is pivotal:
  - One-off actions (“quick wins”)
  - Medium- or long-term investment programs
  - Interim solutions
  - Reflecting resources available

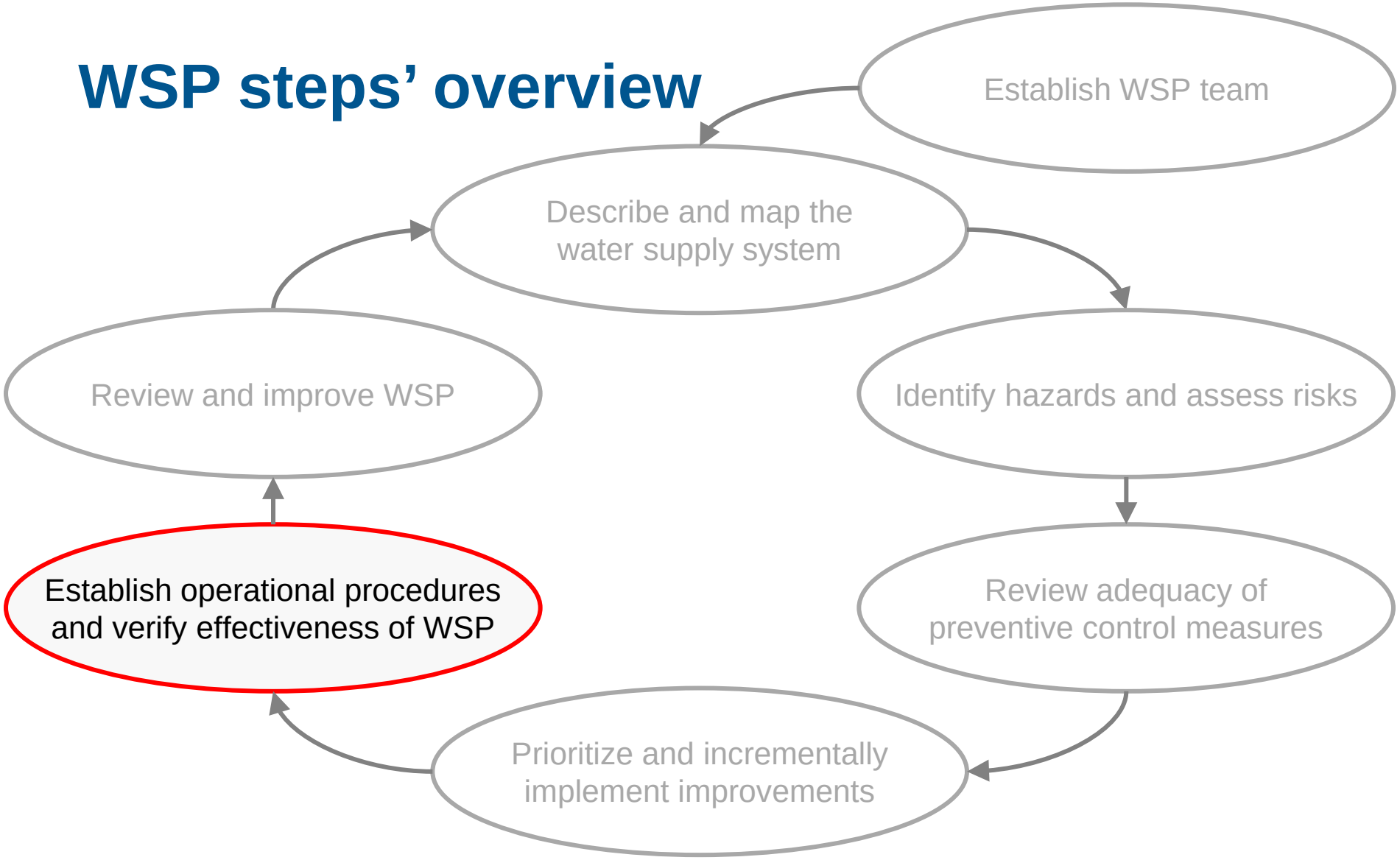
Improvement planning

Supply step	Event	Hazard	L	S	Risk	Validation of existing controls	Improved or new controls
CATCH	xxxxxx	CHEM	1	2		xxxxxx	xxxxxx
ABST	xxxxxx	MICRO	4	16		xxxxxx	xxxxxx
TREAT	xxxxxx	CHEM	3	4		xxxxxx	xxxxxx
STOR	xxxxxx	CHEM	2	2		xxxxxx	xxxxxx
DISTR	xxxxxx	MICRO	5	8		xxxxxx	xxxxxx

Improvement planning

What can go wrong?	Hazard	Under control?	How important is this?	Additional controls needed?
Limited source water availability	Q	No	**VERY IMPORTANT:** Permanently limits water availability for hygiene	Develop additional source *(long term)*
Intermittent supply *(due to above)*	M/Q	No	**VERY IMPORTANT:** May frequently allow ingress of faecal matter	Fix public taps to stop wastage of water *(mid term)*
Source pollution after rains and snow melt	M	No	**IMPORTANT:** May allow faecal pollution occasionally	Install filtration and disinfection unit *(mid term)*
Animals enter reservoir through air vents	M	Screens damaged	**IMPORTANT:** May allow faecal pollution occasionally	Fix screens at air vents *(short term)*
Ingress of runoff into reservoir	M/C	Infrastructure compromised	**IMPORTANT:** May allow faecal pollution occasionally	Fix integrity of inspection covers and install diversion ditch *(short term)*

WSP steps' overview



Operational monitoring

- Confirm performance of **control measures**
- **Operational monitoring plan:** planned sequence of simple measurable tests and observations:
  - Online measurement of **water quality parameters** (e.g. turbidity, pH, chlorine residual, conductivity, head pressure)
  - Periodic inspection of **observable features** such as integrity of protective infrastructures (e.g. wellhead, fence) and catchment activities (e.g. farming practices)
- Establishment of **operational/critical limits** that allow for **corrective actions** as planned response

Monitoring and inspection plan

System component	Monitoring or inspection activity		Limit value or critical condition	Corrective action required
Spring box	**What?**	• Fence • Inspection cover • Spring box structure • Raw water turbidity	• Fence broken • Poor seal or poor fit on inspection cover • Spring box structure cracked or damaged • Turbidity above 5 turbidity units	Caretaker immediately to: • repair fence • repair inspection cover • contact WSP team leader to discuss spring box structure repair options • close valve to prevent any further water from entering system until turbidity drops below 5 turbidity units
	How?	• Visual inspection of fence, cover and spring box using the sanitary inspection form • Turbidity tube		
	When?	• Monthly for all visual inspections • Daily for routine turbidity testing • After heavy rains and during snow-melt for turbidity testing		
	Where?	On site at spring box		
	Who?	Caretaker, Ms Leyla		

Source: WHO/Europe 2014

Operational monitoring SOPs

Control point instruction	**Nr. 7-1**
Critical point	Turbidity
Location (Where to measure/to control?)	Inlet tube
Time (How often and when?)	Continuously
Measurement category (What is to be measured or controlled?)	Siegrist turbidity measurement equipment (Photometer CT 65 B22-F3)
Documentation (How to document/archive?)	Documentation on-site with multi channel writer. Longtime archiving by foreman
Given value and tolerance range	< 0.24 FTU
Corrective actions (How to alarm and what has to be done?)	Exceeding of critical limit: Automatic rejection of spring water Phone alarm of well's foreman
Responsibilities ▪ For corrective actions ▪ For inspection of measurement equipment	 Wells foreman Measurement equipment supplier, yearly

O & M instructions

Operational or maintenance task	Step-by-step instructions	Who?	When?
Cleaning of water storage tank	**Advise consumers of water shut-off** 1) One week before tank cleaning, ask the WSP team leader to notify consumers of a two-day water shut-off. **Clean tank** 1) Open drain valve, close inlet and outlet valves, and drain tank completely. 2) Dry tank for 1 day. 3) Check for cracks and repair, if necessary. 4) Clean walls with brush and remove silt manually. 5) Close drain valve and open inlet valve (keeping outlet valve closed) to fill tank for about 1 hour. 6) Close inlet valve, open drain valve, and drain tank. 7) Repeat tank filling and draining process until draining water runs clean (usually 1–2 more times). 8) Close drain valve and open inlet and outlet valves to resume service.	Caretaker, Ms Leyla	Annually (every spring)

Source: WHO/Europe 2014

Verification monitoring

- **Confirmation** of overall system performance
- **Water quality (compliance) monitoring:** Does the water produced meet the water quality targets?
  - Parameter coverage and minimum frequencies given by regulation
  - Pay attention to potential seasonal variations
- Findings from hazard analysis and risk assessment will inform **verification monitoring specifics**

Verification plan

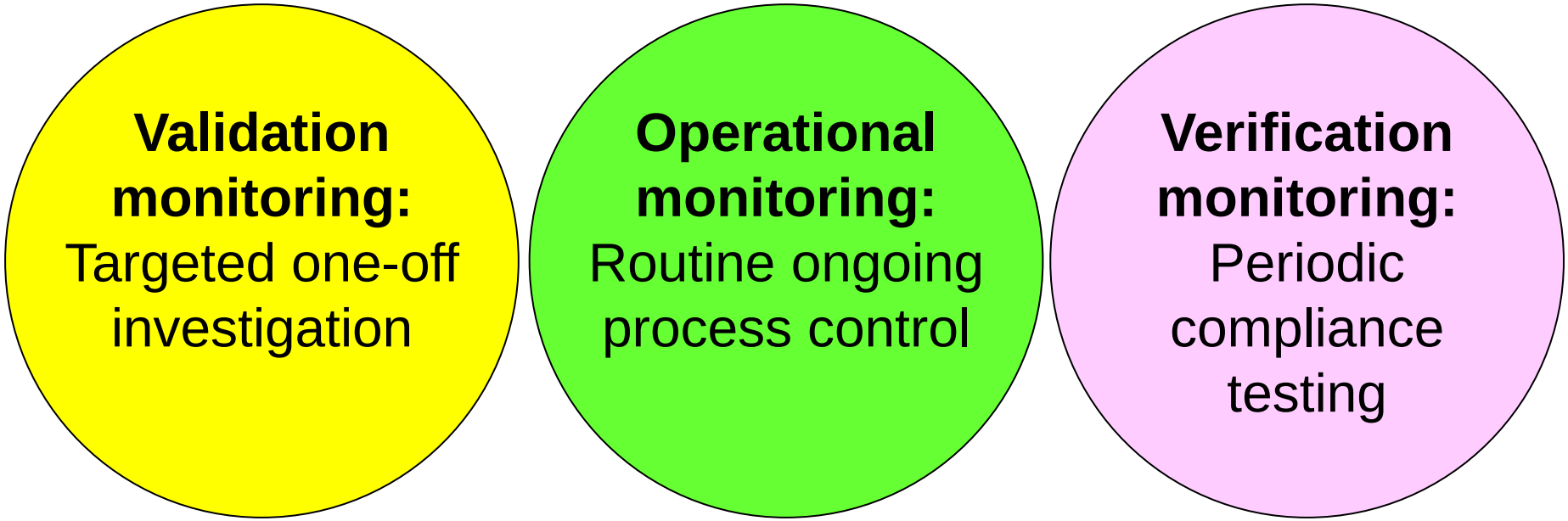
Unit process	Operational monitoring (see Module 6)			Verification monitoring		
	What	When	Who	What	When	Who
Treatment works	On-line measurement – pH – Chlorine	Daily	Water treatment operators / Analyst	*E. coli*	Weekly	Analyst
				Enterococci	Weekly	
				Record audit	Monthly	
	Jar testing records	Weekly				
	Turbidity	Daily				
	Dosing records	Monthly				
Distribution system	pH	Weekly		*E. coli*	Monthly	
	Turbidity	Weekly				
	Chlorine	Weekly		Turbidity	Monthly	
	Sanitary Inspection	Weekly		Enterococci	Monthly	

Verification plan

Sampling frequency	6-monthly
Parameter(s) tested and target value(s)	Faecal coliforms: 0 coliform forming units per 100 millilitres Turbidity: lower than 5 turbidity units
Sampler	Responsible health officer
Sampling locations	Community tapstands (5 randomly selected)
Laboratory at which samples are tested	District health laboratory
WSP team member to whom the results are reported	Mr Fahridin, village head and WSP team member

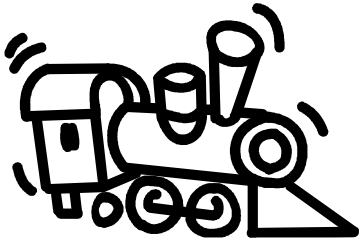
Source: WHO/Europe 2014

Monitoring … monitoring …. monitoring



Let’s undertake a train ride!

Validation monitoring



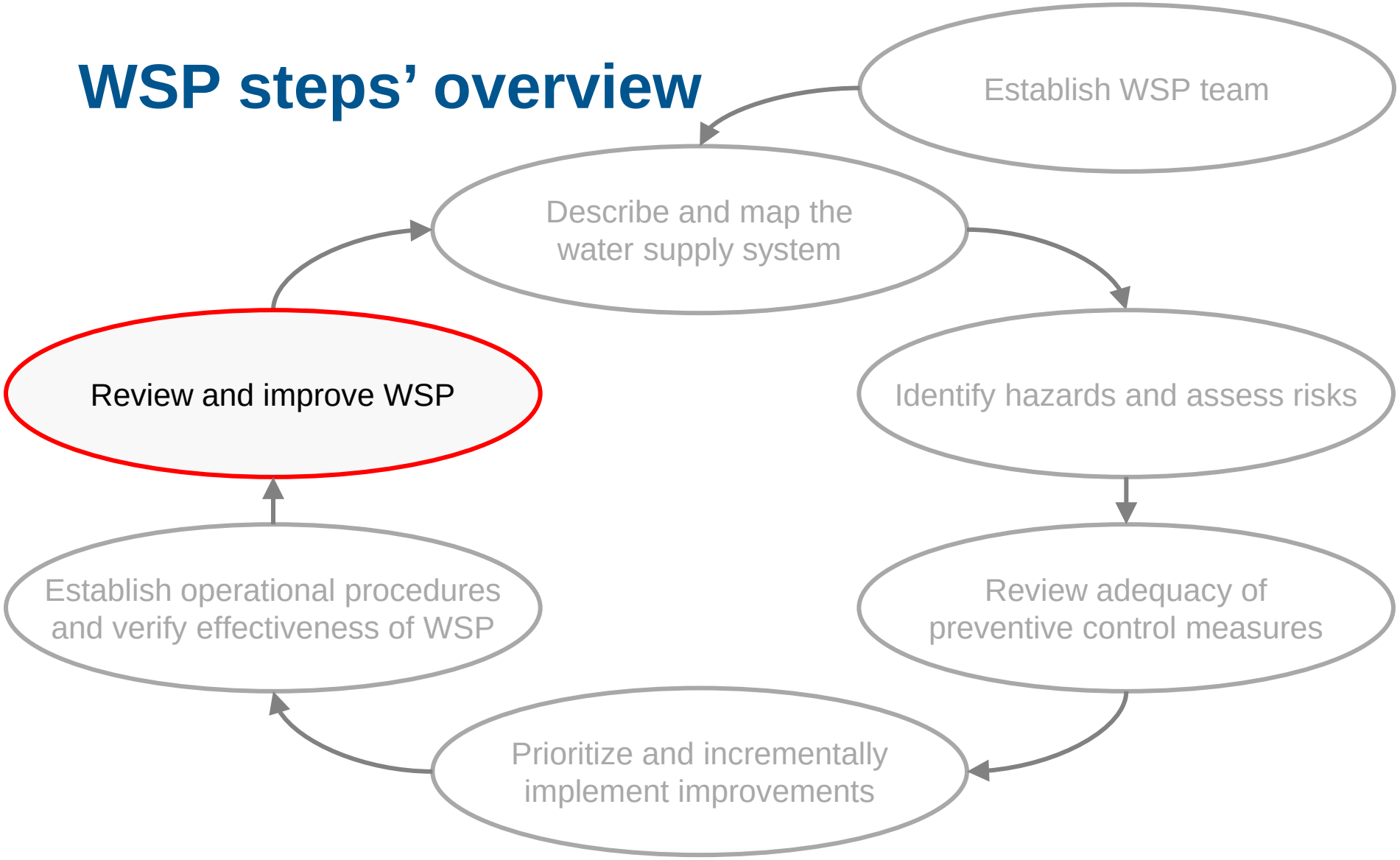
Operational monitoring

Verification monitoring

Budapest — 8 hours — Berlin

Target

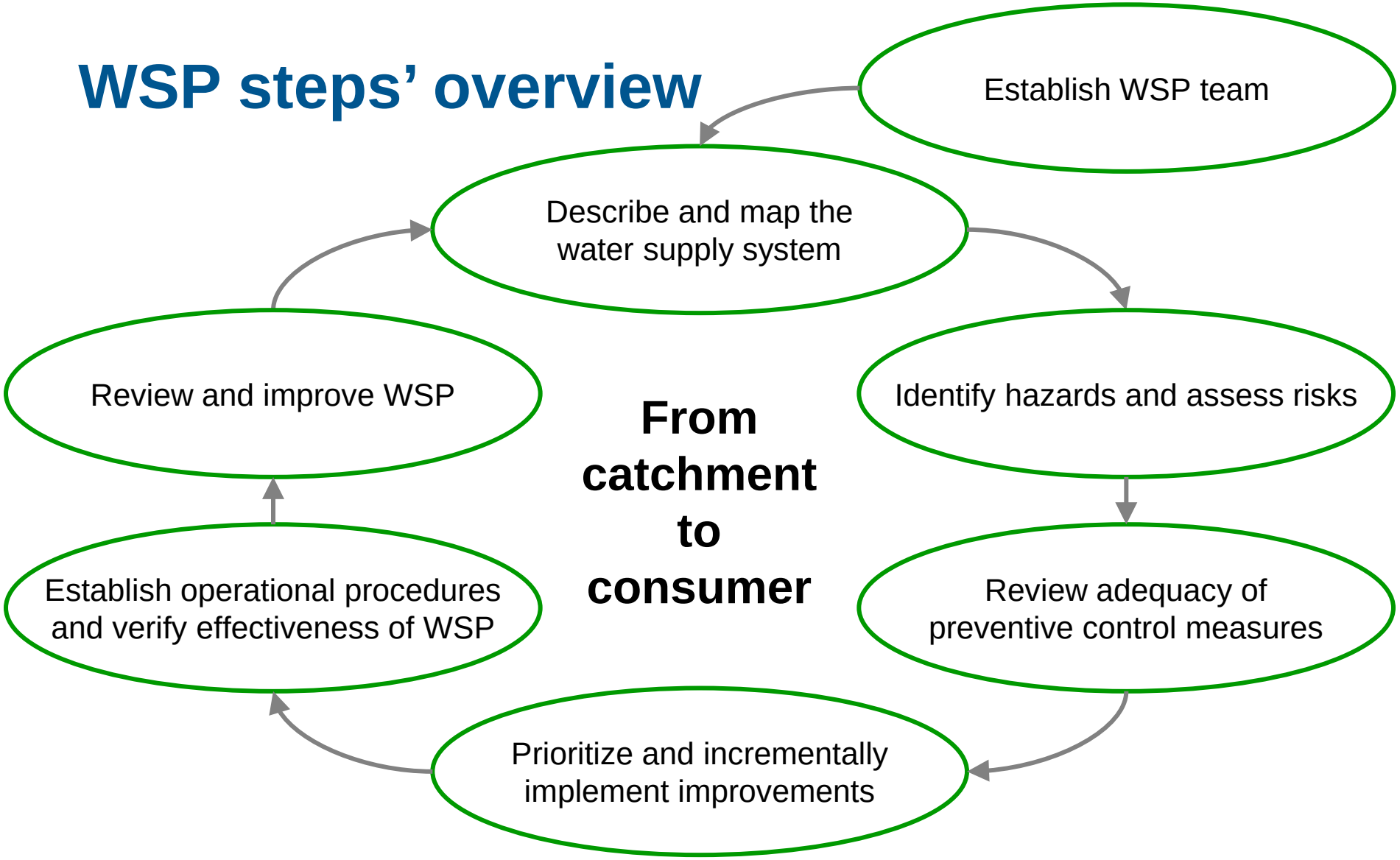
WSP steps' overview



Considerations for review of WSP

- **Planned** time-bound review of WSP in pre-defined revision cycles
- In response to **changes** in supply system or catchment
- In response to **lessons learned** from emergencies, incidents and near misses

WSP steps' overview



Conclusions

- **WSP as codified safe management:** public health benchmark for safe drinking-water
- **Holistic and proactive** risk management that applies for all types and sizes of supplies
- Effective managerial **tool for water suppliers**
- Cover supplier‘s **area of responsibility**

Added value

- More **clarity on supply related risks** improves operations
- Fosters and documents **due diligence**
- Reduction of **water quality incidents**
- Increased **compliance**
- Stimulation of multi-stakeholder **cooperation and communication**

Added value

- Provides **rationale for decision making**:
  helps to focus limited resources and attention
- **Short-term improvements** with own resources:
  - Quick one-off infrastructure fixes
  - Improved monitoring, inspection and maintenance procedures
- Maps **needs for additional resources** for long-term investments (e.g. infrastructure upgrades)
- WSP supports leverage of **external financial support**
- Increased **willingness to pay** water fee

Health gains

- Evidence on **health gains**
- Problem of **time scales**
- Evidence from **Iceland**:
  - Significant decrease in diarrhea incidence
  - Population under WSP is 14 % less likely to develop clinical cases of diarrhea

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Benefits of Water Safety Plans: Microbiology, Compliance, and Public Health

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Supporting Information

ABSTRACT: The Water Safety Plan (WSP) methodology, which aims to enhance safety of drinking water supplies, has been recommended by the World Health Organization since 2004. WSPs are now used worldwide and are legally required in several countries. However, there is limited systematic evidence available demonstrating the effectiveness of WSPs on water quality and health. Iceland was one of the first countries to legislate the use of WSPs, enabling the analysis of more than a decade of data on impact of WSP. The objective was to determine the impact of WSP implementation on regulatory compliance, microbiological water quality, and incidence of clinical cases of diarrhea. Surveillance data on water quality and diarrhea were collected and analyzed. The results show that HPC (heterotrophic plate counts), representing microbiological growth in the water supply system, decreased statistically significant with fewer incidents of HPC exceeding 10 cfu per mL in samples following WSP implementation and noncompliance was also significantly reduced ($p < 0.001$ in both cases). A significant decrease in incidence of diarrhea was detected where a WSP was implemented, and, furthermore, the results indicate that population where WSP has been implemented is 14% less likely to develop clinical cases of diarrhea.

INTRODUCTION

The Water Safety Plan (WSP) methodology for ensuring the safety of drinking water supplies, with its approach to systematic preventive management and risk assessment, has been recommended by the World Health Organization (WHO) since its incorporation in the third edition of the WHO Guidelines for Drinking Water Quality in 2004 and again in the fourth edition in 2011.[1,2] WSPs have become widely used and are incorporated into legal requirements for water utilities in several countries. However, systematic evidence for the effectiveness of WSPs in improving water quality and health is lacking and stakeholders recognize the need for research to strengthen the evidence base.[3] In Iceland, the use of the WSPs by drinking water utilities was legislated in 1995.[4] Implementation has progressed steadily and by 2008 over 80% of the population was served by a water utility with a WSP.[5] The staggered implementation and long duration of WSP use in Iceland, as well as availability of water quality data and surveillance data on diarrhea in humans, provide a unique opportunity to evaluate systematically the impacts of WSPs on water quality and public health.

The WSP methodology is more comprehensive than conventional approaches to drinking water safety, addressing the whole water system from catchment to consumer with the goal of preventing contamination at each stage.[6] This is in contrast to conventional approaches to drinking water quality that focus primarily on ensuring that drinking water meets government standards for biological and chemical parameters with end-point testing. The WSP approach includes, for example, improved maintenance policies and procedures, systematic repair of pipes, a cleaning plan (e.g., regular flushing of fire hydrants and cleaning of reservoir tanks), and improvements in the system (e.g., backflow prevention). Such interventions are expected to reduce microbial growth in the system, prevent infiltration of contaminants, and result in safer water.

Iceland is a developed country with a population of 320 000 inhabitants with well-run municipal water utilities and 100% piped drinking water supply.[7] Iceland is also one of the freshwater-richest countries in the world, estimated at around 600 thousand m³ per person per year,[8] with good access to

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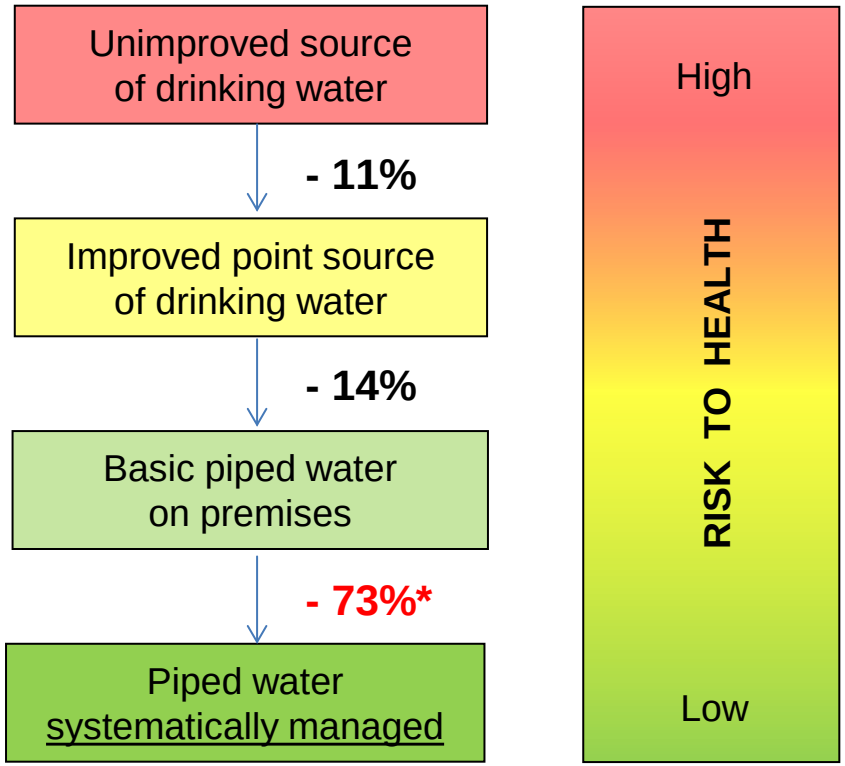
Health gains

Supply transitions and associated reduction in diarrhoea risk



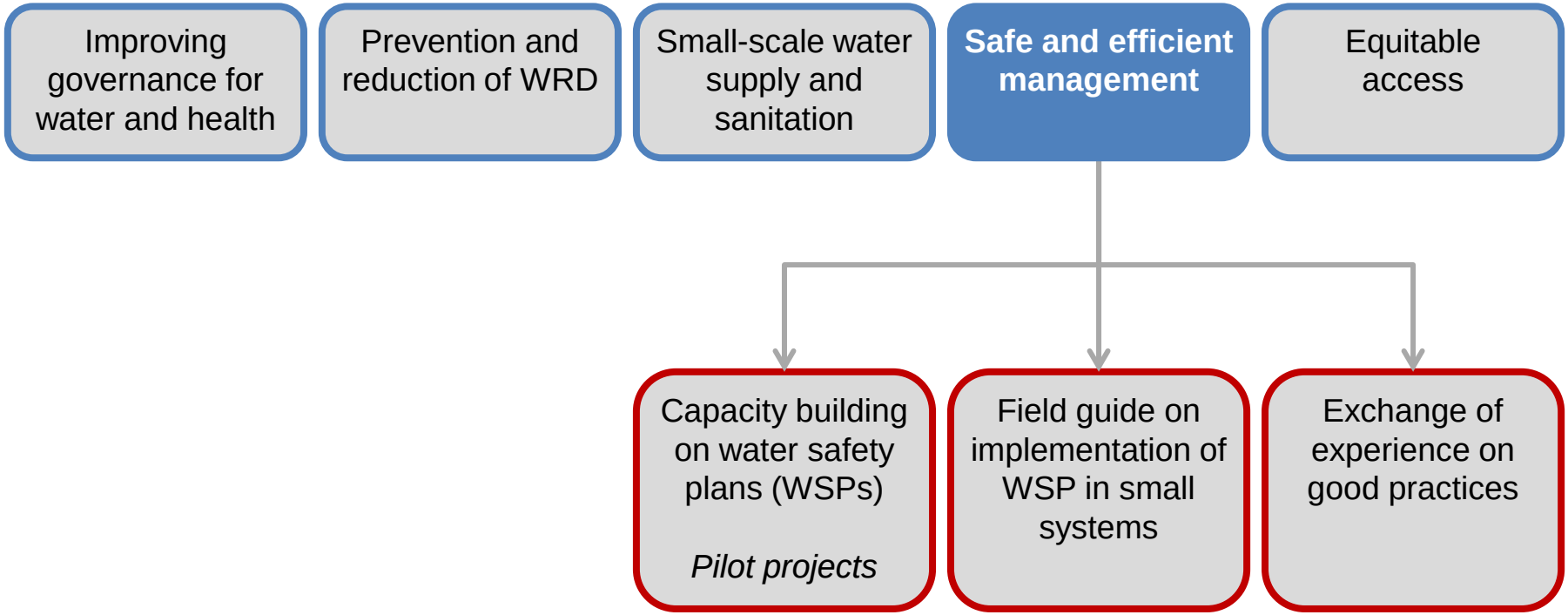
* Preliminary estimate

Source: WHO 2014 (www.who.int/water_sanitation_health/gbd_poor_water/en)

Incremental uptake in Europe

- Regulatory **provisions on WSP-type approaches**:
  - "Regulatory" implementation strategy with minimum requirements and enforcement mechanisms
  - "Soft" implementation strategy triggering that water suppliers find WSPs appropriate - voluntary uptake by larger utilities
- EU Commission prepares for uptake in **DW Directive**
- Increasing uptake by **donors, banks and NGOs**
- **Protocol on Water and Health** prioritizes WSPs

The Oslo 2014-2016 programme of work



Explicit WSP national targets

Country	Target
Armenia	By 2016: Develop methodology and legal basis for WSP By 2010: Develop and implement WSPs in 5 communities
Hungary	Promote good practice in water supply management *Indicator: Number of water supplies using WSPs*
Kyrgyzstan	By 2015: Organise development and approval of WSPs for Bishkek and Osh By 2020: For other cities and regional centres
Republic of Moldova	By 2010: Set up WSPs for all cities and other settlements with a population over 5,000 people

WHO country support

Capacity building on WSPs	2012-2013	2014-2015
National and regional trainings Provision of WSP resource materials in local languages Support to pilot projects and scale-up	5 countries GEO, KGZ, TJK, TKM and UKR	5 countries KAZ, KGZ, TJK, UKR and UZB

Photos: Enkhtsetseg Shinee

Thank you

Rahmat

Source: Rod Shaw