



The WHO water safety plan approach: a tool for preparing for floods

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**World Health
Organization**

REGIONAL OFFICE FOR
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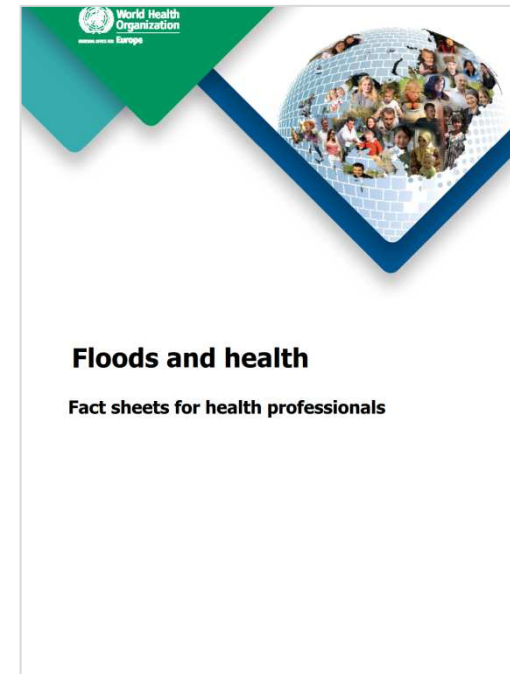
**Всемирная организация
здравоохранения**

Европейское региональное бюро

WHO role in 2014 Balkan flooding events

Public health advice

- **WHO grade 2 emergency:**
 - Deployment of WHO staff
 - Deployment of water purification equipment and emergency health kits
- Advice and support for coordinated and effective **health sector response:**
 - Water, sanitation and hygiene
 - Waste and dead animal management
 - Chemical hazards and vector control
- Public health advice to **general public**

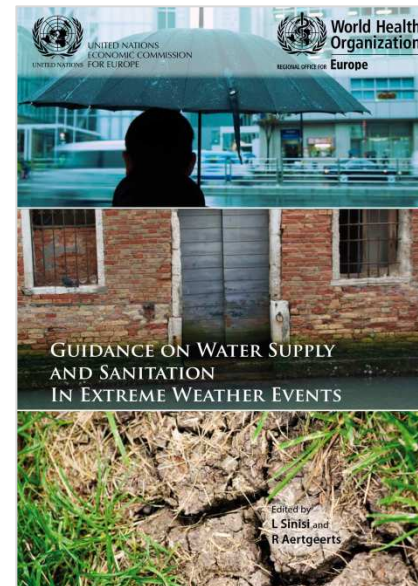


Source: <http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2014/floods-and-health-fact-sheets-for-health-professionals>

Climate change and water

Preparedness planning

- Effects of **climate change** impact precipitation patterns
- Increased frequency, duration and intensity of **rainfall**
- Increased risk of **floods**
- Need for increased **resilience** of water utilities
- **WHO water safety plan** approach supports adaptation management



Source: <http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2011/guidance-on-water-supply-and-sanitation-in-extreme-weather-events>



Source: <http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2013/floods-in-the-who-european-region-health-effects-and-their-prevention>

WHO Guidelines for drinking-water quality

Public health benchmark

- 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)
- Recommendation of **water safety plans** (WSP) as codified safe management



Source: http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines

Framework for safe drinking-water

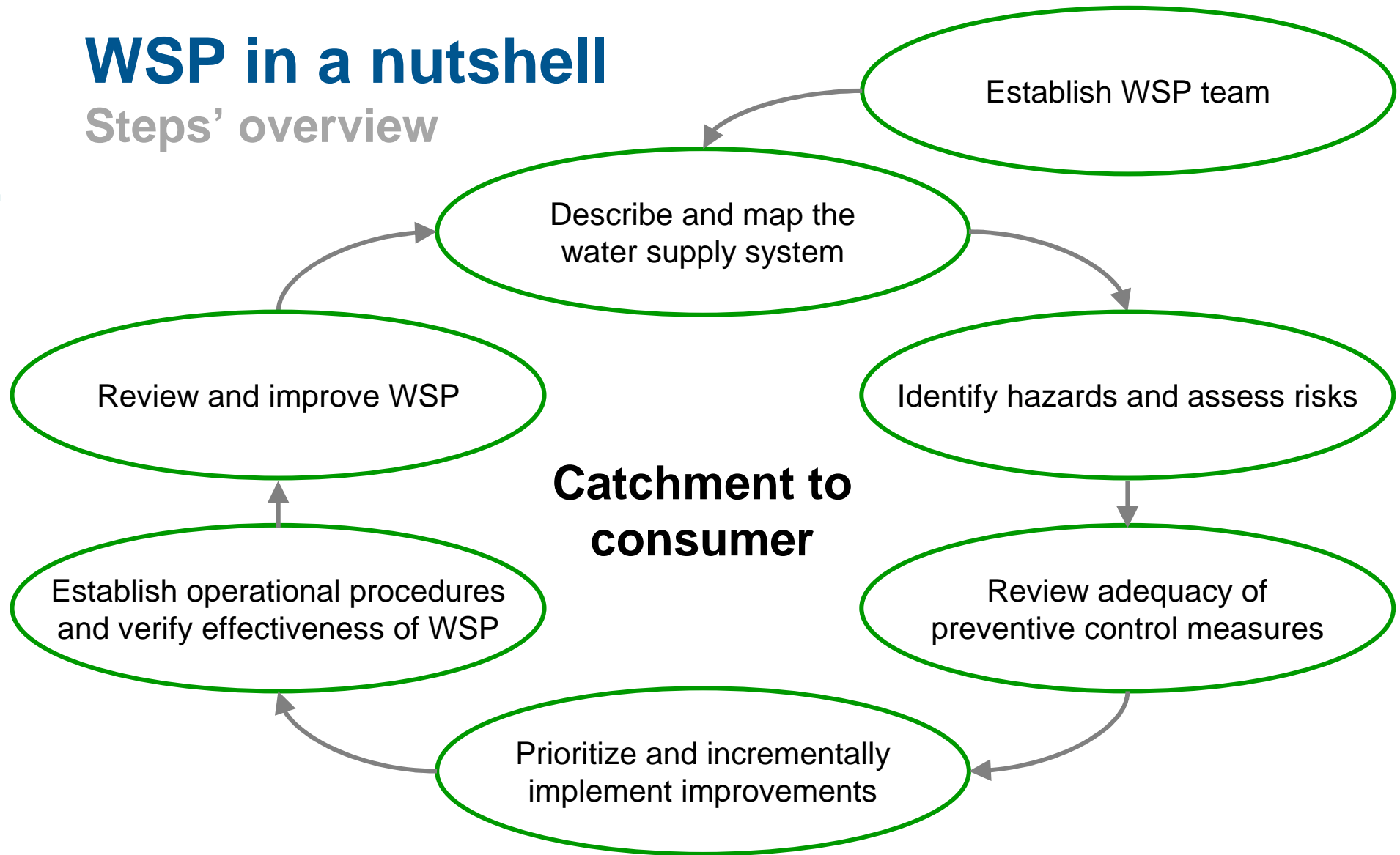
Water safety plans



“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.**”

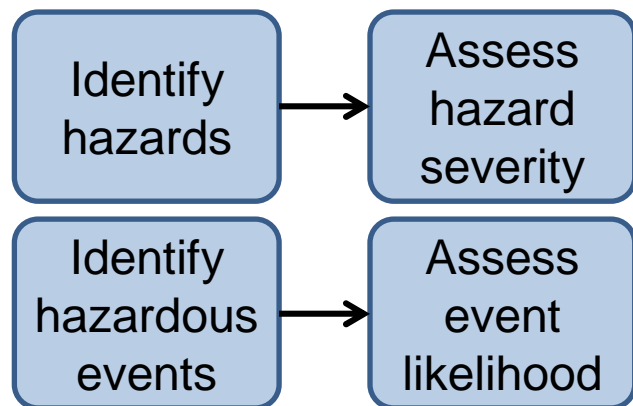
WSP in a nutshell

Steps' overview



WSP system assessment

Hazard analysis



WSP system assessment

Example hazard analysis

Hazard	Supply step	Hazardous event
M & P	Catchment	High loads of turbidity (runoff) and pathogens (sewage overflow) in source water
M & C	Abstraction	Ingress of chemically and/or microbiologically contaminated flood water into (damaged) wells
M	Treatment	Source water quality beyond designed treatment capacities (i.e. coagulation, filtration and disinfection)
P	Treatment	Interruption of supply due to power failure
M	Distribution	Damaged/disrupted mains with ingress of flood water and/or sewerage

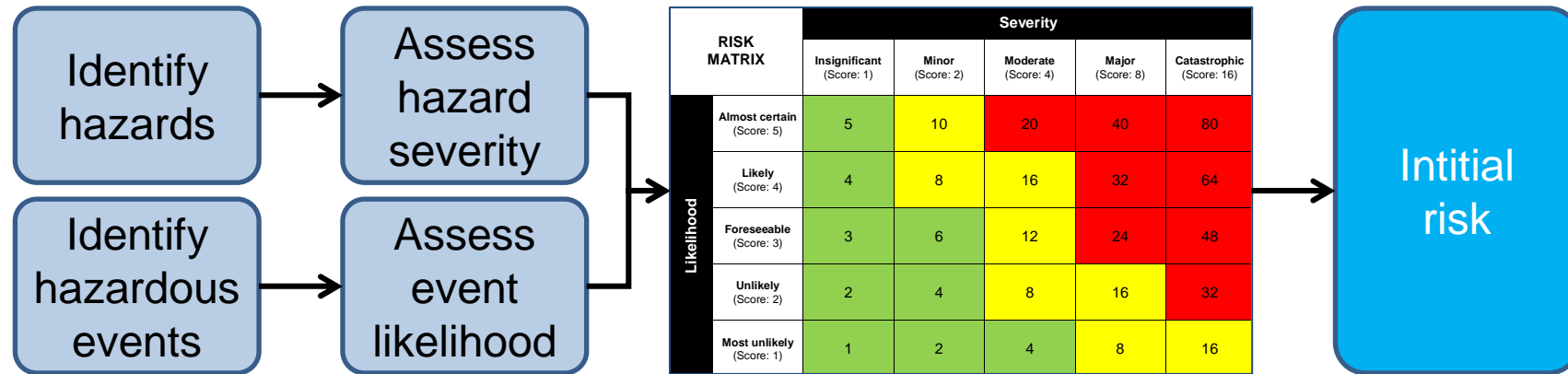
WSP system assessment

Hazard analysis

- **Step back and analyze:** *What can go wrong where?*
- No generic assumptions: supply **system specific**
- Identify **hazardous events** that introduce hazards:
 - Natural causes (e.g. heavy rainfall, floods, droughts)
 - Technical defects (e.g. disturbance of treatment)
 - Malpractices (e.g. inadequate maintenance)
 - Accidents (e.g. spill of chemicals)
- Identify microbiological, chemical and physical **hazards** that cause harm to public health

WSP system assessment

Risk assessment



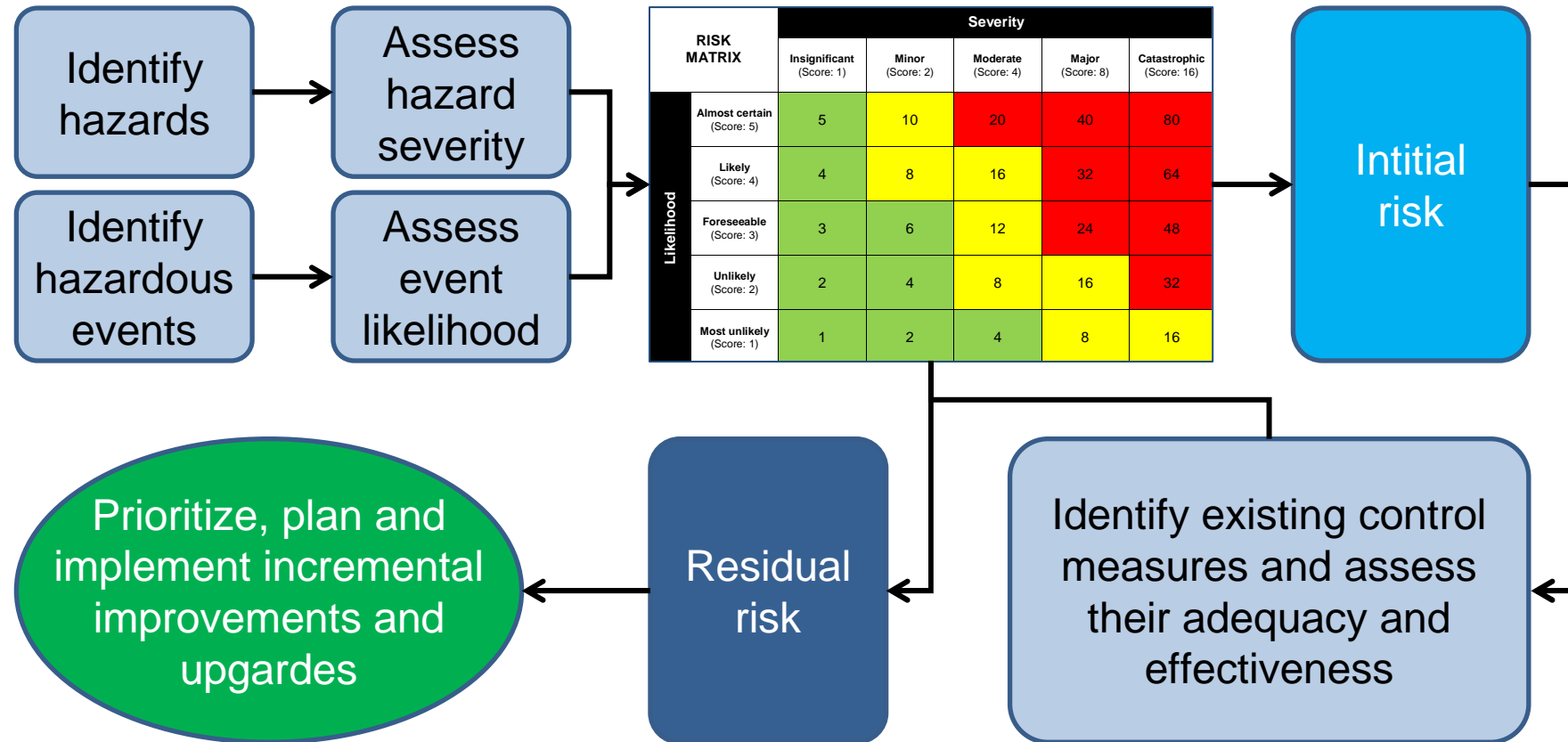
WSP system assessment

Risk assessment

- **Ranking and prioritisation** of risks
- Events can be **classified**:
 - What is a risk to public health?
 - In which areas elevated management attention is needed?
 - What improvements and upgrades are important to close gaps in resilience?

WSP system assessment

Validation of control measures



WSP system assessment

Outcome

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

WSP system assessment

Improvement and upgrade planning

- **Significant residual risks** require further investigation
- **Incremental improvement** is pivotal:
 - Identified capital investments for medium and/or long-term infrastructure upgrades
 - Optimized managerial and operational procedures
 - Enhanced preparedness planning
 - Improved emergency response procedures
 - Adjusted communications with health authorities and the public

WSP disaster/emergency planning

Core elements

- **Response actions** (incl. increased monitoring)
- **Responsibilities and authorities** (internal and external)
- Plans for **emergency water supplies**
- **Communication protocols and strategies**, including notification procedures (i.e. internal, health authority, media and public)
- **Regular practices** of emergency procedures
- **Post-incident evaluations**

Added value of WSP

Reported by water utilities

- **Health gains**
- **Improved operations** through more clarity on supply related risks
- Reduction of **water quality incidents**
- Fosters **due diligence**
- Provides **rationale for decision making**
- Stimulation of multi-stakeholder **communication**
- WSP supports leverage of **external financial support**

Incremental uptake

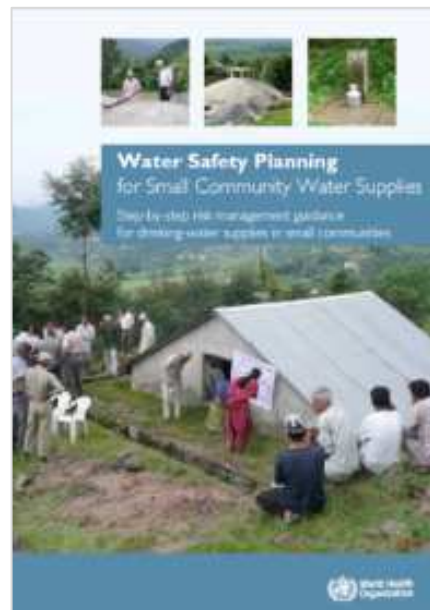
Increasing reality in Europe

- One third of countries have **provisions on WSP-type approaches** in place:
 - “Regulatory” implementation strategy with minimum requirements and enforcement mechanisms (e.g. Belgium, Hungary, Iceland, Switzerland, United Kingdom)
 - “Soft” implementation strategy triggering that water suppliers find WSPs appropriate (e.g. Germany, Portugal)
- **EU Drinking Water Directive**
- Priority programme area under the **WHO/UNECE Protocol on Water and Health** (ALB, BIH, CRO, SRB)

WSP resource materials



Source: http://www.who.int/water_sanitation_health/publication_9789241562638



Source: http://www.who.int/water_sanitation_health/publications/2012/water_supplies



Source: <http://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>

Thank you
Hvala



Source: Rod Shaw