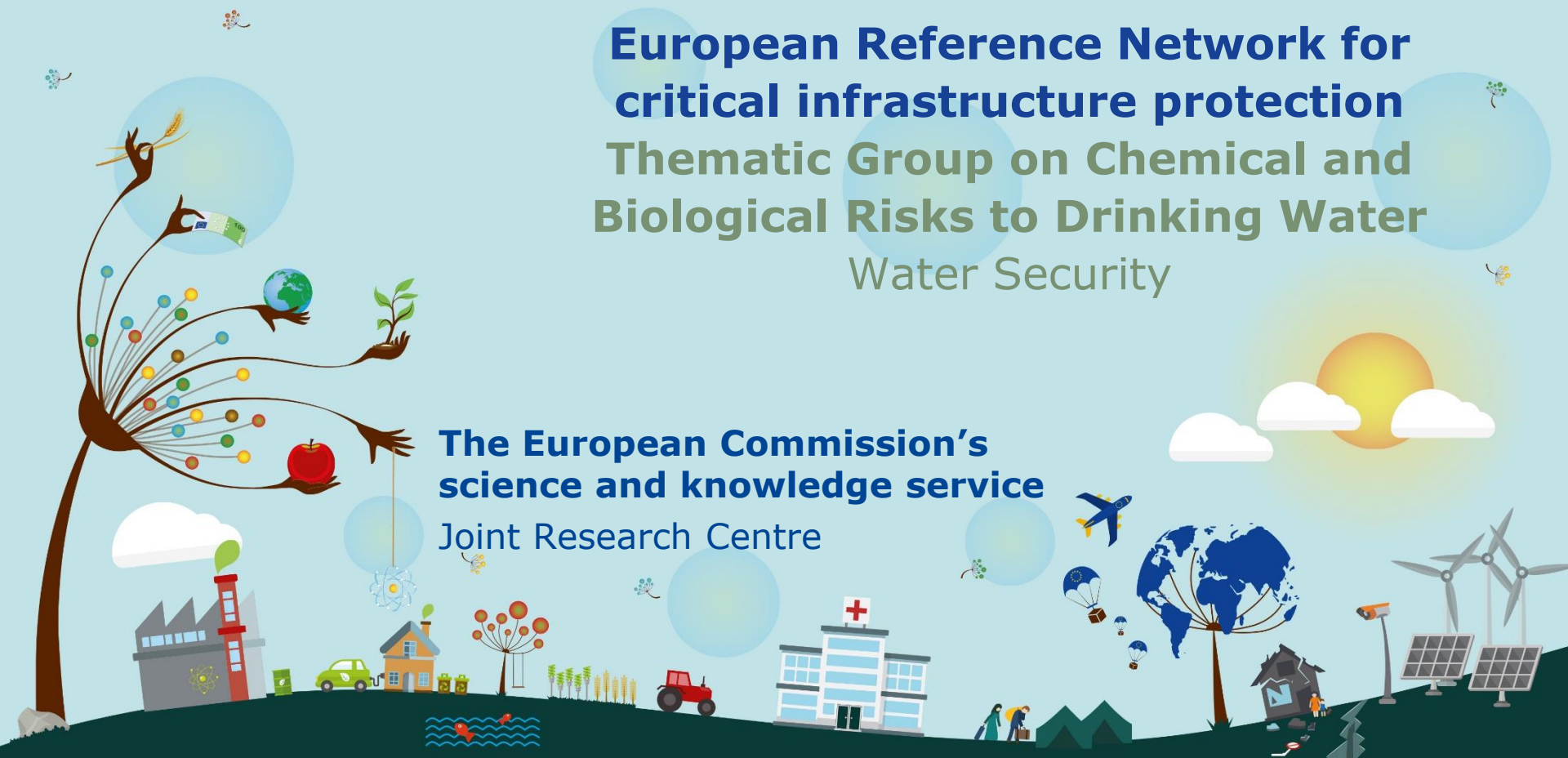


European Reference Network for critical infrastructure protection Thematic Group on Chemical and Biological Risks to Drinking Water Water Security

**The European Commission's
science and knowledge service
Joint Research Centre**



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European
Commission

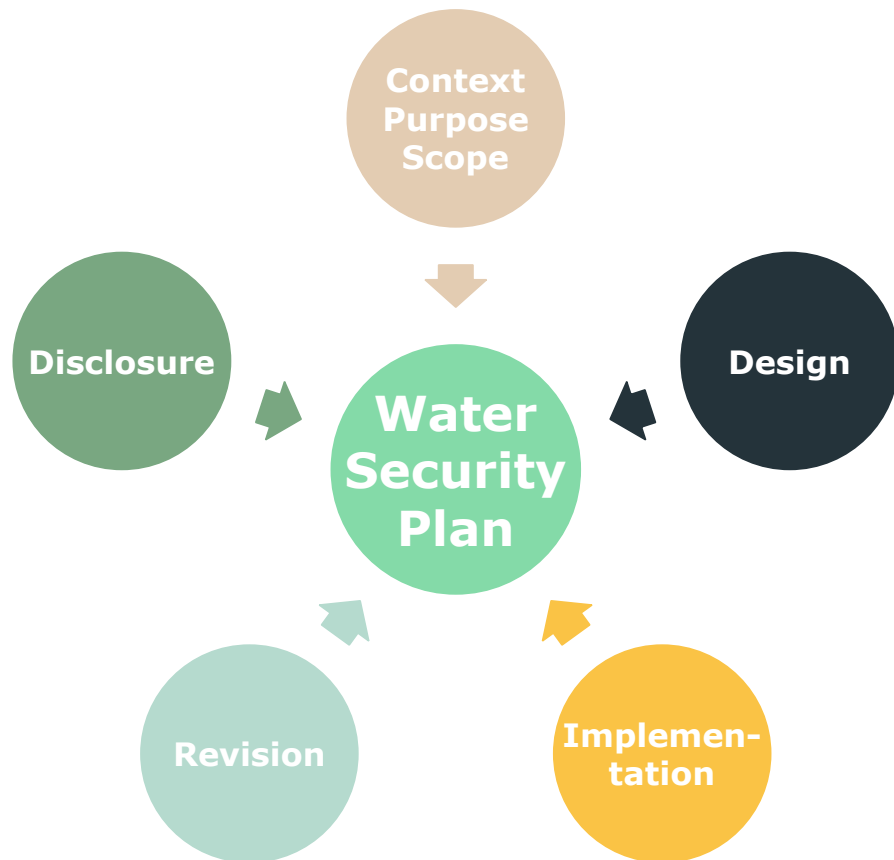
Work Program TG 2017-2019

Guidance on requirements for production of a **Water Security Plan** in drinking water supply

Review of **technologies** for the **rapid detection of chemical and biological contaminants** in drinking water

Practical guidelines on the requirements of a **continuous online water-quality monitoring system** in drinking-water-supply systems

Water Security Plan



JRC TECHNICAL REPORTS

Guidance for production of a Water Security Plan in drinking water supply

ERNICIP chemical and biological (CB) risks to drinking water Thematic Group

Teixeira, R

Carmi, O

Raich, J

Gattinesi, M

Hohenblum, P

2019

Theocharidou, M (Ed.)



The research leading to these results has received funding from the European Union as part of the European Reference Network for Critical Infrastructure Protection project.

Water Security Plan Context

Emergency
situations

Water
contaminations

Health of
consumers

Effective
response and
communication

EU counter
terrorism
strategy

EC 2017 CBRN
risk
action plan

Water Security Plan Purpose

Decrease the risk

Effective and adequate response

Restoration to normality

Responsibilities and roles

Corrective to preventive maintenance

Continuous online systems

Security culture

Continuity of organization's operations

Communication procedures

Better cooperation

Water Security Plan Scope

Deliberate
contaminations

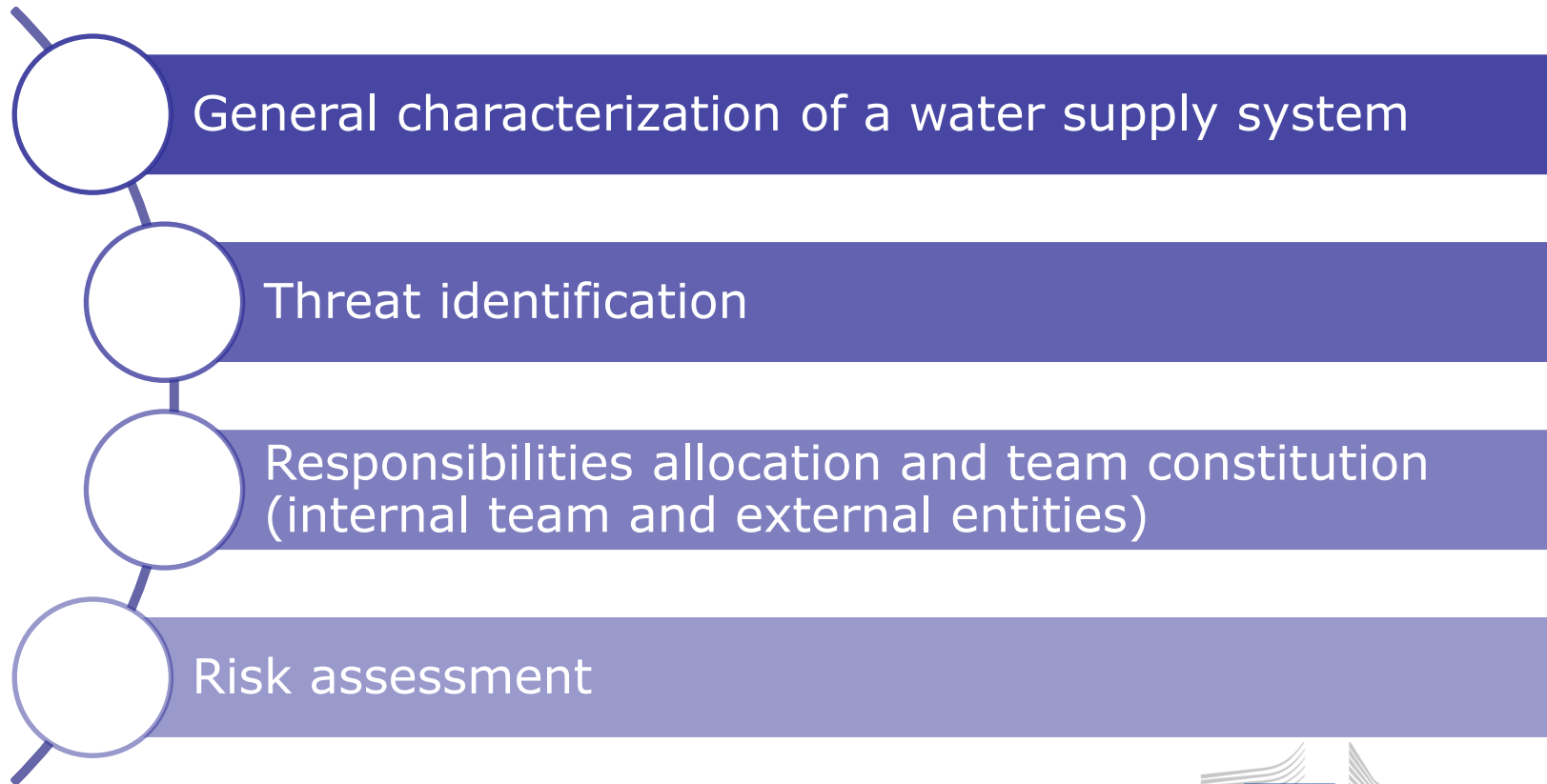
Low
probability/High
impact

Chemical and
biological
(radiological)

Physical
protection

Cyber
Security

Water Security Plan Design



Water Security Plan Implementation

Phase I

- Planning and Preparation

Phase II

- Protection – Event Detection and Confirmation

Phase III

- Response – Event Management

Phase IV

- Remediation and Recovery – Return to Normality

Water Security Plan Implementation

Phase I – Planning and Preparation

- Risk assessment
- Security and system design vulnerabilities
- Characterization and evaluation of the threats
- Definition of scenarios
- Indicators for detection of suspicious activity
- Preparedness for rehabilitation
- Alternative water supplies and redundancy
- Emergency response plan
- Identification of roles
- Awareness-raising, training and exercises

Water Security Plan Implementation

Phase II – Protection – Event detection and confirmation

- Event detection
- Record of anomalous occurrences
- Online water quality and operational monitoring
- Consumer complaints, public health and surveillance by authorities
- Sampling and laboratory analysis for confirmation

Water Security Plan Implementation

Phase III - Response - Event management

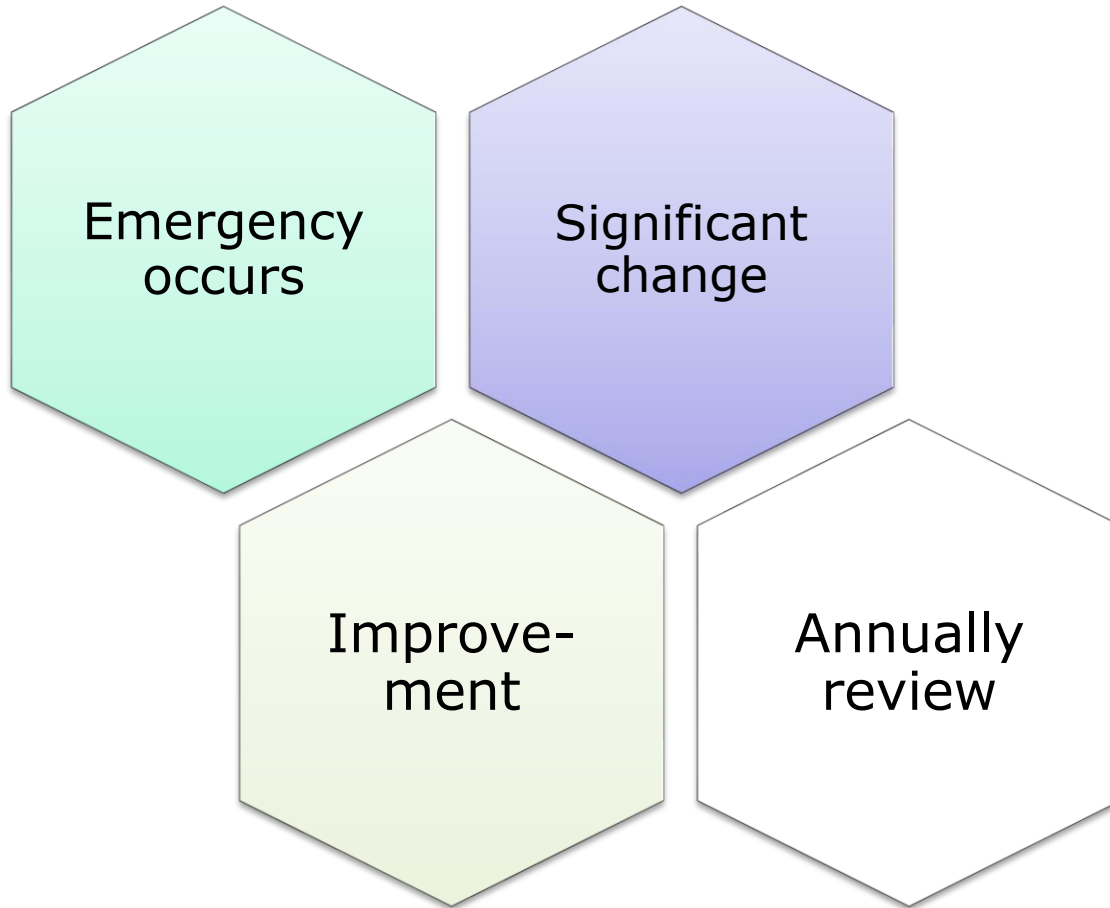
- Communication
- Response measures

Water Security Plan Implementation

Phase IV - Remediation and recovery - Return to normality

- Recovery plan
- Remediation and recovery actions
- Identification of roles
- Return to normality

Water Security Plan Revision



Water Security Plan Disclosure

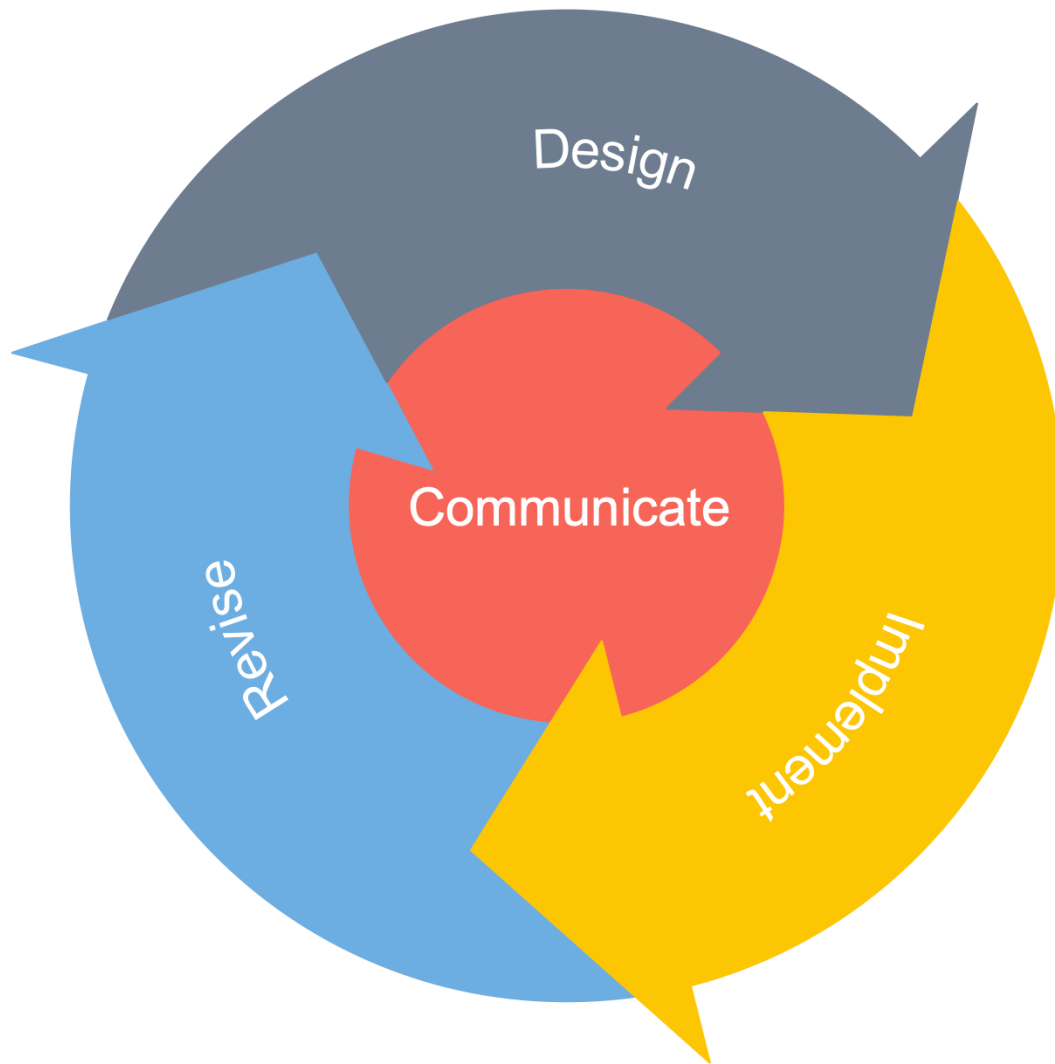
Dissemination to all parties

Links with training and awareness raising actions

Criteria to new employees and external entities

Dissemination in a secure manner to trusted parties

Water Security Plan - Lifecycle



Water Security Plan Complementary Information

1. Roles and responsibilities in planning
2. Characterization and evaluation of the threats
3. Potential contamination scenarios
4. Establishment of contamination impact and event severity
5. Implementation of security measures
6. Guidance of awareness-raising, training and exercises
7. Communication options
8. Response measures
9. Remedial and rehabilitation plan: R/R/P
10. Remedial and rehabilitation plan : Analysis of alternatives and selection of remedies

Observations

Intentional threats to water systems are the main focus

A water security plan needs:

- a risk assessment approach specific to water security
- different approach to remediation and recovery
- inclusion of technical issues: online monitoring, lab tests and methods, sampling, etc.
- involvement of all stakeholders: customers, public health authorities, water managers, policy makers, intelligence services, policy authorities, civil protection, etc.
- link to other plans (emergency plans local or national, WSP, etc.)
- link to daily operations

Challenges

- Security is a sensitive topic to discuss within water utilities or between them and national authorities
- Security awareness is needed for water utilities and their staff
- Information may not be available or sharable
- Terminology is not agreed or understood in a uniform manner
- Standards for water security are missing
- Planning is one step, implementing is key
- Implementation cannot take place solely on the effort of the utility, it needs involvement and an active role of the policy makers and all the authorities involved

Thank you for your attention and time!



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EU Science Hub: ec.europa.eu/jrc