



## Introduction

To be able to manage risks in an efficient manner it is important to identify existing risks as well as possible future risks. Once future risks are identified it might be possible to take measures to prevent these risks materialising or reduce the risks in an early stage. The purpose of this document is to report foreseen trends regarding risk factors identified in the SEPTEDOR (Socio-cultural, Economical, Political, Technical, Ecological, Demographic, Organisatorial and Risk) analysis.

## Importance

The development of strategies for adapting risk management to suit future water supply systems requires prediction of emerging risks. Identification of existing risks and risk that are likely to be important in the future is a key issue to the TECHNEAU project. This information is essential to the development of adaptive strategies in work area 1 (WA1) "Rethink the system", and will form the basis for developing risk management tools and strategies in WA4 "Risk Assessment and Risk Management".

## Approach

The identification and description of possible future risks was based on a literature review, interviews, evaluation work carried out at Chalmers University of Technology, and contributions from WA1 TECHNEAU partners in the SEPTEDOR analysis of their different countries.

## Result

The following major risk categories were identified as likely to be significantly more important to water supply management in the future:

- Sabotage and terrorist attacks
- Conflicts
- New chemicals
- Emerging pathogens
- Public concern
- Climate Change
- Ageing distribution systems

## More information

The future risks are presented in the report "*Trend report – Report regarding future risks*" (Deliverable D1.1.9).

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## TKI Categorisation

Classification					
Supply Chain	Process Chain	Process Chain (cont'd)	Water Quality	Water Quantity (cont'd)	
<b>Source</b>	<b>Raw water storage</b>	<b>Sludge treatment</b>	<b>Legislation/regulation</b>	- Leakage	
- Catchment	- Supply reservoir	- Settlement	- Raw water (source)	- Recycle	
- Groundwater	- Bankside storage	- Thickening	- Treated water		
- Surface water	<b>Pretreatment</b>	- Dewatering	<b>Chemical</b>	<b>Risk management / Consumers</b>	
- Spring water	- Screening	- Disposal	- Organic compounds	<b>Risk analysis</b>	
- Storm water	- Microstraining	<b>Chemical dosing</b>	- Inorganic compounds	- Hazard identification	X
- Brackish/seawater	<b>Primary treatment</b>	- pH adjustment	- Disinfection by-products	- Risk estimation	
- Wastewater	- Sedimentation	- Coagulant	- Corrosion	<b>Risk evaluation</b>	
<b>Raw water storage</b>	- Rapid filtration	- Polyelectrolyte	- Scaling	- Risk tolerability decision	
- Supply reservoir	- Slow sand filtration	- Disinfectant	- Chlorine decay	- Analysis of options	
- Bankside storage	- Bank filtration	- Lead/plumbosolvency	<b>Microbiological</b>	<b>Risk reduction/control</b>	
<b>Water treatment</b>	- Dune infiltration	<b>Control/instrumentation</b>	- Viruses	- Risk reduction options	
- Pretreatment	<b>Secondary treatment</b>	- Flow	- Parasites	- Decision making	
- Primary treatment	- Coagulation/flocculation	- Pressure	- Bacteria	- Implementation	
- Secondary treatment	- Sedimentation	- pH	- Fungi	- Monitoring	
- Sludge treatment	- Filtration	- Chlorine	<b>Aesthetic</b>	<b>Risk Communication</b>	
<b>Treated water storage</b>	- Dissolved air flotation(DAF)	- Dosing	- Hardness / alkalinity	- Communication strategies	
- Service reservoir	- Ion exchange	- Telemetry	- pH	- Potential pitfalls	
<b>Distribution</b>	- Membrane treatment	<b>Analysis</b>	- Turbidity	- Proven techniques	
- Pumps	- Adsorption	- Chemical	- Colour	<b>Trust</b>	
- Supply pipe / main	- Disinfection	- Microbiological	- Taste	- In water safety/quality	
<b>Tap (Customer)</b>	- Dechlorination	- Physical	- Odour	- In security of supply	
- Supply (service) pipe	<b>Treated water storage</b>			- In suppliers	
- Internal plumbing	- Service reservoir		<b>Water Quantity</b>	- In regulations and regulators	

- Internal storage		<b>Distribution</b>				<b>Willingness-to-pay/acceptance</b>	
		- Disinfection			<b>Source</b>	- For safety	
		- Lead/plumbosolvency			- Source management	- For improved taste/odour	
		- Manganese control			- Alternative source(s)	- For infrastructure	
		- Biofilm control			<b>Management</b>	- For security of supply	
		<b>Tap (Customer)</b>			- Water balance		
		- Point-of-entry (POE)			- Demand/supply trend(s)		
		- Point-of-use (POU)			- Demand reduction		

### TKI Categorisation (continued)

<b>Contains</b>		<b>Constraints</b>		<b>Meta data</b>			
Report	X	Low cost		<i>Author(s)</i>	X		
Database		Simple technology		<i>Organisation(s)</i>	X		
Spreadsheet		No/low skill requirement		<i>Contact name</i>	X		
Model		No/low energy requirement		<i>Contact email</i>	X		
Research		No/low chemical requirement		<i>Quality controller name</i>	X		
Literature review	X	No/low sludge production		<i>Quality controller/organisation</i>	X		
Trend analysis		Rural location		<i>Source</i>	X		
Case study / demonstration		Developing world location		<i>Date prepared</i>			
Financial / organisational				<i>Date submitted (TKI)</i>			
Methodology				<i>Date revised (TKI)</i>			
Legislation / regulation							
Benchmarking							