

## ANNEX

1 October 2019

**PROTOCOL ON WATER AND HEALTH TO THE 1992 CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES**

Done in London on 17 June 1999

**National targets in respect of the Protocol and their relation to the Sustainable Development Goals****Targets**

The aim of the Protocol on Water and Health is the prevention, control and reduction of water-related disease in Europe. The import of the Protocol is heightened by its role in furthering the development of water management in respect of both drinking water and waste water. The Protocol plays a particularly important role in Eastern European and Central Asian nations and Caucasus as they strive to address water supply issues. Finland signed the Protocol on 17 June 1999 and ratified it on 3 March 2005. The Protocol entered into force on 4 August 2005.

The Protocol requires the Parties thereto each to establish and publish national targets for the standards and levels of performance that need to be achieved or maintained for a high level of protection against water-related disease. The targets mentioned in Article 6(2) of the Protocol shall serve as the basis for the drafting of these targets. The Parties shall also report the achievement of the targets at three-year intervals to the Secretariat of the Protocol maintained by the WHO Regional Office for Europe and the UN Economic Commission for Europe, which coordinates the implementation of the Protocol.

Finland drafted the national targets in accordance with the Protocol in 2008 and they were implemented by a decision of the Ministry of Social Affairs and Health on 15 February 2008.

This memorandum presents the achievement of the national targets drafted in 2008, the new national targets in respect of the Protocol until 2030, their reasoning and the target dates for their achievement. Direct quotes from the Protocol are printed in *italics*.

**Update of the targets**

The Ministry of Social Affairs and Health has deemed it necessary to review the national targets relating to the Protocol of Finland. In setting the new targets, the developments in legislation, water protection and health protection that have taken place after 2008 have been observed. One or more concrete national targets have been set on each of the high-level targets a-j of the Protocol. Especially in the setting of the targets, the intention has been to emphasise the targets in accordance with the Protocol as part of the implementation of the Sustainable Development Goals and Agenda (Agenda 2030) agreed on by the United Nations Member States because it has been deemed logical to anchor the national targets and the targets of the UNECE Protocol on Water and Health to global sustainable development goals.

The targets have been drafted in wide-ranging cooperation cross-administratively and with expert organisations in a working group comprising the Ministry of Social Affairs and Health, the Ministry of Agriculture and Forestry, the Ministry of the Environment, the Ministry for Foreign Affairs, the National Institute for Health and Welfare, the National Supervisory Authority for Welfare and Health, the Finnish Environment Institute, the Association of Finnish Local and Regional Authorities, the Finnish Water Utilities Association and the Global Dry Toilet Association of Finland. The targets were tailored on the basis of statements requested from all key ministries (7 statements), the authorities supervising or guiding water supply and health protection (20 statements), State research institutes and corresponding bodies (5 statements) as well as 37 statements from registered associations representing, inter alia, the industry, officials performing environmental protection and health protection supervision, water supply plants and

water cooperatives, aquaculture and fishing, scientific research, development cooperation, nature conservation, swimming teaching and environmental education and information. In addition, the targets and the statements issued thereon have been available to the public via Government Project Register Hankeikkuna.

## Sustainable Development Goals

The Sustainable Development Goals and Agenda, which will guide the sustainable development efforts until 2030, were adopted by all United Nations Member States at the UN General Assembly in 2015. The Agenda for Sustainable Development (Agenda 2030) seeks to eradicate extreme poverty and to achieve sustainable development where the environment, economy and the people are taken into account. The 17 sustainable development goals (*Sustainable Development Goals*) and 169 targets (*targets*) came into effect at the beginning of the year 2016, and they shall be binding on both the poor and the rich countries.

Sustainable Development Goal 6 aims to ensure availability and sustainable management of water and sanitation for all. Especially targets 6.1 (Table 1) and 6.2 (Table 2) of the Sustainable Development Goals relate to the targets of the Protocol on Water and Health and also set on them the global high-level goals to which Finland is committed and at which also the UNECE Protocol aims. WHO/UNICEF are responsible for the monitoring of the implementation of the targets on the global level. The monitoring takes place annually through the so-called Joint Monitoring Programme (JMP), which becomes part of the SDG6 Synthesis Report. The Report was handled for the first time in the summer of 2018 on the High-level Political Forum, HLPF, and will thereafter be handled regularly at 3-4-year intervals.

The targets of the Goal 6 are:

- 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
- 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated waste water and substantially increasing recycling and safe reuse globally.
- 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
- 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
- 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, waste water treatment, recycling and reuse technologies.
- 6.b Support and strengthen the participation of local communities in improving water and sanitation management.

Tables 1 and 2 present the normative interpretations of targets 6.1 and 6.2 of the Sustainable Development Goals.

<b>Table 1.</b> <b>Normative interpretation of target 6.1 of the Sustainable Development Goals in accordance with WHO/UNICEF Joint Monitoring Programme</b>	
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	
universal	Implies all exposures and settings including households, schools, health facilities and workplaces.
equitable	Implies progressive reduction and elimination of inequalities between population sub-groups.
safe	Safe drinking water is free from pathogens and elevated levels of toxic chemicals at all times.
affordable	Payment for services does not present a barrier to access or prevent people meeting other basic human needs.
drinking water	Water used for drinking, cooking, food preparation and personal hygiene.
access	Implies sufficient water to meet domestic needs is reliably available close to home.
for all	Suitable for use by men, women, girls and boys of all ages including people living with disabilities.

<b>Table 2</b> <b>Normative interpretation of target 6.2 of the Sustainable Development Goals in accordance with WHO/UNICEF Joint Monitoring Programme</b>	
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.	
access	Implies facilities close to home that can be easily reached and used when needed.
adequate	Implies a system which hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site.
equitable	Implies progressive reduction and elimination of inequalities between population sub-groups.
sanitation	Sanitation is the provision of facilities and services for safe management and disposal of human urine and faeces.
hygiene	Hygiene is the conditions and practices that help maintain health and prevent spread of disease including handwashing, menstrual hygiene management and food hygiene.
for all	Suitable for use by men, women, girls and boys of all ages including people living with disabilities.
end open defecation	Excreta of adults or children are: deposited directly or after being covered by a layer of earth in the bush, a field, a beach, or other open area; discharged directly into a drainage channel, river, sea, or other water body; or are wrapped in temporary material and discarded.
paying attention to the needs of women and girls	Implies reducing the burden of water collection and enabling women and girls to manage sanitation and hygiene needs with dignity. Special attention should be given to the needs of women and girls in “high use” settings such as schools and workplaces, and “high risk” settings such as health care facilities and detention centres.
and those in vulnerable situations	Implies attention to specific water, sanitation and hygiene needs found in “special cases” including refugee camps, detention centres, mass gatherings and pilgrimages.

### New targets for 2019-2030

The new targets of Finland extending to year 2030 have been compiled in Table 3. Achievement of the national targets drafted in 2008, the reasoning of the new targets and the targets dates set for their achievement are presented below in this memorandum.

Table 3. National targets relating to the Protocol on Water and Health extending to 2030			
Target of the Protocol		National target 2019-2030	
a)	The quality of the drinking water supplied, taking into account the Guidelines for drinking-water quality of the World Health Organisation	a1)	The chemical, microbiological, technical and aesthetic quality of drinking water supplied by drinking water supply plants shall meet the requirements of Council Directive 98/83/EC on the quality of water intended for human consumption, hereinafter <i>the Drinking Water Directive</i> .
		a2)	The quality regarding radioactivity of drinking water supplied by drinking water supply plants shall meet at least the requirements of Council Directive 2013/51/EURATOM laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption, hereinafter <i>the Euratom Drinking Water Directive</i> .
		a3)	Information on surveillance targets, the quality of drinking water, defects observed in surveillance and the remedial action taken by the authorities shall be managed and distributed through a centralised resource planning and information management system in environmental health care. The aim is to harmonise surveillance, improve the quality of related guidance, increase the effectiveness of surveillance and promote health issues relating to water management.
		a4)	The consumers of water shall be adequately informed of the quality of drinking water supplied and its importance to human health. Households and the consumers of water shall have easy access to information on the importance of the quality of drinking water to human health.
b)	The reduction of the scale of outbreaks and incidents of water-related disease	b1)	Waterborne outbreaks shall be prevented through surveillance, information, guidance and training and drinking-waterborne outbreaks also through the risk management of the water supply chain.
		b2)	The number of persons falling ill in drinking-waterborne outbreaks shall be 0.01 % of the population at most in six years on the average.
		b3)	The number of waterborne outbreaks and of the persons fallen ill in them shall be based on the electronic system of notification and investigation of suspected waterborne outbreaks.
		b4)	Waterborne outbreaks shall be investigated using laboratory examinations, water analysis and epidemiological studies directed at those fallen ill.
		b5)	A summary of outbreaks shall be published at least once every three years.
c)	The area of territory, or the population sizes or proportions, which should be served by collective systems for the supply of drinking water or where the supply of drinking water by other means should be improved	c1)	The achieved service rate, which covers 100 % of the population, shall be maintained.
		c2)	The supply of drinking water shall be promoted in accordance with the implemented and planned community structure development. The development shall be based either on joining a collective system for the supply of water or on securing a property-specific supply of water.

d)	The area of territory, or the population sizes or proportions, which should be served by collective systems of sanitation or where sanitation by other means should be improved	d1)	The sanitation of settlements shall be served in all Finland by collective systems in areas where this is necessary in accordance with the requirements relating to implemented and planned community development or the environment and health. In areas outside a collective water supply system, the waste waters shall be treated property-specifically using as efficient systems as possible.
		d2)	Property owners shall refurbish property-specific sanitation systems in buildings that are in habitable condition so that they are more efficient than septic-tank treatment in accordance with the requirements laid down in the Environmental Protection Act.
		d3)	The aim shall be to encourage property owners with advice voluntarily to bring the waste water treatment above the statutory level.
e)	The levels of performance to be achieved by such collective systems and by such other means of water supply and sanitation respectively	e1)	The operating preconditions of water supply plants shall be improved by increasing the resources of the plants so that adequate financial and proficiency resources can be ensured for the operations of the plants, with which the plants can produce to their customers high-quality and fail-safe water-supply services at reasonable costs. This may mean increasing the sizes of the plants by merging plants, ensuring the resources with new cooperation models or the use of external services.
		e2)	The commitment of the operators of water supply plants to ensuring the operational reliability of water supply services and the cooperation between the operators and the water supply plants in determining the service level of each water supply plant shall be promoted. The service level shall be monitored with key figures to be set plant-specifically. The key figures shall be recorded in the water supply information system.
		e3)	The plants shall describe their operations with key figures that can be used to assess the efficiency of the operations and the finances. The key figures shall be monitored at regular intervals. Good practices and transparency of the water supply shall be improved by publishing information describing the operations of water supply plants.
		e4)	Adequate access to water supply services shall be ensured also during disruptions.
		e5)	The continuity management of water supply plants shall be developed in cooperation with various actors. The experiences from the continuity management of water supply plants shall be applied to all water supply plants to the extent that this is appropriate with a view of their operations.
f)	The application of recognized good practice to the management of water supply and sanitation, including the protection of waters used as sources for drinking water	f1)	The status of surface waters and groundwater used as water sources shall be ensured by protection. The key objectives of water management and water protection shall be defined for each water management area. Groundwater protection shall be promoted with plans for protecting the groundwater areas and up-to-date information on the boundaries of groundwater areas and hydrogeology. Groundwater resources shall be used as water sources in a sustainable manner. Risks arising from human actions shall be reduced in groundwater areas used as or suitable for sources of drinking water.
		f2)	The water management measures shall be planned in cooperation with interest groups. The key principle shall be an open and active cooperation. Any operations that may cause a risk of environmental pollution shall require a permission granted by the authorities or a notification to the authorities of the operations.

		f3)	Drinking water supply and sanitation shall be subject to the principle of preparedness and comprehensive risk management (Water Cycle Safety Plan, WCSP), which comprises the WSP model for drinking water and the SSP model for waste water treatment and sewerage, for the drafting of which a national electronic online-based software shall be maintained. Risk assessment, risk management, surveillance and preparedness for disruptions shall form a coherent and mutually reinforcing entity. Water supply plants and the authorities shall act in cooperation in order to prevent disruptions in drinking water supply and sanitation as well as to prevent any adverse health and environmental impacts caused by the disruptions.
		f4)	The surveillance of the quality of drinking water and the prevention of disruptions shall be based on the assessment and management of the risks affecting health-related water quality in the entire water supply chain in accordance with the Water Safety Plan (WSP) principle presented by WHO. Drinking water suppliers and the authorities responsible for the surveillance of drinking water shall have extensive guidelines on best practices to safeguard the quality of drinking water. In order to ensure adequate proficiency, all persons whose duties have an effect on the quality of the drinking water of a drinking water supply plant shall have passed a proficiency test in technical utility operations and water hygiene provided for in the Health Protection Act. Drinking water tests belonging to the supervision by the authorities shall be carried out in an approved laboratory using accredited or assessed methods.
		f5)	The assessment and management of sanitation risks shall be carried out by applying the Sanitation Safety Plan (SSP) model, which corresponds to WSP, which, in addition to the prevention of adverse health impacts, also takes into account the assessment and management of the risks affecting the environment. The assessment and management of adverse environmental and health impacts in accordance with the SSP model form part of the environmental permit regulations of waste water treatment plants. In order to reduce the load from urban waste water, a water protection development contract shall be drafted to agree on the drafting of an indicative programme for voluntary measures to be taken by the different actors in order to intensify waste water treatment.
		f6)	It shall be ensured that the plants reconstruct their water supply systems adequately, that the reconstructions are allocated properly and that tools and key figures are developed to support the investments.
		f7)	Undertakings and organisations are encouraged to enter into a water stewardship commitment to identify the water risks in their value chains and to develop sustainable use and management of water.
g)	The occurrence of discharges of: i. untreated waste water; and ii. Untreated storm water overflows from wastewater collection systems to waters within the scope of this Protocol	g1)	Untreated urban waste water or industrial waste water shall not be discharged into waters under normal circumstances. Disruptions caused by the conduct and treatment of urban and industrial wastewater shall be precluded by preventive measures, and adequate action, such as drills, shall be taken to prepare for accidents and to inform thereof. The pollution arising from occasional discharges shall be taken into account in each treatment plant's environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.

		g2)	Combined sewerage systems shall, where possible, be changed into separate sewerage systems. The management of storm water to be collected shall be developed by the plants so that its discharge into waste water sewers remains small and does not disturb the normal operations of waste water treatment plants. Systematic measures to reduce the nutrient load of storm water, such as prevention of storm water formation, withholding, delay or treatment of storm water, shall be implemented by municipalities in areas where storm water accounts for a substantial part of the environmental load on surface waters and the water status needs to be improved.
		g3)	Under normal conditions, all waste waters in combined sewerage systems shall be conducted to treatment plants for treatment. Preventative action shall be taken to prepare for overflows caused by exceptional rainfalls. The pollution arising from occasional discharges shall be taken into account in each treatment plant's environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.
h)	The quality of discharges of waste water from waste water treatment installations to waters within the scope of this Protocol	h1)	Urban waste water and industrial waste water shall undergo a biological and chemical treatment using the best available technology to remove organic matter and nutrients causing eutrophication, phosphorous and nitrogen, so that the treatment efficiency of plants shall constantly be improved. Greater efficiency in treatment shall be introduced particularly in areas where the harmful effects of waste water threaten surface waters whose status is not good or whose status is at a risk of deteriorating and where the status of the water system could be enhanced by intensifying urban waste water treatment.
		h2)	Limit values and environmental quality standards shall not be exceeded with regard to harmful substances defined in legislation. The hygienic risks arising from urban waste waters shall be reduced, where necessary. The risks arising from new emerging micro pollutants (pharmaceutical residues, micro plastics) shall be examined and, where necessary, procedures and methods shall be developed to reduce and prevent the risks in a cost-effective manner. Correspondingly, practices and methods to recycle and recover nutrients shall be developed.
i)	The disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations and the quality of waste water used for irrigation purposes, taking into account the Guidelines for the safe use of waste water and excreta in agriculture and aquaculture of the World Health Organization and the United Nations Environment Programme	i1)	Sewage sludge from treatment plants shall not be discharged into waters or the sea and they shall not be placed in landfills, but the sludge shall be collected, treated and utilised as fertiliser products, energy products or as other products.
		i2)	Mineral phosphorous resources shall be saved by recycling the phosphorous in the sludge. The recovery of nutrients shall be increased so that at least 50 percent of urban waste water sludge shall be utilised using developed technology by the year 2025. The usability of the nutrients in the sewage sludge shall be improved by developing new treatment methods.
		i3)	Regulation relating to the properties of fertilising products produced by recycling shall be modified and their use shall be actively promoted without endangering the safety of the fertilisers and environmental protection. Special attention shall be paid to the products not causing soil contamination or endangering the production of high-quality food or feed.
		i4)	The adverse health and environmental impacts of treated urban waste water shall be identified and efficient management procedures shall be defined for identified impacts to enable water reuse.

		i5)	The microbiological quality of fertiliser products shall be safeguarded with legislation, surveillance and research.
j)	The quality of waters which are used as sources for drinking water, which are generally used for bathing or which are used for aquaculture or for the production or harvesting of shellfish	j1)	The quality of the waters shall meet the requirements of the EU Water Framework Directive. A good ecological and chemical status of surface water as well as a good chemical and quantitative status of groundwater shall be achieved. The weakening of the status of waters in good and excellent status shall be prevented. Protection plans for groundwater areas shall be drawn up and kept up-to-date in groundwater areas used for the abstraction of water as well as in groundwater areas where activities affecting the status of groundwater take place.
		j2)	Environmental targets shall be set on all bodies of water. In defining the targets, special attention shall be paid to waters used for the abstraction of drinking water and to bathing waters, with regard to which special attention shall be paid to the hygiene quality.
		j3)	Popular areas shall have public bathing areas or small public beaches. The water quality at public bathing areas shall meet the requirements of Directive 2006/7/EC of the European parliament and of the Council, hereinafter the Bathing Water Directive, and/or the requirements of the decrees of the Ministry of Social Affairs and Health. Bathing water quality shall be at least sufficient at bathing areas where a large number of people bathe.
		j4)	A bathing water profile shall be established for all bathing areas where a large number of bathers is expected. The bathing water profile shall describe the characteristics of the bathing water and other surface waters and groundwaters in its catchment area, and any activities located in the catchment area that could be a source of pollution of the bathing water, and assess the causes that may affect the quality of bathing waters and impair bathers' health. Each public bathing area where a large number of people bathe shall have an accessible toilet.
		j5)	Information on the quality of bathing waters, defects observed in surveillance and the remedial action taken by the authorities shall be collected into a centralised resource planning and information management system in environmental health care, the aim of which is to harmonise surveillance, improve the quality of related guidance and increase the effectiveness of surveillance.
		j6)	Plant-specific environmental permits granted under the Environmental Protection Act and the Water Act shall ensure that aquaculture is located so that the operations do not cause harm to the environment and that water-borne health security risks have been minimised.
k)	The application of recognized good practice to the management of enclosed waters generally available for bathing	k1)	There shall be public swimming pools and they shall be maintained so that people have a possibility to learn and maintain swimming skills. Accessibility shall be taken into account in public swimming pools.
		k2)	The quality and surveillance of enclosed waters shall meet the requirements of the Decree of the Ministry of Social Affairs and Health (315/2002).
		k3)	Information on the quality of enclosed waters, defects observed in surveillance and remedial action taken by the authorities shall be collected into a centralised resource planning and information management system in environmental health care, the aim of which shall be to harmonise surveillance, improve the quality of related guidance and increase the effectiveness of surveillance.



		k4)	The employees of swimming centres and spas who engage in actions impacting the quality of enclosed waters shall pass the proficiency test in plant technology and hygiene of enclosed waters referred to in section 28a of the Health Protection Act (763/1994).
		k5)	In order to decrease the load of enclosed waters, the persons participating in the sanitation and cleaning of swimming pools and wet rooms shall have adequate knowledge of the effects of the hygiene of the premises on the health quality of enclosed waters and adequate competence in the cleaning and sanitation of these premises in accordance with the provisions of section 28a of the Health Protection Act (763/1994).
		k6)	The operators shall have plans for each pool or pool group to address possible disruptions. The plans for disruptions shall describe the instructions to prevent adverse health impacts and the personnel shall be trained to act in accordance with the instructions.
l)	The identification and remediation of particularly contaminated sites which adversely affect waters within the scope of this Protocol or are likely to do so and which thus threaten to give rise to water-related disease	11)	The risk targets shall be identified, examined and remediated in a prioritized manner. Sites that threaten groundwater and other sites causing significant adverse environmental and health impacts shall be prioritized and their identification and remediation shall be promoted in a cost-effective and sustainable manner.

### The relation of the targets of the Protocol to the Sustainable Development Goals

Table 4 presents the targets of the Protocol on Water and Health and the Sustainable Development Goals which are implemented through the national targets in accordance with the Protocol.

<b>Table 4.</b> <b>The targets a–j of the Protocol on Water and Health and the corresponding Sustainable Development Goals</b>			
<b>Target of the Protocol</b>		<b>Sustainable Development Goal</b>	
a)	The quality of the drinking water supplied, taking into account the Guidelines for drinking-water quality of the World Health Organisation	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
		17.14	Enhance policy coherence for sustainable development.
b)	The reduction of the scale of outbreaks and incidents of water-related disease	3.3	By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
		3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
c)	The area of territory, or the population sizes or proportions, which should be served by collective systems for the supply of drinking water or where the supply of drinking water by other means should be improved	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
d)	The area of territory, or the population sizes or proportions, which should be served by collective systems of sanitation or where sanitation by other means should be improved	6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
		6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

e)	The levels of performance to be achieved by such collective systems and by such other means of water supply and sanitation respectively	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
		6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
		9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
		11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
		16.6	Develop effective, accountable and transparent institutions at all levels.
f)	The application of recognized good practice to the management of water supply and sanitation, including the protection of waters used as sources for drinking water	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
		6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
		6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
		6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
		6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
		6.a	By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, waste water treatment, recycling and reuse technologies.
		6.b	Support and strengthen the participation of local communities in improving water and sanitation management.
		9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
		9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
		12.2	By, 2030, achieve the sustainable management and efficient use of natural resources.
		12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices

			and to integrate sustainability information into their reporting cycle.
		12.8	By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
		16.6	Develop effective, accountable and transparent institutions at all levels.
		16.7	Ensure responsive, inclusive, participatory and representative decision-making at all levels.
		17.7	Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.
		17.9	Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation.
		17.14	Enhance policy coherence for sustainable development.
		17.16	Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.
		17.17	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.
g)	The occurrence of discharges of: i. untreated waste water; and ii. Untreated storm water overflows from wastewater collection systems to waters within the scope of this Protocol	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
h)	The quality of discharges of waste water from waste water treatment installations to waters within the scope of this Protocol	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
i)	The disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations and the quality of waste water used for irrigation purposes, taking into account the Guidelines for the safe use of waste water and excreta in agriculture and aquaculture of the World Health Organization and the United Nations Environment Programme	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
j)	The quality of waters which are used as sources for drinking water, which are generally used for bathing or which are used for aquaculture or for the production or harvesting of shellfish	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
		6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

		6. 6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
k)	The application of recognized good practice to the management of enclosed waters generally available for bathing	3.3	By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
		4 a	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.
		6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
l)	The identification and remediation of particularly contaminated sites which adversely affect waters within the scope of this Protocol or are likely to do so and which thus threaten to give rise to water-related disease	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

**The national targets in respect of the Protocol for 2019-2030, their reasoning and target dates as well as the achievement of the targets set in 2008**

***“(a) The quality of the drinking water supplied, taking into account the Guidelines for drinking-water quality of the World Health Organisation,”***

National target of 2008

The quality of the drinking water supplied by water supply plants meets the requirements of Decrees (461/2000) and (401/2000) of the Ministry of Social Affairs and Health. Said Decrees are based on Council Directive 98/83/EC on the quality of water intended for human consumption, hereinafter *the Drinking Water Directive*. The health-based targets of the World Health Organization (WHO) for drinking water quality have been observed in the preparation of the Directive.

The employees of plants supplying drinking water who engage in actions impacting the quality of drinking water shall have passed the proficiency test in plant technology and water hygiene referred to in section 20b of the Health Protection Act (763/1994).

Achievement of the target

The target has been achieved. For example in 2017, 99.99 percent of the control examinations met the quality standards set on drinking water. By the end of 2018, 55,000 proficiency tests in plant technology and drinking water hygiene were passed.

National target for 2019–2030

a1) The chemical, microbiological, technical and aesthetic quality of drinking water supplied by drinking water supply plants shall meet the requirements of Council Directive 98/83/EC on the quality of water intended for human consumption, hereinafter *the Drinking Water Directive*.

a2) The quality regarding radioactivity of drinking water supplied by drinking water supply plants shall meet at least the requirements of Council Directive 2013/51/EURATOM laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption, hereinafter *the Euratom Drinking Water Directive*.

a3) Information on surveillance targets, the quality of drinking water, defects observed in surveillance and the remedial action taken by the authorities shall be managed and distributed through a centralised resource planning and information management system in environmental health care. The aim is to harmonise surveillance, improve the quality of related guidance, increase the effectiveness of surveillance and promote health issues relating to water management.

a4) The consumers of water shall be adequately informed of the quality of drinking water supplied and its importance to human health. Households and the consumers of water shall have easy access to information on the importance of the quality of drinking water to human health.

The relation of the target to the Sustainable Development Goals

The targets relating to the quality of drinking water shall implement Sustainable Development target 6.1 ensuring access to safe drinking water for all. Target 17.14 enhancing policy coherence for sustainable development shall be implemented through an improved and harmonised quality of surveillance.

Target date

The targets relating to the quality of drinking water, its surveillance and information thereof are continuous activities in accordance with the legislation in force.

The centralised resource planning and information management system in environmental health care shall be in use in 2020.

Reasoning

The health-based quality requirements set on drinking water in the national legislation and the quality targets based on the usability of the water are based on the Drinking Water Directive 98/93/EC, in the preparation of which the guidelines of the World Health Organization have been observed, and on the Euratom Drinking Water Directive 2013/51/EURATOM. Under the legislation, the health protection authority shall monitor the quality of drinking water on a regular basis and the surveillance shall be based on risk assessment and risk management through the entire water supply chain. The risk assessment shall be carried out in cooperation between the operators and the authorities.

Under the Health Protection Act, the surveillance of the quality of drinking water consists of self-surveillance of the operator and surveillance by the authorities. Proactive surveillance by the authorities means for example that the health protection authority shall approve the operations of a water-supply plant before the plant can supply water when significant changes are made in the treatment of water or if significant changes take place in the quality or distribution of water. Planned surveillance by the authorities includes water-distribution-specific control examination programmes for control of the quality of drinking water and a municipal control plan defining the frequency for inspections relating to the infrastructure, premises and operations of the plant. In accordance with the legislation, the control examination programme shall be drafted in cooperation between the supplier of drinking water and the health protection authority. The national control programme for environmental healthcare drafted by the National Supervisory Authority for Welfare and Health shall be taken into account in the municipal control plan in accordance with local needs. The national control programme and the municipal control plans enable both the national harmonising of surveillance and the observance of local conditions.

Under the Water Services Act, a water supply plant shall ensure that the drinking water supplied by the plant meets the quality requirements laid down in the Health Protection Act. On the basis of surveillance, the health protection authority may order that drinking water be disinfected or otherwise treated or issue provisions regarding the use of drinking water in order to prevent adverse health impacts.

The legislation requires the supplier of drinking water to provide sufficient information concerning the quality of the drinking water supplied by it. The health protection authority shall ensure that households within the municipality that have not been connected to the water main of a drinking water supplier, receive adequate information on the quality of drinking water in their area, any adverse health impacts connected with it, and on the possibilities to eliminate the impacts. The Radiation and Nuclear Safety Authority shall draw up a national summary of the results of radioactivity measurements made from drinking water at three-year intervals and inform the public of the safety significance of the results.

The centralised resource planning and information management system in environmental health care, to which all control targets of environmental health care, including all plants supplying drinking water, shall be compiled, shall enable national monitoring of the real-time control of the targets. The system shall include information on the surveillance targets, water quality and any defects observed during surveillance as well as on measures taken by the authorities to remedy the situation. With regard to plants supplying drinking water, basic information on the plants, the results of the regulatory research

on drinking water, control reports and information on any administrative measures shall be collected into the system.

The National Supervisory Authority for Welfare and Health shall submit a report on the quality of drinking water to the European Commission at regular intervals as provided in the Drinking Water Directive. The reporting obligation shall apply to plants that supply at least 1,000 m<sup>3</sup> of drinking water daily or serve at least 5,000 users, which covers 81 percent of the Finnish population. The EU Commission shall publish a periodic report on the quality of drinking water of the Member States.

The prevention of drinking waterborne epidemics and other adverse health impacts is studied in paragraph b).

#### References

- Health Protection Act (763/1994)
- Water Services Act (119/2001)
- Radiation Act (859/2018)
- Decree of the Ministry of Social Affairs and Health on Drinking Water Quality Requirements and Related Control Examinations (1352/2015) and the guidance on the matter drafted by the National Supervisory Authority for Welfare and Health
- Decree of the Ministry of Social Affairs and Health on Drinking Water Quality Requirements and Related Monitoring and Control Concerning Small Units (401/2001)

#### ***”(b) The reduction of the scale of outbreaks and incidents of water-related disease,”***

##### National target of 2008

The number of persons falling ill in waterborne outbreaks shall be reduced to an annual level of 0.01% of the population at most.

##### Achievement of the target

Drinking water-related epidemics have been subject to a mandatory notification and reporting procedure since 1998. On the basis of the 20-year-long monitoring, it can be stated that the target set in 2008 on the number of persons falling ill in drinking water-related epidemics has been achieved.

##### National target 2019–2030

b1) Waterborne outbreaks shall be prevented through surveillance, information, guidance and training and drinking-waterborne outbreaks also through the risk management of the water supply chain.

b2) The average number of persons falling ill in drinking-waterborne outbreaks shall be at most 0.01 % of the population in six years.

b3) The number of waterborne outbreaks and of persons fallen ill in them shall be based on an electronic system of notifications and investigations of suspected waterborne outbreaks.

b4) Waterborne outbreaks shall be investigated using laboratory examinations, water analysis and epidemiological studies directed at those fallen ill.

b5) A summary of outbreaks shall be published at least once every three years.

Target b2) shall only concern drinking-waterborne outbreaks and the other targets shall, in addition to drinking-waterborne outbreaks, also concern outbreaks related to bathing water and enclosed waters.

### The relation of the target to the Sustainable Development Goals

The targets comply with SDG targets 3.3 and 3.9, which aim at preventing outbreaks of waterborne diseases and reducing deaths and illnesses from water pollution. These targets are part of the goal entity set to ensure healthy lives and promote well-being.

### Target date

The monitoring, investigation and reporting of outbreaks caused by drinking water, bathing water and enclosed waters are continuous operations in accordance with the provisions in force.

### Reasoning

As the number of persons falling ill in drinking waterborne outbreaks varies annually, the achievement of the target cannot be assessed based on the information on waterborne outbreaks of only one year. The use of data spanning several years to calculate the relative share in the entire population of persons fallen ill provides a more reliable view of the situation than data from one year.

The Health Protection Act includes obligations for preparedness for disruptions and the prevention of drinking-waterborne diseases. The Act requires that the health protection authorities shall, in cooperation with other authorities and agencies, draw up a plan to prepare for disruptions. The goal is that the adverse health impacts caused by disruptions can be prevented, examined and eliminated as soon as possible or that they can be minimised.

An outbreak caused by drinking water or a suspicion of such an outbreak calls for immediate action by the drinking water supplier plant and the health protection authority to improve the quality of drinking water and to prevent the spread of the outbreak. The health protection authority may, where necessary, order that the drinking water be disinfected or otherwise treated. The legislation also requires that the disinfection of drinking water be started if the water is suspected of or found to having become microbiologically contaminated.

Nor may bathing water and enclosed water pose adverse health impacts for their users. Under the Health Protection Act, a health protection authority may forbid the use of a public bathing area or pool if the water quality does not meet the requirements set for it. The surveillance and quality of bathing waters and enclosed waters are governed by Decrees of the Ministry of Social Affairs and Health. The quality and surveillance of bathing waters are handled in more detail in item j) and enclosed waters in item k).

The investigation of foodborne as well as drinking-waterborne epidemics and epidemics borne by bathing waters and enclosed waters is governed by a Government Decree. The municipal food control authority and the health protection authority shall appoint a working group to investigate outbreaks and also to prepare for waterborne outbreaks and to agree on the arrangement of investigation relating thereto. To investigate an outbreak, laboratory testing of the infected, examination of the water suspected to be cause of the outbreak and epidemiological studies have to be carried out. A waterborne outbreak means a case where at least two persons have contracted a disease with similar symptoms after consuming drinking water of the same origin or after being exposed to the same water. The Decree requires that a notification is made of a suspicion of a waterborne outbreak, and it also contains provisions relating to the investigation of and reporting on waterborne outbreaks. Waterborne outbreaks shall be notified of and reported on using an electronic online-based reporting system, which is available to the authorities handling outbreaks. The information in the outbreak examination and monitoring register is available also to the authorities governing the control, the National Supervisory Authority for Welfare and Health, and the Regional State Administrative Agencies.



The National Institute for Health and Welfare (THL) provides expert assistance to investigate waterborne outbreaks and it maintains methodological competence for determining the most important pathogenic microbes with regard to waterborne outbreaks. As required in the Decree of the Council of State, THL shall be responsible for the more detailed study, typing and monitoring of the causes of outbreaks isolated from humans and water. THL has compiled instructions relating to the management of waterborne outbreaks on its own website. THL and the Finnish Food Authority draw up at least once in three years a summary of foodborne and waterborne outbreaks in accordance with said Decree. The report shall include information on the number of waterborne outbreaks and on the people fallen ill, the causes of the waterborne outbreaks as well as on the technical reasons that lead to the waterborne outbreaks. The information reported can be utilised in the work aiming at preventing waterborne outbreaks. The reports are available on the website of the Finnish Food Authority.

Waterborne diseases shall also be reduced through the proper treatment of waste waters from communities and individual properties. Waste waters and matters relating to their treatment are handled below under items d), e), f), g), h) and i).

#### References

- Health Protection Act (763/1994)
- Government Decree on the Examination of Foodborne and Waterborne Epidemics (1365/2011)
- Decree of the Ministry of Social Affairs and Health on Drinking Water Quality Requirements and Related Control Examinations (1352/2015)
- Decree of the Ministry of Social Affairs and Health on Drinking Water Quality Requirements and Related Control Examinations of Small Units (401/2001)
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Surveillance of Public Beaches (177/2008)
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Surveillance of Small Public Beaches (354/2008)
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Control Examinations of Enclosed Waters at Swimming Centres and Spas (315/2002)

***”(c) The area of territory, or the population sizes or proportions, which should be served by collective systems for the supply of drinking water or where the supply of drinking water by other means should be improved,”***

#### National target of 2008

In 2006, ca. 90% of the population was served by collective systems for the supply of drinking water. No material rise from the current service rate is expected. Improvements in the supply of drinking water seek to ensure that the drinking water available is up to standards in terms of quality. Efforts are made to have the water supply in dispersed settlements and villages covered by the water supply network whenever technically and economically feasible.

Drinking water procurement opportunities for individual properties are enhanced in cases where the property cannot procure appropriate drinking water at a reasonable cost.

#### Achievement of the target

The target date set in 2008 for the target to promote the supply of drinking water in dispersed settlements based on a centralised solution as well as to enhance property-specific supply of drinking water was 31 December 2015. In practice, the promotion of the supply of drinking water based on centralised solutions has remained moderate in accordance with the target. The service rate was estimated to be 92 % in 2015 when the starting point in 2008 was 90 %. The water services of

properties outside the operating area of water supply plants have been arranged through water cooperatives or property-specifically.

#### National target for 2019–2030

c1) The achieved service rate, which covers 100 % of the population, shall be maintained.

c2) The supply of drinking water shall be promoted in accordance with the implemented and planned community structure development. The development shall be based either on joining a collective system for the supply of water or on securing a property-specific supply of water.

#### The relation of the target to the Sustainable Development Goals

The target shall implement sustainable development target 6.1 by ensuring a functional drinking-water infrastructure for the entire population irrespective of their place of residence.

#### Target date

According to the water supply legislation in force, the target is part of the continuous operations laid down for the municipalities.

#### Reasoning

Access to drinking water covers 100 % of the population in Finland. Access to drinking water has been arranged either through centralised solutions based on a network or by property-specific systems.

The rate of joining collective water supply systems is not expected to rise in the future. It is not feasible to arrange water supply through a centralised solution in rural areas outside urban areas, villages and sparsely populated areas as the limited use and the long residence time of water in the network may weaken the quality of drinking water. In addition, the investment and operational costs of a centralised water supply system will often rise unreasonably high for service users in dispersed settlements. The owner or possessor of a property shall be responsible for the water supply of his property. In dispersed settlements, access to drinking water is often based on property-specific wells. The property owner shall be responsible to ensure that there is quantitatively and qualitatively sufficient drinking water available on the property. The municipal health protection authority shall ensure that property owners relying on their own wells receive sufficient information on the quality of the drinking water in their area, the adverse health impacts relating to quality and the possibilities to remove the adverse impacts.

The coverage of the water supply networks can be estimated to be very good in Finland. When developing the water supply services, it shall be necessary to take into account the long-term regional service needs. Due to the decreasing population in urban areas and in dispersed settlements, the water supply system may become oversized. At the same time, the change of vacation homes and secondary residences into permanent residences and the development of economic activities in rural areas and dispersed settlements increase water supply service needs elsewhere.

The municipalities shall develop the water supply in their areas according to community development in cooperation with the water supply plants, those supplying water to the plants and treating their waste waters as well as with other municipalities as well as to participate in the general regional planning of water supply. A municipality shall also take appropriate measures to safeguard access to the water supply if so required by the needs of a relatively large number of inhabitants or by health or environmental considerations. The municipality shall approve the operating areas of water supply plants either on the proposal of the plant or after hearing the plant. The operating areas shall cover the areas where it is necessary to connect properties to the water main of a water supply plant due to realised or planned community development.

A municipality may choose the manner in which it arranges its water supply. In order to safeguard access to water supply services, it is possible to establish a water supply plant, expand the operating area of an existing water supply plant or for example arrange water supply based on property-specific solutions. On the other hand, the operating areas of water supply plants shall cover at least those areas where the connecting of properties to the water main is necessary due to realised or planned community development.

#### References

- Water Services Act (119/2001)
- P. Silfverberg, 2017. Guidelines on water and waste water services for 2020's. [Description sheet available in English] Publication series of the Finnish Water Utilities Association No 44. ISBN 978-952-6697-17-8
- K. Berninger, T. Laakso, H. Paatela, S. Virta, J. Rautiainen, R. Virtanen, O. Tynkkynen, N. Piila, M. Dubovik & R. Vahala. 2018. Sustainable water services for the future – direction, steering and organisation. [Description sheet available in English] Publications of the Government's analysis, assessment and research activities 56/2018.

***”(d) The area of territory, or the population sizes or proportions, which should be served by collective systems of sanitation or where sanitation by other means should be improved,”***

#### National target of 2008

In 2006, approximately 80 % of the population was served by collective systems of sanitation. Centralized sewerage and waste water treatment shall be the goal wherever technically and economically feasible in terms of water services and environmental protection. Areas meeting these conditions shall be determined so that centralized sewerage and waste water treatment could be implemented before the expiry of the deadline imposed in Government Decree on property-specific waste water treatment requirements (542/2003). Property owners shall render property-specific sanitation systems compliant with the requirements in cases where connecting a property to the collective system of sanitation was not a viable option due to the location of the property.

#### Achievement of the target

The target has been achieved with regard to centralized sewerage. The target of rendering property-specific sanitation systems to comply with the requirements was not achieved. The legislation was amended and the deadline for implementing the water treatment requirements in property-specific systems was postponed twice.

#### National target for 2019–2030

d1) The sanitation of settlements shall be served in all Finland by collective systems in areas where this is necessary in accordance with the requirements relating to implemented and planned community development or the environment and health. In areas outside a collective water supply system, the waste waters shall be treated property-specifically using as efficient systems as possible.

d2) Property owners shall refurbish property-specific sanitation systems in buildings that are in habitable condition so that they are more efficient than septic-tank treatment in accordance with the requirements laid down in the Environmental Protection Act.

d3) The aim shall be to encourage property owners with advice voluntarily to bring the waste water treatment above the statutory level.

### The relation of the target to the Sustainable Development Goals

The targets shall implement Sustainable Development targets 6.2 and 6.3 by ensuring an adequate and universal sanitation for all and by improving the quality of water in bodies of water by decreasing pollution and by decreasing the amount of untreated waste water.

### Target date

Under the legislation, the arrangement of sanitation is a continuous statutory duty of a municipality when the needs of a relatively large number of inhabitants as well as considerations of health or environmental protection so require. The property owner or holder is responsible for the arrangement of property-specific sanitation.

Under the Environmental Protection Act, in cases in waterfront and groundwater areas where connecting a property to a collective sanitation system is not a viable option due to the location of the property, the target date for the intensification of sanitation shall be 31 October 2019. In other areas, the intensification shall be carried out when a property undergoes measures requiring a building permit.

### Reasoning

In 2015, approximately 83 percent of the population was served by collective systems of sanitation, including efficient conducting and treatment of waste waters. Centralized sewerage and waste water treatment shall remain a goal wherever technically and economically well-founded and feasible in terms of water supply and environmental protection. The projects were granted discretionary Government transfers within the National Sewerage Programme until the year 2016.

The municipality shall approve the operating area of a water supply plant. Within the area of the municipality, the operating areas of water supply plants shall cover areas where the connecting of properties to a waste water sewer of the water supply plant is necessary due to realised or planned community development. The operating area of a water supply plant shall be such that the plant can attend to the tasks that it is responsible for in an economical and appropriate manner. In connection with the decision on the approval of the operating area, the municipality shall also set a target schedule for having the different parts of the operating area covered by the networks.

A property located in the operating area of a water supply plant shall be connected to the water main and sewer of the plant. The legislation, however, allows an exemption from the connecting outside an urban area if the water supply equipment of the property has been constructed before the approval of the operating area of the water supply plant or if the property does not have a flush toilet. Another precondition for the exemption is that the provisions of the Environmental Protection Act are complied with in the conducting and treatment of waste water from the property. A property may be exempted from the connecting requirement also outside an urban area if the connecting to the network would be unreasonable to the owner or holder of the property taking into account the costs arising from constructing the water supply equipment of the property and its connection, the minimal need for services of the water supply plant or another similar special reason. Another precondition for the exemption is that it does not compromise the economical and appropriate management of water supply in the area of operation of the water supply plant and that the conducting and treatment of waste water from the property can be arranged in accordance with the requirements laid down in the Environmental Protection Act.

Connecting to sewer networks shall also be promoted in the operational programmes of water management plans (cf. item f), where the expansion of the sewer networks is presented as a means to achieve the target to decrease the load on waters set for dispersed settlements outside urban areas.

According to the legislation, the property owner shall have an account of the property-specific sewerage system in a dispersed settlement and the treatment of waste water on the property, and it shall, where necessary, be submitted to the supervisory authority of the municipality. On the basis of these accounts, it shall be possible to assess the level of the waste water treatment and discharges on the municipal level in dispersed settlements as well as to estimate the needs to expand the centralized sewer network.

## References

- Water Services Act (119/2001)
- Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004)
- Environmental Protection Act (527/2014)
- Government Decree on Treating Domestic Waste Water in Areas Outside Sewer Networks (157/2017)
- Kangas, A. (Editor) Waste waters in sparsely populated areas. Legislation and practice 2017. [Description sheet available in English] Environment Guide 2017. <http://urn.fi/URN:ISBN:978-952-11-4740-1>

***”(e) The levels of performance to be achieved by such collective systems and by such other means of water supply and sanitation respectively,”***

## National target of 2008

Water supply services of a high standard and meeting the needs of settlement as well as business and leisure activities shall remain available at reasonable cost.

When water supply plants serving more than 5,000 residents are examined, slightly under 90 % of subscribers currently receive their drinking water from water supply plants with a safety rating of I or II, i.e. plants that are capable of supplying a minimum of 50 litres of water per resident per day through the distribution network even when their primary water abstraction facility is out of commission. The dependability of drinking water supply shall be improved so that all water supply plants serving more than 5,000 residents shall have a safety rating of either I or II.

## Achievement of the target

The target has been achieved nearly in full scale.

## National target for 2019–2030

e1) The operating preconditions of water supply plants shall be improved by increasing the resources of the plants so that adequate financial and proficiency resources can be ensured for the operations of the plants, with which the plants can produce to their customers high-quality and fail-safe water-supply services at reasonable costs. This may mean increasing the sizes of the plants by merging plants or ensuring the resources with new cooperation models or the use of external services.

e2) The commitment of the operators of water supply plants to ensuring the operational reliability of water supply services and the cooperation between the operators and the water supply plants in determining the service level of each water supply plant shall be promoted. The service level shall be monitored with key figures to be set plant-specifically. The key figures shall be recorded in the water supply information system.

e3) The plants shall describe their operations with key figures that can be used to assess the efficiency of the operations and the finances. The key figures shall be monitored at regular intervals. Good

practices and transparency of the water supply shall be improved by publishing information describing the operations of water supply plants.

e4) Adequate access to water supply services shall be ensured also during disruptions.

e5) The continuity management of water supply plants shall be developed in cooperation with various actors. The experiences from the continuity management of water supply plants shall be applied to all water supply plants to the extent that this is appropriate with a view of their operations.

#### The relation of the target to the Sustainable Development Goals

The targets shall promote Sustainable Development target 6.1 to achieve universal and equitable access to safe and affordable drinking water for all. The targets shall also increase water-use efficiency (target 6.4), develop quality and reliable infrastructure (target 9.1) as well as effective, accountable and transparent institutions (target 16.6) and ensure access to basic services for citizens (target 11.1).

#### Target date

The improvement of the operating preconditions of water supply plants belongs to continuous activities. The water supply information system shall serve the information needs of water supply plants, decision-makers, citizens and the authorities by the year 2021.

#### Reasoning

There are approximately 1,100 water supply plants in Finland, for which municipalities have approved operating areas. In addition, there are some 700 water supply operators for which no operating area has been approved by a municipality. Most of the altogether 1,400 operators are small water cooperatives, which operate mainly in dispersed settlements and are owned by the inhabitants. The tightening requirements on the obligations of water supply plants concerning knowledge and monitoring and ensuring proficiency, continuity of services as well as financial operating preconditions will further increase the challenges especially for small water supply plants. By strengthening the resources of water supply plants, the operating preconditions can be enhanced and operational reliability can be improved also during disruptions.

From the point of view of customers, essential in the operations of a water supply plant are the quality, the 24-hour operational reliability and the economic efficiency of the services. In order to achieve the targeted service level, it is possible to use the key figures determined in cooperation by the authorities and the water supply plants which describe the quality, operational reliability and economic efficiency of the services. The achievement of the target values set for the selected key figures shall be monitored on a regular basis and reported on to the customers. An improvement of the operations and the transparency of finances of water supply plants shall increase the preconditions for improved resourcing as well as promote the long-term financial management and corporate governance of the plants.

The Water Services Pool, which was set up to support the preparedness of water supply services, shall promote the continuity management of water supply plants. Continuity management means all measures with which a plant manages various disruptions threatening its operations through pre-planned and implemented arrangements and management models. The Water Services Pool shall promote the development of preparedness operations for example by establishing the status of preparedness, by drafting guidelines and tools as well as by arranging nationwide preparedness training and exercises and make proposals for measures to improve the preparedness of water supply plants.

The Water Services Pool shall support the preparedness of water supply plants for disruptions in normal circumstances as well as in exceptional circumstances. The operations of the Water Services Pool are based on an agreement concluded between the National Emergency Supply Agency, the Association of Finnish Local and Regional Authorities and the Finnish Water Utilities Association. The operations of the Water Services Pool shall be guided by the pool committee comprising, in addition to the representatives of water supply plants, municipalities and the National Emergency Supply Agency, also representatives of the ministries which guide and supervise water supply as well as authorities from the healthcare, emergency supply and rescue service sectors.

The cooperation between public administration and the water supply plants shall be promoted for example by developing continuity management tools for companies and providing related training, by implementing joint exercises for companies and the authorities as well as by supporting and guiding the operations of the sectors and pools. The participation of the authorities responsible for the guidance of the regular supervision of water supply plants in the development work and distribution of the instructions drawn up shall ensure that up-to-date information is applied also in water supply plants.

#### References

- Water Services Act (119/2001)
- Act on Safeguarding Security of Supply (1390/1992)
- Government Decision on the Objectives of Security of Supply (1048/2018)
- P. Silfverberg, 2017. Guidelines on water and waste water services for 2020's. [Description sheet available in English] Publication series of the Finnish Water Utilities Association No 44. ISBN 978-952-6697-17-8
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#### ***”(f) The application of recognized good practice to the management of water supply and sanitation, including the protection of waters used as sources for drinking water,”***

##### National target of 2008

The general objectives of water protection have been defined in the programme of water protection guidelines extending until 2015, which was adopted by Government on 23 November 2006. The major targets in respect of drinking water quality shall concern reducing nutrient inputs causing eutrophication, and reducing the risks arising from harmful substances as well as protecting groundwater.

General objectives for the status of waters have been set in the Water Framework Directive 2000/60/EC, which has been implemented nationally through the Act on the Organization of Water Management (1299/2004). The objectives shall be determined in connection with water management plans and related operational programmes. They shall seek to ensure no deterioration in the status of surface waters and groundwater, which should be of at least good status.

##### Achievement of the target

The water-specific status targets and the measures necessary to achieve the targets have been defined in area-specific water management plans. All sectors have implemented measures which have decreased the pressures on water. The measures have, however, not been sufficient in all respects.

### National target for 2019–2030

f1) The status of surface waters and groundwater used as water sources shall be ensured by protection. The key objectives of water management and water protection shall be defined for each water management area. Groundwater protection shall be promoted with plans for protecting the groundwater areas and up-to-date information on the boundaries of groundwater areas and hydrogeology. Groundwater resources shall be used as water sources in a sustainable manner. Risks arising from human actions shall be reduced in groundwater areas used as or suitable for sources of drinking water.

f2) Water management measures shall be planned in cooperation with interest groups. The key principle shall be an open and active cooperation. Any operations that may cause a risk of environmental pollution shall require a permission granted by the authorities or a notification to the authorities of the operations.

f3) Drinking water supply and sanitation shall be subject to the principle of preparedness and comprehensive risk management (Water Cycle Safety Plan, WCSP), which comprises the WSP model for drinking water and the SSP model for waste water treatment and sewerage, for the drafting of which a national electronic online-based software shall be maintained. Risk assessment, risk management, surveillance and preparedness for disruptions shall form a coherent and mutually reinforcing entity. Water supply plants and the authorities shall act in cooperation in order to prevent disruptions in drinking water supply and sanitation as well as to prevent any adverse health and environmental impacts caused by the disruptions.

f4) The surveillance of the quality of drinking water and the prevention of disruptions shall be based on the assessment and management of risks affecting health-related water quality in the entire water supply chain in accordance with the Water Safety Plan (WSP) principle presented by WHO. Drinking water suppliers and the authorities responsible for the surveillance of drinking water shall have extensive guidelines on best practices to safeguard the quality of drinking water. In order to ensure adequate proficiency, all persons whose duties have an effect on the quality of the drinking water of a drinking water supply plant shall have passed a proficiency test in technical utility operations and water hygiene provided for in the Health Protection Act. Drinking water tests belonging to the supervision by the authorities shall be carried out in an approved laboratory using accredited or assessed methods.

f5) The assessment and management of sanitation risks shall be carried out by applying the Sanitation Safety Plan (SSP) model, which corresponds to WSP, which, in addition to preventing adverse health impacts, takes into account also the assessment and management of risks affecting the environment. The assessment and management of adverse environmental and health impacts in accordance with the SSP model form part of the environmental permit regulations of waste water treatment plants. In order to reduce the load of urban waste water, a water protection development contract shall be drafted to agree on the drafting of an indicative programme for voluntary measures to be taken by the different actors in order to intensify waste water treatment.

f6) It shall be ensured that the plants reconstruct their water supply systems adequately, that the reconstructions are allocated properly and that tools and key figures are developed to support the investments.

f7) Undertakings and organisations are encouraged to enter into a water stewardship commitment to identify the water risks in their value chains and to develop sustainable use and management of water.



### The relation of the target to the Sustainable Development Goals

Targets shall implement Sustainable Development targets 6.1, 6.3, 6.4, 6.5, 6.6, 6.a and 6.b relating to access and sustainable use of water, targets 16.6 and 16.7 relating to effective and accountable institutions as well as targets 17.14 and 17.17 relating to the implementation of sustainable development.

The WSP principle as well as the cooperation between the authorities and the plants in drafting the plans for disruptions shall promote Sustainable Development target 17.17 to encourage and promote effective public, public-private and civil society partnerships.

The water stewardship commitment shall implement Sustainable Development target 12.6 to encourage companies to adopt sustainable practices and to report the corporate responsibility information relating to sustainable development. It shall also implement targets 12.2 and 12.8 relating to sustainable management and efficient use of natural resources and awareness thereof. The water stewardship commitment is also connected to strengthening the means of implementing and revitalising the global partnership for sustainable development in accordance with the Sustainable Development Goal 17 (targets 17.7; 17.9; 17.14; 17.16; and 17.7) as well as to the promotion of sustainable infrastructure, industries and innovations in accordance with targets 9.1 and 9.4.

### Target date

The status targets of surface waters and groundwater shall be achieved gradually by the year 2027.

All plants that supply at least 1,000 m<sup>3</sup> of drinking water per day and which have their own raw water abstraction or water processing shall use the national online-based WSP software by the year 2025. Using the national online-based SSP tool or in a corresponding manner, the new environmental permits of all urban waste water treatment plants and any changes in the environmental permits shall observe the recognised adverse environmental and health impacts starting at the latest in 2025.

In order to maintain and improve the infrastructure of the water supply networks, 2-3 percent of the networks, in proportion to the length of the network and its net value, shall be reconstructed annually on a risk basis.

The drafting of the plans for disruptions by the water supply plants and the authorities and the proficiency testing of drinking-water hygiene are continuous operations in accordance with the legislation.

### Reasoning

#### *Protection of water resources*

The central issues of water management and protection shall provide guidelines for the matters to be observed in the water management plans and operational programmes. The central issues shall include for example the intensification of the protection of waters in agriculture, forestry, peat production and mining and the implementation of the measures, the safeguarding of the quality and amount of groundwater as well as the management of the waste water hazards and discharges of harmful substances.

The significance of the projects shall be examined by water management areas with a view to the achievement of the water status targets. The significance of regional water management cooperation groups is central in the planning of water management. The cooperation groups shall comprise State and municipal authorities with an impact on water use, protection and status, entrepreneurs,

organisations, owners of water areas, central research facilities as well as users of waters and, depending on the areas of emphasis in the water management plans, also other actors.

The legislations shall separately define the projects that require an environmental permit. A permit may also be needed for a project that has not been separately mentioned but which may cause harmful discharges of substances into water or soil. The environmental permit may contain provisions for example on the extent of operations, discharges and their reduction. A precondition for the granting of a permit shall for example be that the operations may not cause adverse health impacts or significant pollution of the environment or a risk thereof. Supervision of compliance with the permit shall be based on both supervision by the authorities and the self-monitoring of the operator. Even if the operations do not require an environmental permit, the operator shall be under a general obligation to have knowledge of the environmental and human health impacts of its operations, the environmental risks and their management and of the possibilities to reduce adverse impacts. A general obligation shall also be to organise the operations in such a way that environmental pollution can be prevented in advance.

Groundwater area protection plans and up-to-date definitions of groundwater areas shall aim at ensuring the preservation of groundwater resources in a usable condition, however, without unnecessarily limiting other forms of land use in a groundwater area. The protection plans shall state the hydrogeological properties of the area, chart the risk factors endangering the groundwater as well as prepare recommendations for actions for existing or potential risk factors. The aim of the protection plans shall also be to enhance the quality control of groundwater as well as to prepare for action against groundwater damage or accidents. With regard to its impact, the protection plan shall be an investigation and instruction to be applied in the planning of land use and its supervision by the authorities as well as in the handling of permit applications and notifications, which the operators submit under the legislation on environmental permits, land extraction and chemicals.

#### *Drinking water supply*

The National Supervisory Authority for Welfare and Health (Valvira) shall provide guidance to local authorities who supervise drinking water quality. Valvira shall draw up application instructions of best practices in cooperation with the Regional State Administration Agencies and other different actors. Also the service level targets set on a water supply plant by the owner in charge of governance (a municipality) should guide both the plants that supply drinking water and waste water treatment plants towards a dependable and safe water supply.

Under the legislation, both the self-monitoring of the plant and the supervision by the authorities shall be based on the assessment and management of risks affecting the health-related quality of water in accordance with the WSP principle. The risk assessment shall be carried out in cooperation between the operators and the authorities. The health protection authority shall approve the risk assessment and pay special attention to ensuring that the risks affecting health are subject to management measures along the entire water distribution chain from the water formation area through water abstraction, treatment and storage to water distribution and that the management measures are appropriate and efficient. The authority shall also ensure that information on the approval of the risk assessment and a summary of its results are available to water users.

The Health Protection Act also provides that those who engage in actions impacting the quality of drinking water supplied by a drinking water supply plant shall demonstrate their plant-technological and drinking-water hygienic proficiency by passing a test provided by Valvira. A proficiency certificate for a passed test shall be valid for five years. The provision was added to the Health Protection Act in 2006. By the end of 2018, 55,000 proficiency tests in plant technology and drinking water hygiene were passed.

Under the Water Services Act, water supply plants shall draw up plans to safeguard their operations during disruptions and keep the plans up-to-date and take preparedness measures that are necessary on the basis of the plan. The Health Protection Act requires a corresponding plan from competent health protection authorities. The legislation also requires that the authorities and operators cooperate in drafting the plan as well as coordination and training relating to different plans so that, during a disruption, the adverse health impacts can be prevented, investigated and removed, the effects of the disruption can be limited to the extent possible and recovery from the disruption is launched as soon as possible. The smooth management of disruptions requires that the responsibilities of the different actors are clear and known to all actors.

Broad-based national cooperation shall be carried out to prepare for disruptions and to draw up the plans for disruptions. The Ministry of Social Affairs and Health has in 2014 published a guide, 'Exceptional situations related to environmental health', for disruptions relating to the quality of drinking water, where for example the investigation of water-related disruptions is handled. As required by the legislation, Valvira has drawn up guidance, available on its website, for practical measures for various disruptions endangering the quality of drinking water. The Water Services Pool (cf. item e) has published several guides for handling disruptions. They shall include for example a guide for water supply facilities on preparing for supply interruptions, a crisis communication guide, a guide on organising back-up water utilities and a guide on organising drills for supply interruptions.

### *Sanitation*

The waste water utilities in charge of the urban waste water treatment are almost without an exception owned by municipalities. The treatment of waste water is based on the Urban Waste Water Directive 91/271/EEC and the treatment requirements are set plant-specifically in the environmental permit granted by the environmental permit authority.

The Sanitation Safety Plan model (SSP) used in Finland is based on the WSP principle and it is meant for assessing and control of the adverse environmental and health impacts of high-tech waste water treatment plants and sewerage. The purpose of the SSP has been to harmonise the risk assessment of sanitation plants on the national level and simultaneously harmonise and facilitate risk assessment, which is a precondition for the granting of an environmental permit.

The waste water treatment plants shall be encouraged to bring waste water treatment above the efficiency level required in the environmental permits of the plants. In 2012, the Ministry of the Environment, the Association of Finnish Local and Regional Authorities and the Water Utilities Association signed a recommendation agreement to decrease the nutrient load in urban waste waters, which causes eutrophication of surface waters. The decrease of loads shall be supported by a target aiming at promoting the introduction of best available techniques (BAT) in sewerage techniques and a summary of process-specific techniques has been compiled for the use of the plants. The aim is that measures complying with the agreement shall be taken into account when drafting and examining water management plans and operational programmes as well as when assessing the need for changes in the environmental permits of urban waste water treatment plants. The agreement has been in force until the end of the year 2016 and the parties to the agreement are negotiating to conclude a new agreement extending to 2027.

The requirement of the Water Services Act to draw up a plan to safeguard operations during a disruption shall also apply to urban waste water treatment plants. They shall also be bound by the obligation to be prepared of the Environmental Protection Act, according to which operators engaged in activities subject to a permit shall take measures in advance to prevent accidents and other exceptional events and to limit their adverse impacts on health and the environment. For the purposes of preparedness, the operator shall draw up a preparedness plan based on risk assessment, secure the necessary devices and other equipment, draw up instructions, test the devices and equipment, and provide training in measures to be taken in case of accidents and other exceptional circumstances.

### *Risk management and the Water Cycle Safety Plan*

The risk management of the entire cycle of water management (Water Cycle Safety Plan) aims at taking into account the entity covering the protection of water resources, drinking water supply and waste water management and applying uniform principles. In order to facilitate and harmonise risk management, internet-based risk management software was developed in Finland to be used as a tool for the management of adverse impacts on health from the entire water supply chain (WSP) as well as adverse impacts on the environment and health from waste water treatment and sewerage (SSP). The WSP/SSP software was introduced in December 2016. The Ministry of Social Affairs and Health administers the system and it is available to all water supply plants and authorities free of charge. In 2019, the software was used by more than 995 users from nearly 480 different organisations.

The WSP and the SSP form a coherent package. As the WSP takes into account risks arising in the catchment and formation areas of water and the SSP takes into account risks arising from waste water to the aquatic ecosystems, the software with a shared basis shall also serve the goals of water protection. The information collected in the software on dangers and best practices for risk management may thus also be utilised when assessing the risks of water formations and drafting plans for the protection of groundwater areas.

### *Maintenance and improvement of infrastructure*

The development of the investments of water supply plants shall be monitored annually on the basis of the notifications and key figures of the water supply plants (cf. item e).

The aim shall be to ensure that the water services systems are subject to adequate reconstruction and that the reconstructions are allocated properly so that the operational reliability and safety of water supply can be ensured also in the future. The determination of a plant-specific reconstruction level shall require close cooperation between the owner of the plant, which is usually a municipality, and water supply plant as well as adequate and reliable information on the status of the network. The status of the Finnish water services network is estimated to be satisfactory at present and its annual reconstruction need is estimated to be EUR 320 million. Six percent of the water distribution networks and 12 percent of the sewer networks are estimated to be in a very bad condition. There are also shortcomings in the information management relating to networks and only few water supply plants have actual asset management plans.

### *Water Stewardship Commitment*

The goal of the water stewardship commitment is that companies would recognise the water risks in their value chains and develop sustainable water use and governance. Although the use of water resources is sustainable in Finland and the status of waters is mainly good, global water crises concern everyone. Finnish companies operate and have subcontractors in areas suffering from different kinds of water-related problems. Water risks may be linked to access and quality of water or to inefficient and unjust regulation, and companies may have a key role and responsibility in solving the challenges. The companies may, for their part, take care of the sustainability of water use at their own and their subcontractors' business locations and develop sustainable water use and governance in cooperation with stakeholders.

The development of the water stewardship of a company is an on-going process. The commitment comprises five mutually supportive and complementary steps

- 1) water risk assessment
- 2) water stewardship strategy development
- 3) assessment of water stewardship in the value chains
- 4) development of sustainable water use and governance in cooperation with stakeholders
- 5) monitoring, evaluation and reporting of water stewardship.

## References

- Health Protection Act (763/1994)
- Water Act (587/2011)
- Environmental Protection Act (527/2014)
- Government Decree on Urban Waste Water Treatment (888/2006)
- Government Decree on Substances Dangerous and Harmful to the Aquatic Environment (1022/2006)
- Government Decree on Treating Domestic Waste Water in Areas Outside Sewer Networks (209/2011)
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- H. Luukkonen (2016). Vesihuollon kehittäminen ja ohjaaminen. Hyvät suunnittelukäytännöt vesihuollon kehittämisessä. [Development and guidance of water services. Good planning practices for the development of water supply and sewerage systems; only in Finnish] The Association of Finnish Local and Regional Authorities. Helsinki.
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- Vesihuoltolaitoksen kriisiviestintäohje. [Crisis communication guide for water supply facilities; only in Finnish] Water Services Pool, Finnish Water and Waste Water Utilities Association. Helsinki 2008
- Opas varavedenjakelun järjestämisestä. [Guide for organising back-up water utilities; only in Finnish]. Water Services Pool Finnish Water and Waste Water Utilities Association. Helsinki 2011
- Vesihuollon häiriötilanne- ja valmiusharjoitusten järjestäminen. [Organising drills and contingency plans for water supply interruptions; only in Finnish] National Emergency Supply Organisation, Water Services Pool Helsinki 2015
- Vesihuoltolaitoksen opas häiriötilanteisiin varautumiseen. [Guide for water supply facilities on preparing for supply interruptions; only in Finnish]. National Emergency Supply Organisation, Water Services Pool Helsinki 2016
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***“(g) The occurrence of discharges of:***

***i. Untreated waste water; and***

***ii. Untreated storm water overflows***

***from waste-water collection systems to waters within the scope of this Protocol,”***

## National target of 2008

### **i. untreated waste water**

Untreated urban waste water or industrial waste water shall not be discharged into waters under normal circumstances. Preventative measures shall be taken to preclude disruptions and adequate action shall be taken to prepare for accidents. The pollution arising from occasional discharges shall be taken into account in each treatment plant’s environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.

ii. untreated storm water overflows from waste-water collection systems

Under normal conditions, all waste waters in combined sewerage systems shall be conducted to treatment plants. Preventative action shall be taken to prepare for overflows caused by exceptional rainfalls. The pollution arising from occasional discharges shall be taken into account in each treatment plant's environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.

Systematic measures to reduce the nutrient load of storm water (such as prevention of storm water formation, withholding, delay or treatment of storm water) shall be implemented in areas where storm water accounts for a substantial part of the environmental load on surface waters and water status needs to be improved.

The responsibility of municipalities, water supply plants and property owners for conducting storm water shall be clarified in connection with the revision of the Water Services Act, which shall commence in 2007.

Achievement of the target

- i. The target has been achieved. The discharge of untreated waste water into waters under normal circumstances has been prevented for example by building overflow tanks and by installing duplicated pumps. The occasional bypasses and overflows have been taken into account in the environmental permits and good estimates thereof can be obtained from pumping times and water volume measurements. No monitoring data is available of disruptions but some regional investigations have been conducted.
- ii. Also this target has been achieved. Combined sewers have been reconstructed into separate sewers and tanks and reservoirs have been constructed for temporary storage of overflows. The Water Services Act requires a plan for the preparation of disruptions.

During the amendment of the Land Use and Building Act as well as the Water Services Act in 2014 the provisions relating to storm water were mainly included in the Land Use and Building Act as the most important way to manage storm waters is land use and planning. The administrative arrangement has become clearer when the overall responsibility lies with the municipality. Systematic management of storm waters can be developed with planning. The goal of the management is comprehensive management, which means that, in addition to storm water sewers, storm waters would be impeded and infiltrated at their collection site as well as conducted to wetlands. A significant target is to keep storm waters away from waste water sewers. Conducting storm water into a waste water sewer was forbidden in the Water Services Act and the goal is to gradually move away from the old combined sewer system. Storm waters are no longer part of water services although a water supply plant may still attend to storm water sewers upon agreement.

National target 2019-2030

i. untreated waste water

g1) Untreated urban waste water or industrial waste water shall not be discharged into waters under normal circumstances. Disruptions caused by the conduct and treatment of urban and industrial waste water shall be precluded by preventive measures, and adequate action, such as drills, shall be taken to prepare for accidents and to inform thereof. The pollution arising from occasional discharges shall be taken into account in each treatment plant's environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.

ii. untreated storm water overflows from waste-water collection systems

g2) Combined sewerage systems shall, where possible, be changed into separate sewerage systems. The management of storm water to be collected shall be developed by the plants so that its discharge into waste water sewers remains small and does not disturb the normal operations of waste water treatment plants. Systematic measures to reduce the nutrient load of storm water, such as prevention of storm water formation, withholding, delay or treatment of storm water, shall be implemented by municipalities in areas where storm water accounts for a substantial part of the environmental load on surface waters and the water status needs to be improved.

g3) Under normal conditions, all waste waters in combined sewerage systems shall be conducted to treatment plants for treatment. Preventative action shall be taken to prepare for overflows caused by exceptional rainfalls. The pollution arising from occasional discharges shall be taken into account in each treatment plant's environmental permit and the proportion of such discharges shall be examined as part of surveillance when assessing compliance with permit regulations.

The relation of the target to the Sustainable Development Goals

The target is in line with Sustainable Development target concerning halving the proportion of untreated waste water (6.3).

Target date

i. untreated waste water

As there are no overflows of urban and industrial waste water in normal circumstances, it is not necessary to set a target date for the target. The goal is to maintain the present situation. With regard to overflows taking place during disruptions, the plants are required to prepare for them. The risk assessment relating to disruptions, the management measures aiming at reducing and removing the risks and the plan for actions during disruptions shall be kept up-to-date plant-specifically.

ii. untreated storm water overflows from waste-water collection systems

The systematic management of storm water and the prevention of adverse impacts of storm water on properties shall be systematically developed especially in areas covered by a detailed plan. Combined sewers shall be changed into separate sewers in connection with the reconstruction of the water distribution networks. No specific target date has been set for the target but it is continuous development activity.

Reasoning

Under normal conditions, no untreated waste water is discharged into waters from Finnish urban waste water treatment plants. In exceptional circumstances, such as in flood situations or in case of equipment failure, bypasses do, however, take place. Despite the bypasses, the treatment plants must meet the emission requirements laid down in the permit regulations, which, depending on the size of the treatment plant, are expressed as quarterly, six-month or full-year averages. In order to achieve them, the treatment plant shall normally operate more efficiently than required in the permit regulations so that temporary bypasses of untreated or partly treated waste water do not cause the permit limits to be exceeded.

With the exception of limited city centre areas, separate sewerage systems are used in Finland although leaks to networks may result in storm water loads at the treatment plants. Rain and melt waters accumulated on paved surfaces are thus conducted directly to surface waters via storm water networks consisting of drains and partially of drain ditches. Only a small portion of storm water is mixed with waste water and ends up at the treatment plant for processing. This solution was chosen when it was deemed that the amount of contaminants in the storm water was very small compared to other load on waters. When conducted to waste water treatment plants, large amounts of usually cold water do,

however, hamper the function of the treatment process and reduce its efficiency. As the treatment of waste water has become more efficient and also other measures have decreased the loads on waters, attention has, during the past years, also been paid on the loads caused by storm waters and their reduction. The adverse impacts of storm water can be reduced by taking hydrological factors into account already at the town planning stage. There are numerous methods for treating separately collected and conducted storm water and they can be used to reduce the flow of especially the most polluted water into the water.

The management of storm waters is governed mainly in the Land Use and Building Act, which was amended for that part in 2014. The comprehensive management of storm water in areas covered by a detailed plan was then provided to be the responsible of municipalities. The sewerage of storm water is still governed by the Water Services Act as a water supply plant may, upon agreement with the municipality, continue the conduction of storm water via drains.

### References

- Land Use and Building Act (132/1999)
- Environmental Protection Act (527/2014)
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- Hulevesiopas [Stormwater guide; only in Finnish]. 2012. The Association of Finnish Local and Regional Authorities. ISBN 978-952-213-896-5.

***”(h) The quality of discharges of waste water from waste-water treatment installations to waters within the scope of this Protocol,”***

### National target of 2008

Waste water shall be treated biologically to remove organic matter and nutrients causing eutrophication – phosphorus and nitrogen – shall be removed. The treatment efficiency of plants shall constantly be improved. Greater efficiency in treatment shall be introduced particularly in areas where the harmful effects of waste water threaten surface waters whose status is not good or whose status is at a risk of deteriorating and where the status of the water system could be enhanced by intensifying urban waste water treatment. Limit values and environmental quality standards shall not be exceeded with regard to harmful substances. Methods and means shall be developed to reduce the hygienic risks of urban waste water.

### Achievement of the target

With the voluntary measures mutually agreed upon with the operators in the field, the efficiency of the operations of the treatment plants has increased and the hygienic risks and disruptions have simultaneously been reduced.

The treatment of waste water in dispersed settlements has not reached the target by the target date as the deadline for attaining the required treatment level was postponed.

### National target 2019-2030

h1) Urban waste water and industrial waste water shall undergo a biological and chemical treatment using the best available technology to remove organic matter and nutrients causing eutrophication, phosphorous and nitrogen, so that the treatment efficiency of plants shall constantly be improved.



Greater efficiency in treatment shall be introduced particularly in areas where the harmful effects of waste water threaten surface waters whose status is not good or whose status is at a risk of deteriorating and where the status of the water system could be enhanced by intensifying urban waste water treatment.

h2) Limit values and environmental quality standards shall not be exceeded with regard to harmful substances defined in legislation. The hygienic risks arising from urban waste waters shall be reduced, where necessary. The risks arising from new emerging micro pollutants (pharmaceutical residues, micro plastics) shall be examined and, where necessary, procedures and methods shall be developed to reduce and prevent the risks in a cost-effective manner. Correspondingly, practices and methods to recycle and recover nutrients shall be developed.

#### The relation of the target to the Sustainable Development Goals

The targets implement Sustainable Development target 6.3 to decrease the proportion of untreated waste water and increase recycling and reuse.

#### Target date

An increase in the efficiency of the operations of the treatment plants required to achieve a good water status in 2019-2030 is linked to the target dates of the planning periods of water treatment. The target shall also be pursued through mutual agreement with the operators of the field. Otherwise, the improvement of the quality of waste water discharged to waters shall be a continuous development of operations.

With regard to the property-specific treatment of waste waters in dispersed settlements, the basic purification level required in the Environmental Protection Act shall be reached in waterfront and groundwater areas by 31 October 2019. Target dates need not be set for other areas but the intensification shall be carried out when measures requiring a building permit take place on the property.

#### Reasoning

All urban waste water treatment plants, where the volume of waste water treated equals the waste water load of more than 100 inhabitants, shall need a permit in accordance with the Environmental Protection Act granted for their operations by the Regional State Administrative Agencies. The legislation presents the minimum requirements for biological treatment and phosphorous removal in waste water treatment as well as the grounds on which nitrogen shall be removed from waste water. The environmental permits of treatment plants shall always determine the maximum of emissions usually both quantitatively and as an efficiency percentage. Requirements shall usually be imposed on urban waste water treatment plants in respect of at least organic matter, phosphorous and nitrogen. Corresponding principles shall be applied to the treatment of industrial waste water. Measures to increase the efficiency of waste water treatment shall be implemented especially in locations where the water status is not good and the waste water impacts on the status.

Waste water treatment plants shall operate so that the emission standards imposed on substances that are dangerous and harmful to the aquatic environment and the quality standard concentrations in the aquatic environment are not exceeded and the waste waters, the location, construction or service of their treatment or sewerage do not adversely affect human health. Availability of knowledge of the harmful substances in urban waste waters and their emission sources has been improved and the prevention of access of harmful substances that do not disintegrate during the treatment to urban waste water treatment systems and water systems has been started.

The waste waters in dispersed settlements that are to be treated property-specifically may not cause environmental pollution. The waste water purification shall meet the requirements for biological oxygen demand, phosphorous and nitrogen removal, which entered into force for new buildings at the beginning of 2004. Old properties located in dispersed settlements in waterfront and groundwater areas shall render their waste water treatment systems to comply with said requirements by 31 October 2019. In other areas, the statutory increase of the efficiency of the waste water treatment system shall be linked to reconstruction and upgrading work requiring a building permit carried out on the property. Voluntary increase in the efficiency of treatment through for example guidance shall, however, be aimed at.

The environmental permit decisions shall be based on nationally defined best available technology. The permits also take into account the prevention of disruptions as well as the proper care of sewers and treatment plants. Voluntary agreement-based measures shall be developed to complement the permit procedure in order to reduce the waste water load as cost-effectively as possible.

The surveillance of treatment plant operations is based on the surveillance prescribed in the permit, usually commissioned to a regional water protection association or a consultant. The authorities shall verify the findings and perform spot checks, where necessary. The findings of the surveillance are recorded in the information system of the environmental administration, which also allows the compilation of regional and national summaries. The data entered in the information system indicate that in 2016, the average treatment efficiency of urban waste water treatment plants in the removal of organic matter was 98.1 %, in the removal of phosphorous 96.9 % and in the removal of nitrogen 68.2 %. Significant intensification is not expected to take place in the near future but treatment efficiency shall improve slightly and evenly in the future. With regard to individual plants, the requirement of total nitrogen removal to be set in a possible revised environmental permit may significantly enhance the treatment findings.

The needs to increase the efficiency of waste water treatment shall also be handled in the operational programmes of water management plans in order to decrease point source pollution affecting bodies of water (cf. item f). The realisation of the operational programmes shall be monitored per water management period and, where necessary, new targets for decreasing point source pollution shall be proposed. The protection of waters and the development of water services shall also be promoted with voluntary activities (a recommendation agreement to decrease the nutrient load in urban waste waters which causes eutrophication of surface waters; cf. item f).

#### References

- Health Protection Act (763/1994)
- Environmental Protection Act (527/2000)
- Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004)
- Government Decree on Urban Waste Water Treatment (888/2006)
- Government Decree on Substances Dangerous and Harmful to the Aquatic Environment (1022/2006)

***”(i) The disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations and the quality of waste water used for irrigation purposes, taking into account the Guidelines for the safe use of waste water and excreta in agriculture and aquaculture of the World Health Organization and the United Nations Environment Programme,”***

#### National target of 2008

The Decree on Urban Waste Water (888/2006) prohibits the discharge of sewage sludge into waters.

Under the Decree on Fertiliser Products (12/07) and the Government Decision on the Use of Sewage Sludge in Agriculture (282/1994), sewage sludge shall be treated in the requisite manner before placement elsewhere than in landfills.

Until 2005, the national waste plan required the reuse of a minimum of 90% of sewage sludge. The new national waste plan will be submitted to the Government for adoption during 2007.

Under the Government Resolution on Water Protection Guidelines until 2015 (23 November 2006), the different operators shall work together to improve the conditions for safe and environmentally sustainable recovery and placement of sewage sludge.

#### Achievement of the target

Increasing the efficiency of sludge treatment is an ongoing effort. The reuse target (90 %) set in the national waste plan has been achieved and sludge is directed to be reused as fertiliser products.

#### National target for 2019– 2030

i1) Sewage sludge from treatment plants shall not be discharged into waters or the sea and they shall not be placed in landfills, but the sludge shall be collected, treated and utilised as fertiliser products, energy products or as other products.

i2) Mineral phosphorous resources shall be saved by recycling the phosphorous in the sludge. The recovery of nutrients shall be increased so that at least 50 percent of urban waste water sludge shall be utilised using developed technology by the year 2025. The usability of the nutrients in the sewage sludge shall be improved by developing new treatment methods.

i3) Regulation relating to the properties of fertilising products produced by recycling shall be modified and their use shall be actively promoted without endangering the safety of the fertilisers and environmental protection. Special attention shall be paid to the products not causing soil contamination or endangering the production of high-quality food or feed.

i4) The adverse health and environmental impacts of treated urban waste water shall be identified and efficient management procedures shall be defined for identified impacts to enable water reuse.

i5) The microbiological quality of fertiliser products shall be safeguarded with legislation, supervision and research.

#### The relation of the target to the Sustainable Development Goals

The target promotes Sustainable Development target 6.3 by increasing recycling and safe reuse of sludge.

#### Target date

The possibilities of the instruments supporting the recycling of phosphorous as a sludge-based fertiliser product shall be explored by the year 2020. By 2025, 50 percent of sewage sludge from treatment plants shall be treated using developed processing. In other respects, the implementation of the targets is a continuous activity in accordance with the legislation in force.

#### Reasoning

The amount of sewage sludge is estimated to remain the same. An increase in the efficiency of waste water treatment in dispersed settlements may, in principle, increase the amount of sludge conducted

to urban waste water treatment plants but, on the other hand, some of the solutions to increase efficiency in the treatment of waste water from dispersed settlements are based on dry toilets, the sludge from which remains to be reclaimed locally. Legislation provides for the preconditions for the use of sludge as fertiliser products and for operations relating to fertiliser products. Legislation also provides for the supervision of operations.

Only such sewage-sludge based fertiliser products which have a national type designation may be produced for placing on the market, placed on the market or conveyed to the user without compensation. In accordance with the Fertiliser Product Act, fertiliser products shall be of uniform quality, safe and suitable for their purpose of use. Treated sewage sludge which does not meet the requirements of the Fertiliser Product Act may be used for landscaping in closed sites for example as filling and covering material in a sealing layer of the surface layer of a closed landfill and in layers above it.

A fertiliser product may not contain harmful substances, products or organisms in such quantities that its use in accordance with the instructions for use may cause any danger to human or animal health or safety, plant health or the environment. Nor may their use in cultivation cause any disturbing odour nuisance. Sewage sludge shall be subject to requirements relating to handling, quality and reuse targets.

The prohibition to discharge treated or untreated sewage sludge from waste water treatment plants into waters is governed by legislation. The professional or institutional treatment of sewage sludge shall require an environment permit, where regulations on the treatment of sludge are set case by case so that the adverse environmental impacts of the activity are minimised.

As sludge products are fertiliser products, they shall be subject to the monitoring of cadmium in farmland required by the Fertiliser Product Act. Sewage-sludge based by-products used as soil conditioner as such shall also be subject to the monitoring of harmful substances in cultivated land as well as the monitoring of pH. Restrictions on the use of plants as human food or animal feed also apply on these lands. The use of all products shall also be restricted by provisions relating to the spreading times and the maximum amounts of nutrients used.

The spreading on soil of untreated sewage sludge, septic tank sludge or dry toilet waste shall be forbidden. In dispersed settlements, it shall, however, be possible to spread them on the own fields of a farm or on joint fields of farms if this is permitted in the municipal waste water or environmental protection regulations and if the sludge mixture has been treated before spreading it on the field so that it does not cause any adverse impacts on health or the environment or odour nuisance.

The approved treatment methods for septic tank sludge as well as for dry toilet waste are lime stabilisation, composting, thermophilic digestion as well as mesophilic digestion. Mesophilically digested sludge shall, before or after the digestion, be disinfected, composted, thermally dried or treated in another corresponding manner approved by the supervisory authority. A farm may also treat, on a small scale, the septic tank sludge or dry toilet waste of a couple of neighbours or close-by temporary summer residents for the own use of the farm or farms. Fertiliser products containing sewage sludge may not be used in organic production.

In Finnish conditions, there is no need in sight to start using treated waste water for irrigation in agriculture on a large scale, but it may otherwise be appropriate to increase the reuse for example in built areas suitable for it, and in agriculture. The promotion of possibilities relating to the reuse of water shall be important from the point of view of promotion of the circular economy, the efficiency of resources and energy efficiency as well as of clean technology. However, the reuse of urban waste water involves risks as careless reuse may cause adverse impacts on human health, the safety of foodstuffs, farmed animals or the environment. In order to prevent the adverse impacts, it is necessary to create a toolkit that is sufficient and proportionate to the purpose of use as well as to the risks. In

avoiding adverse impacts, it is material to identify the health and environmental risks relating to the reuse of waste water, to define efficient management tools for the identified risks and to monitor the functionality of the management tools.

#### References

- Fertiliser Product Act (539/2006)
- Waste Act (646/2011)
- Environmental Protection Act (527/2014)
- Government Decree on Urban Waste Water Treatment (888/2006)
- Government Decree on Limiting Certain Emissions from Agriculture and Horticulture (1250/2014)
- Decree of the Ministry of Agriculture and Forestry on the Food Hygiene of the Primary Production of Food (1368/2011)
- Decree of the Ministry of Agriculture and Forestry on Fertiliser Products (24/11)
- Decree of the Ministry of Agriculture and Forestry on Activities Concerning Fertiliser Products and their Control (11/12)

***”(j) The quality of waters which are used as sources for drinking water, which are generally used for bathing or which are used for aquaculture or for the production or harvesting of shellfish,”***

#### National target of 2008

The quality of surface water used as a source for drinking water shall meet the requirements of Government decision (366/1994).

Water quality at large public bathing areas shall meet the requirements of the Decree of the Ministry of Social Affairs and Health to be issued in early 2008, which are based on the requirements of the Bathing Water Directive 2006/7/EC. Bathing water quality shall be at least on the satisfactory level. Bathing water at small public bathing areas shall meet the national requirements imposed by the Ministry of Social Affairs and Health.

The general quality requirements concerning waters used for aquaculture are laid down in the Decree of the Ministry of Agriculture and Forestry on the requirements imposed on the primary sector to ensure food safety (134/2006).

#### Achievement of the target

The targets have been achieved. With regard to small bathing areas, the information has not been collected on the national scale.

#### National target 2019-2030

j1) The quality of the waters shall meet the requirements of the EU Water Framework Directive. A good ecological and chemical status of surface water as well as a good chemical and quantitative status of groundwater shall be achieved. The weakening of the status of waters in good and excellent status shall be prevented. Protection plans for groundwater areas shall be drawn up and kept up-to-date in groundwater areas used for the abstraction of water as well as in groundwater areas where activities affecting the status of groundwater take place.

j2) Environmental targets shall be set on all bodies of water. In defining the targets, special attention shall be paid to waters used for the abstraction of drinking water and to bathing waters, with regard to which special attention shall be paid to the hygiene quality.

j3) Popular areas shall have public bathing areas or small public beaches. The water quality at public bathing areas shall meet the requirements of Directive 2006/7/EC of the European parliament and of the Council, hereinafter the Bathing Water Directive, and/or the requirements of the decrees of the Ministry of Social Affairs and Health. Bathing water quality shall be at least sufficient at bathing areas where a large number of people bathe.

j4) A bathing water profile shall be established for all bathing areas where a large number of bathers is expected. The bathing water profile shall describe the characteristics of the bathing water and other surface waters and groundwaters in its catchment area, and any activities located in the catchment area that could be a source of pollution of the bathing water, and assess the causes that may affect the quality of bathing waters and impair bathers' health. Each public bathing area where a large number of people bathe shall have an accessible toilet.

j5) Information on the quality of bathing waters, defects observed in surveillance and the remedial action taken by the authorities shall be collected into a centralised resource planning and information management system in environmental health care, the aim of which is to harmonise surveillance, improve the quality of related guidance and increase the effectiveness of surveillance.

j6) Plant-specific environmental permits granted under the Environmental Protection Act and the Water Act shall ensure that aquaculture is located so that the operations do not cause harm to the environment and that water-borne health security risks have been minimised.

#### The relation of the target to the Sustainable Development Goals

The targets relating to the status and usability of waters shall implement Sustainable Development targets 6.4, 6.5 and 6.6 to increase water-use efficiency, to implement integrated water resources management and to protect and restore water-related ecosystems.

#### Target date

The quality of waters used as sources for drinking water, generally used for bathing or used for aquaculture or for the production or harvesting of shellfish shall be good by the year 2021. With regard to more polluted and multi-problem areas, the target has been postponed until 2027. The target date for achieving a good status may be postponed also beyond 2027 if the postponement is due to natural circumstances.

The surveillance and quality determination of bathing water as well as information shall be continuous operations in accordance with the provisions in force.

The centralised resource planning and information management system in environmental health care shall be in use in 2020.

#### Reasoning

##### *Status of waters*

The national water management targets and plans shall ensure the use of waters as raw water sources for drinking water and as recreational targets as well as their use for aquaculture and the production and harvesting of shellfish. The water management plans are based on the Water Framework Directive, which has been implemented in Finland by the Act on the Organisation of River Basin Management and the Marine Strategy. In accordance with the latest estimate of 2013, 86 % of the area of Finnish lakes, 67 % of river waters and 34 % of coastal waters are of good ecological status. Of the groundwater areas, 93 % have been classified as good in respect of chemical quality and volume. The

achieved status has been taken into account in the operational programmes of water management for 2016-2021 and in the plans relating to the years 2022-2027.

In order to achieve a good status of waters, water management plans have been drafted for all seven water management districts of mainland Finland. The plans shall be revised at six-year intervals and adopted by the Council of State. The current plans were adopted in 2015 and they shall remain in force until the end of 2021. More detailed operational programmes were drafted as part of the water management plans containing water-body-specific cost-effective measures for achieving the status targets of waters. Health protection and environmental protection have been taken into account in defining the measures.

At the end of 2015, there were approximately 5,930 inventoried and classified groundwater areas in Finland. Of them, 2,186 were groundwater areas important for water supply and 1,640 were other areas suitable for water supply. In addition, there were altogether 2,104 other groundwater areas. It was estimated that altogether over 5 million m<sup>3</sup> of groundwater shall be forming in the areas per day.

With regard to the chemical status or the volume of groundwater altogether 385 were risk areas. Of these areas, 95 groundwater areas had a poor chemical status and three groundwater areas had a poor volume status. In addition, there were 185 areas in need of analysis. An area in need of analysis shall refer to a groundwater area which is subjected to significant human activities causing pressure, but the information on the quality of the groundwater is not adequate to assess whether the area is a risk area and to determine the status of the groundwater area.

Some 400 protection plans for groundwater areas shall have been prepared and they will cover more than 1,500 groundwater areas. Approximately 230 groundwater abstraction sites have been designated as protected areas.

#### *Bathing water*

Before the beginning of a bathing season, the municipal health protection authority shall publish a list of the municipal public bathing areas for example on the website of the municipality. The information is submitted to allow the users of bathing areas to influence the number of bathing areas subject to regular surveillance.

The requirements of the Bathing Water Directive have been implemented by a Decree of the Ministry of Social Affairs and Health. The Decree shall apply to public bathing areas where a large number of bathers is expected. The Decree shall provide for the frequency of bathing water monitoring and samples shall be taken at least once a month during the bathing season. The bathing water shall be monitored with regard to concentrations of bacteria indicating intestinal contamination, for the presence of which there are reference points for action. Observations on the presence of cyanobacteria and waste shall have also been made in bathing areas. The starting point shall be that the bathing water may not cause adverse health impacts to bathers. Bathing waters shall also be classified according to their microbiological quality into four bathing water classes: excellent, good, satisfactory and poor. The classification shall be made on the basis of an assessment comprising the last four bathing seasons.

Information on the bathing water and the factors affecting its quality as well as on any causes of pollution of the bathing water shall be collected in a bathing profile established in order to assess and manage the risks of a bathing area. These causes may be the geographical, physical and hydrological characteristics of the bathing water or, of the surface waters in its catchment area, as well as any activities or factors that may pollute the bathing water. Based on the information in the bathing water profile, it is possible to aim at preventing, decreasing and eliminating any factors with an adverse impact on bathing water quality. The building of accessible toilets for public bathing areas shall be encouraged. The presence of toilets and their proper servicing and cleaning have an impact on the hygiene of the bathing area.

The surveillance and quality requirements of small public bathing areas are also governed by a Decree of the Ministry of Social Affairs and Health. Small public beaches shall not be classified but the monitoring of the bathing water quality during the bathing season shall be based on the reference points for action set on the presence of bacteria indicating intestinal contamination and cyanobacteria.

The surveillance of bathing water quality shall be the responsibility of the municipal health protection authority. The body maintaining the bathing area shall be responsible to inform of the bathing water quality. Matters relating to bathing water surveillance and quality shall be posted both on the website of the body maintaining the bathing area and on the bathing area.

The centralised resource planning and information management system in environmental health care shall enable the national monitoring of the surveillance of public bathing areas. The system shall include information on the surveillance targets, bathing water quality and any defects observed during the surveillance as well as on measures taken by the authorities to remedy the situation and to render the operations to comply with the law.

### *Aquaculture*

As aquaculture causes environmental impacts, all commercial operations shall require an environmental permit granted by the Regional State Administrative Agency. The objective of the Aquaculture Strategy 2022 shall be sustainability of the growth of production. This shall be aimed at through spatial guidance of operations in the maritime area so that the growth of production does not endanger the achievement of the targets set in the water and maritime management plans. Inland, the growth of operations shall especially be based on so-called white-water technology, which enables the treatment and reuse of waste water generated in the course of operations. Spatial guidance and environmental permit requirements shall guide the operations to waters which have a good status and where the increasing nutrient load is effectively diluted. These waters also enable the safety and purity of foodstuffs.

### References

- Health Protection Act (763/1994)
- Water Services Act (119/2001)
- Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004)
- Government Degree on the Organisation of River Basin Management (1040/2004)
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Surveillance of Public Beaches (177/2008)
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Surveillance of Small Public Beaches (354/2008)
- Kansallinen vesiviljelyn sijainninhajausuunnitelma [National aquaculture spatial plan; only in Finnish] Ministry of Agriculture and Forestry and Ministry of the Environment, 21 May 2014.
- Vesiviljelystrategia 2022. [Aquaculture Strategy 2022; summary available in English] Government Resolution of 4 December 2014.

***”(k) The application of recognized good practice to the management of enclosed waters generally available for bathing,”***

### National target of 2008

The quality and surveillance of enclosed waters shall meet the requirements of the Decree of the Ministry of Social Affairs and Health (315/2002). Employees taking actions impacting the quality of enclosed waters at swimming centres and spas shall have passed the proficiency test on plant



technology and hygiene of enclosed waters referred to in section 28a of the Health Protection Act (763/1994).

#### Achievement of the target

The targets have been achieved. By the end of the year 2018, more than 6,500 proficiency tests on plant technology and hygiene of enclosed waters were passed.

#### National target 2019-2030

k1) There shall be public swimming pools and they shall be maintained so that people have a possibility to learn and maintain swimming skills. Accessibility shall be taken into account in public swimming pools.

k2) The quality and surveillance of enclosed waters shall meet the requirements of the Decree of the Ministry of Social Affairs and Health (315/2002).

k3) Information on the quality of enclosed waters, defects observed in surveillance and remedial action taken by the authorities shall be collected into a centralised resource planning and information management system in environmental health care, the aim of which shall be to harmonise surveillance, improve the quality of related guidance and increase the effectiveness of surveillance.

k4) The employees of swimming centres and spas who engage in actions impacting the quality of enclosed waters shall pass the proficiency test in plant technology and hygiene of enclosed waters referred to in section 28a of the Health Protection Act (763/1994).

k5) In order to decrease the load of enclosed waters, the persons participating in the sanitation and cleaning of swimming pools and wet rooms shall have adequate knowledge of the effects of the hygiene of the premises on the health quality of enclosed waters and adequate competence in the cleaning and sanitation of these premises in accordance with the provisions of section 28a of the Health Protection Act (763/1994).

k6) The operators shall have plans for each pool or pool group to address possible disruptions. The plans for disruptions shall describe the instructions to prevent adverse health impacts and the personnel shall be trained to act in accordance with the instructions.

#### The relation of the target to the Sustainable Development Goals

Public swimming pools and good quality of enclosed waters shall implement Sustainable Development targets 3.3; 4.a; and 6.3 the aim of which is to end epidemics of water-borne diseases, build and provide safe education facilities that are child and disability sensitive and improve water quality by reducing pollution.

#### Target date

The quality of enclosed waters and its quality surveillance shall be continuous operations in accordance with the provisions in force.

The centralised resource planning and information management system in environmental health care shall be in use in 2020.

Persons engaged in actions impacting the quality of enclosed waters shall pass a proficiency tests at five-year intervals. Persons participating in the sanitation and cleaning of swimming pools and wet

rooms may pass a voluntary test maintained by the guidance and training organisation of the cleaning industry.

### Reasoning

The Decree of the Ministry of Social Affairs and Health on the quality and surveillance of the enclosed waters of public swimming pools shall set the microbiological, chemical and physical quality requirements for the quality of enclosed waters. The starting point shall be that enclosed waters may not cause adverse health impacts on swimmers. This shall be ensured so that adequate chlorine disinfection in line with the usage is used in the pool, the conditions for chlorine disinfection are appropriate and no harmful quantities of trihalomethane and chloramine concentrations are present. The Decree shall also provide for the frequency of the surveillance of enclosed waters. Control samples from enclosed water shall be taken the more frequently the more swimmers use the pools on the average. The National Supervisory Authority for Welfare and Health, Valvira, has issued instructions on applying the Decree containing for example instructions on the preparation of a control examination programme and the monitoring of usage.

The centralised resource planning and information management system in environmental health care shall enable the national monitoring of the surveillance of public swimming centres and pools. The system shall include information on the surveillance targets, the quality of enclosed waters and any defects observed during the surveillance as well as on measures taken by the authorities to remedy the situation and to render the operations to comply with the law.

In accordance with the Health Protection Act, employees of swimming centres and spas or corresponding facilities who engage in actions impacting the quality of enclosed waters shall have a proficiency certificate in plant technology and hygiene of enclosed waters, a so-called water proficiency certificate. The water proficiency certificate shall be obtained by passing a proficiency test in plant technology and hygiene in enclosed waters. Further provisions on the proficiency of the employees of said facilities in the plant technology and hygiene of enclosed waters and the testing of proficiency shall be issued by a Decree of the Ministry of Social Affairs and Health. The Decree contains provisions on for example who may test said employees and what the proficiency areas are that the employee shall master in order to pass the test.

In order to decrease the load of enclosed waters, the Health Protection Act provides that the persons participating in the sanitation and cleaning of swimming pools and wet rooms shall have adequate knowledge of the effects of the hygiene of the premises on the health quality of enclosed waters and adequate competence in the cleaning and sanitation of these premises. One way to demonstrate proficiency is to pass a test maintained by the guidance and training organisation of the cleaning industry, SSTL. SSTL approves the trainers who can give the proficiency tests meant for persons participating in the sanitation and cleaning of swimming pools and wet rooms.

Instructions on building a treatment system for enclosed water shall be provided in Building Information Group's HEVAC Building Services Information File. The information file shall provide information on how the treatment of enclosed water should be constructed in different situations so that the health quality requirements of enclosed waters are met. The HEVAC file shall be used as a construction recommendation at all sites where public swimming pools are built.

The guide of the Finnish Swimming Teaching and Lifesaving Federation 'Welcome to the swimming hall!' shall explain how to act in a public swimming hall in a hygienic manner and how to take other swimmers into consideration. The guide has been used for example in schools before the swimming lessons of the pupils. The guide has been translated into several languages and it contains information which shall help the person who visits a swimming hall for the first time. The guide also describes arrangements with which a swimming hall operator may facilitate the visits of persons from different cultures to swimming halls. The guide includes pictures (for example you must wash yourself before

going to the pool, you can enter the sauna wrapped in a towel), which can be used in the swimming halls to guide the swimmers.

#### References

- Health Protection Act 763/1994
- Decree of the Ministry of Social Affairs and Health on the Quality Requirements and Control Examinations of Enclosed Waters at Swimming Centres and Spas (315/2002)
- Decree of the Ministry of Social Affairs and health on Competence Concerning Technical Utility Operations and Enclosed Water Hygiene Required of Persons Working at Swimming Centres, Spas or Similar Facilities and on the Related Competence Testing (1350/2006)
- Guidelines of National Supervisory Authority for Welfare and Health. Allasvesiasetuksen soveltamisohje - Uima-allasveden laatu ja valvonta [Instruction on applying the Decree on Enclosed Water - Quality and control of swimming pool water; only in Finnish]
- Rakennustieto Oy:n LVI-ohjekortti, LVI 22-10386 [Building Information Group's HEVAC Building Services Information File 22-10386; only in Finnish]
- Welcome to the swimming hall! - guide. The Finnish Swimming Teaching and Lifesaving Federation.

***”(1) The identification and remediation of particularly contaminated sites which adversely affect waters within the scope of this Protocol or are likely to do so and which thus threaten to give rise to water-related disease,”***

#### Target of 2008

The identification and remediation of contaminated sites shall be continued in a prioritized manner within the framework of available appropriations. Sites that threaten groundwater and other sites causing significant adverse environmental and health impacts shall be prioritized in remediation.

#### Achievement of the target

By the end of the year 2017, the environmental administration made more than 5,600 decisions on the remediation of contaminated sites. An average of 250 decontamination projects shall be initiated annually on the basis of the decisions of the authorities. In groundwater areas, the main goal of remediation has been to prevent any deterioration of the quality of groundwater or to improve the quality of groundwater. With State funding, remediation has been initiated in altogether 410 sites through the State waste management system.

Since 2016, the Pirkanmaa Centre for Economic Development, Transport and the Environment has been responsible for the drafting and implementation of the national investigation and remediation programme for contaminated sites. The areas to be remediated as State waste management work shall be selected through the programmes. In prioritising the targets, the areas of emphasis are the protection of groundwater areas and the securing of water acquisition critical to society. The remediation of for example old gas station properties that were located in groundwater areas has been funded through the Oil Pollution Compensation Fund.

#### National target 2019-2030

11) The risk targets shall be identified, examined and remediated in a prioritized manner. Sites that threaten groundwater and other sites causing significant adverse environmental and health impacts shall be prioritized and their identification and remediation shall be promoted in a cost-effective and sustainable manner.

### The relation of the target to the Sustainable Development Goals

The target shall support Sustainable Development target 3.9 to reduce soil contamination and other contamination of the environment through it as well as to promote the goals of circular economy and cleantech business operations inter alia by increasing the proactive observance of contaminated sites in land use, by encouraging the recycling and reuse of soil material, by developing knowhow and training in the research and remediation methods of contaminated sites as well as by supporting the development of related technical innovations and cleantech business.

### Target date

The health and environmental risks posed by contaminated sites shall have been contained in a sustainable manner by 2040.

### Reasoning

The national risk management strategy for contaminated land was completed in December 2015. The strategy represents the national view of the central goals of the risk management and remediation of contaminated sites and the related development needs. The purpose of the strategy is to contain significant health and environmental risks posed by contaminated sites in a sustainable manner by 2040. A central part of the implementation of the strategy is the National Investigation and Remediation Programme for Contaminated Sites (2016-2040), which shall promote systematic coordinated risk management of contaminated sites. In connection with the Investigation and Remediation Programme, a pilot project on the remediation of contaminated sites was carried out in 2016-2018. During the project, the practices and measures relating to sustainable risk management and remediation of contaminated sites were developed, remediation projects testing various risk-management solutions and techniques were implemented as well as the business of cleantech companies of the sector and their possibilities for international business operations were promoted.

Information on contaminated sites have been collected in Finland by environmental authorities since the early 1990s. The National Soil Database System (MATTI), introduced in 2007, contains data of more than 26,000 sites that have been found or suspected to be contaminated. Data has been collected for example on the location and ownership of the sites, the operating history as well as the investigation and remediation carried out. In addition, the data system contains information on sites found non-contaminated or remediated sites, which have no remediation needs with a view to current operations. Of the sites in the system, more than 16,500 are the so-called assessment-need targets, where operations have been or are being carried out using substances that are harmful to the environment and may have transported to the soil. However, there is no certainty of soil contamination at these sites yet. Of these sites, some 3,400 are located on groundwater areas or in the vicinity of populated areas.

Most of the remediation of contaminated sites is connected to land use changes in densely populated areas or to sales of property. In groundwater areas, the purpose of the remediation is to prevent the deterioration of the quality of groundwater. Remediation of already contaminated groundwater areas has seldom been started because of unsure results, high costs and the length of the remediation. When determining soil remediation goals in groundwater areas, the risk of contamination of groundwater has been observed and the goals have often been more stringent than in other areas. With regard to contaminated sediments, the harmful substances and their effects shall be investigated, where necessary, and the adverse impacts arising from them shall be prevented by attending to the necessary water protection measures for example in connection with dredging.

The majority of the remediation, approximately 60 %, is undertaken with private funding. The so-called State waste management system has been used to fund urgent remediation of contaminated areas that have adverse impacts on the environment or health in situations where the party responsible is

unknown or insolvent. The appropriation available has been approximately EUR 1.5-3 million annually.

The investigation and remediation of oil-polluted sites has been funded from the Oil Pollution Compensation Fund as well as in cooperation with the oil industry and the Ministry of the Environment. By the end of 2017, funding from the Oil Pollution Compensation Fund was applied to the remediation of some 1,500 sites within a remediation programme or project. An environmental technological basic assessment has been carried out in 1,114 sites, 455 of which have been remediated. In addition, remediation costs have been reimbursed from the Fund to some 75 other sites. In 2018, remediation has been started at 10 sites and remediation is in progress at some 40-50 sites. The funding through the Oil Pollution Compensation Fund has been approximately EUR 2-2.5 million annually.

#### References

- Forest Act (1093/1996)
- Nature Conservation Act (1096/1996)
- Environmental Damage Insurance Act (81/1998)
- Land Use and Building Act (132/1999)
- Act on the Oil Pollution Compensation Fund (1406/2004)
- Act on Oil Pollution Response (1673/2009)
- Water Act (587/2011)
- Waste Act (646/2011)
- Chemicals Act (599/2013)
- Environmental Protection Act (527/2014)
- Government Decree on the Assessment of Soil Contamination and Remediation Needs (214/2007)
- National risk management strategy for contaminated land. Ministry of the Environment. The Finnish Environment 10/2015. <http://hdl.handle.net/10138/159058>

***”(m) The effectiveness of systems for the management, development, protection and use of water resources, including the application of recognized good practice to the control of pollution from sources of all kinds;”***

The targets and target dates have been addressed under items c) – k).

Their implementation is especially supported by the Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004), which requires the preparation of river basin management plans and related operational programmes according to river basins (target, implementation of the WSP and SSP principles as well as application of the key figure system of the water supply plants).

***”(n) The frequency of the publication of information on the quality of the drinking water supplied and of other waters relevant to the targets in this paragraph in the intervals between the publication of information under Article 7, paragraph 2.”***

According to a decision taken by the first Meeting of the Parties to the Protocol on Water and Health, the information and evaluations referred to in Article 7 (2) of the Protocol should be published at least every three years, i.e. for the first time in 2010. According to the decision, Finland has published the information and evaluations at three-year intervals, and the same practice shall be continued during the target period 2019-2030. Existing data collection systems have been utilized in the collection and reporting of data required under the Protocol (inter alia the reporting required by the EU and WHO).