

National targets in Norway - Water and health

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National targets for water and health

Targets under the WHO/UNECE Protocol on water and health

THE CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

- Protocol on Water and Health

Table of contents

National targets for water and health	1
Targets under the WHO/UNECE Protocol on water and health	2
Introduction	3
Changes in climate	4
Use of terminology	5
(a) The quality of the drinking water that reaches consumers	6
(b) Reduction of the scale of outbreaks and incidence of water- related disease	9
(c) Areas requiring increased connection to the collective water supply or where the drinking water supply may be improved by other means	12
(d) Areas requiring increased connection to the collective sewerage systems or where sanitation can be improved by other means	14
(e) Performance to be achieved by the water and sewerage network	16
(f) The quality of operating procedures at water and sewerage plants for the protection of water sources	20
(g) Overflows that may impact upon water sources	22
(h) Discharges of municipal wastewater	24
(i) Use or reuse of fertiliser products of organic origin	27
(j) The quality of raw water for drinking water, bathing water, or water that is used in the production of food	30
(k) Operating routines at pool facilities that are open to the public for bathing.....	33
(l) Identification and treatment of contaminated sites which may affect waters, or which may give rise to waterborne disease	35
(m) Effective management systems, including methods, to limit pollution	37
(n) Information for the public regarding the quality of drinking water and water for other uses	39



Introduction

The Protocol on Water and Health (hereafter referred to as the Protocol) was adopted in London on 17 June 1999. It is the first international agreement of its kind adopted specifically to attain an adequate supply of safe drinking water and adequate sanitation for everyone, and to effectively protect water used as a source of drinking water. The Protocol's parties therefore undertake to establish targets in several areas in order to meet its objectives.

Norway ratified the Protocol on 6 January 2004, and as a party is therefore obligated to follow it. Implementation of the Protocol requires that the parties establish national targets in the areas defined in Section 2 (a) to (n) of Article 6 of the Protocol.

The process of establishing targets involves the preparation of a realistic plan with prioritised, dated targets adapted to the national situation. Through this process, increased awareness of areas of weakness and necessary measures will be achieved. This creates a platform for discussion, promotes coherence, harmonisation and integration between relevant sectors, and brings together participants such as governmental and municipal agencies, special interest organisations, scientific institutions, the private sector and the general public. Established targets also create a vertical communication channel between various administrative levels, and help to ensure that national objectives are implemented at a local level.

In accordance with Article 7 of the Protocol, the parties shall collect and evaluate data regarding progress towards the achievement of the established targets and indicators designed to show how far that progress has contributed towards preventing, controlling or reducing water-related disease. The parties shall regularly publicise the results of the collection and evaluation of data. Every three years, each party (including Norway) shall report the results to UNECE/WHO-EURO's secretariat. The results shall be circulated to the other parties. As each of the targets is achieved, the member states shall set new and stricter targets until a satisfactory standard is achieved.

In the work to develop the national targets under the Protocol, we have used the Guidelines on the Setting of Targets, Evaluation of Progress and Reporting prepared by the Task Force on Indicators and Reporting under UNECE as support in determining which position the national objectives might take.

In Norway, the work to develop national targets is led by the Ministry of Health and Care Services, with the Norwegian Food Safety Authority as secretariat, in close collaboration with the Norwegian Environment Agency and Norwegian Institute of Public Health. The targets are not regulatory targets, but work targets that are set in order to hold participants accountable and achieve improved compliance with the regulations, and through this ensure safe drinking water and safeguard public health.

In practice, many of the measures must be implemented by the municipalities, who are often the waterworks owners and also responsible for facilitating preventive public health and environment work. The targets must therefore be viewed in the context of the public health work in accordance with the new Public Health Act.

This document states the national targets Norway has set in accordance with Article 6 of the Protocol.



Experiences in Norway

It is good health policy to encourage people to drink water instead of other beverages. The government therefore wishes to ensure that everyone has access to good, safe drinking water straight from the tap.

The Norwegian Food Safety Authority's supervision of drinking water has discovered that the drinking water supply has significant shortcomings in certain areas. According to the Norwegian Institute of Public Health, polluted drinking water is a significant primary cause of stomach/intestinal disease in Norway. The Norwegian Institute of Public Health is concerned about the condition of drinking water and the distribution system and its effect on public health.

The waterworks face many challenges, particularly the smaller works, which in many cases have insufficient treatment of the water. It is estimated that around half a million people in Norway receive water from small water supply systems in which the water quality is largely unknown to the authorities.

For larger waterworks, the main problem is often a significant need to update old or poor pipeline systems for drinking water and drainage. Measures must be implemented in order to clear the backlog of necessary maintenance and replacement of system pipelines. In several areas, it has been discovered that contingency plans against undesirable incidents are inadequate. The effects of climate change are expected to augment a number of problems relating to water and drainage. Measures are necessary to ensure that the population receives access to safe drinking water, regardless of where in the country one lives. The measures will result in fewer cases of illness and reduced sickness absences due to unsafe drinking water, and will be able to reduce the harmful effects of expected climate change.

In 2013, on assignment from Norwegian Water BA, Norconsult prepared a report which states the present value of Norwegian water and sewerage systems. The report roughly estimates that the costs of upgrades necessary to bring public and private water and sewerage systems up to an acceptable 2012 standard total around NOK 124 billion for public water and sewerage systems and around NOK 76 billion for private water and sewerage systems.

Changes in climate

NOU 2010:10 "Adapting to a changing climate" describes the impacts that can be expected as the result of climate change in Norway. Because of the increased proportion of impervious surfaces, due for example to residential and commercial developments within the municipalities, we have already experienced many of these effects for several years. This primarily applies to greater run-off, which has resulted in basement and ground-level flooding, as well as sewers becoming increasingly overloaded. The results of the latter are that increased volumes of untreated wastewater enter overflows and that greater volumes of contaminated water are discharged through treatment plants.

The effects of larger discharges of wastewater include poorer water quality for outdoor activities and recreation, and as raw water for food production. To the extent that the discharges enter sources of drinking water, this will result in increased challenges for the



Final targets document

waterworks. In addition to this type of discharge, increased run-off from land areas will also carry infectious matter, particles and organic material (humus). Many waterworks may therefore experience a need for additional water treatment.

Water sources will also have poorer natural self-purification, and therefore offer less protection, as a result of climate change. For example, lakes may be disturbed more often, resulting in the protection represented by ice being present for shorter periods than previously.

Use of terminology

“No administrative consequences” means that the targets and measures will be handled through existing organisational structures and divisions of responsibility. The phrase does not refer to time or financial resources. “Supervisory authorities” refers to authorities at both operative and strategic levels.



Final targets document

Targets under the WHO/UNECE Protocol for water and health

THE CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

- Protocol on Water and Health

National targets – Norway

Points from Article 6 of the Protocol are repeated below, along with which national targets may be used as the basis for follow-up in Norway. In addition, the individual authorities and waterworks owners will have further targets beyond those which are incorporated in the Protocol.

The targets express the desired achievement of targets within a given timeframe, and do not provide a basis for the acceptance of deviations from the provisions of the Drinking Water Regulations or other relevant legislation.

As the targets are reached, the member states shall set new and stricter targets until a satisfactory standard has been reached through compliance with the provisions of the Drinking Water Regulations.

(a) The quality of the drinking water that reaches consumers

Targets:

- a) For each water supply system that supplies more than 500 persons, the number of statutory samples which exceed the limit value for chemical parameters in the Drinking Water Regulations shall not be more than two per year. The maximum value shall not exceed the limit value by more than a factor of five. For microbiological parameters with 0 as the limit value, the number of samples which exceed the value following verification shall be less than one per year.
- b) For each water supply system that supplies between 50 and 500 persons, the number of statutory samples which exceed the limit value for chemical parameters in the Drinking Water Regulations shall not be more than three per year. The maximum value shall not exceed the limit value by more than a factor of five. For microbiological parameters with 0 as the limit value, the number of samples which exceed the value following verification shall be less than three per year.
- c) For each water supply system which supplies fewer than 50 persons, a sample taken randomly during the course of a year should not exceed the limit value for chemical parameters by more than a factor of three. *E. coli* shall not be detected.
- d) The supervisory authority shall maintain an up-to-date overview of the drinking water quality for all water supply systems that supply more than 50 persons. In addition, the supervisory authority shall maintain an overview of a selection of various types of water supply system that supply fewer than 50 persons.

These are new targets. Equivalent work targets have not previously existed.



Target date no later than the end of:

2016 for targets a) and b).

2020 for target c).

2015 for target d).

Responsible ministries:

- The Ministry of Health and Care Services holds the main responsibility for legislation relating to drinking water.
- The Ministry of Climate and Environment holds the main responsibility for legislation that protects all types of water sources. Ministry of Local Government and Modernisation is responsible for the Planning and Building Act.

Status:

The EU Drinking Water Directive (98/83/EF) is incorporated in the Norwegian Drinking Water Regulations.

The Norwegian Food Safety Authority does not have a complete overview of how many persons receive drinking water from various sources, or of the quality of the drinking water. In terms of the quality of the drinking water, the greatest challenge relates to the small water supply systems.

Around 95% of all water supply systems that reported data to the Norwegian Food Safety Authority for 2009 reported no nonconformities relating to parameters such as *E. coli* or colour figures. These are self-reported figures from the supposedly best waterworks. Upon inspection, compliance is observed to be somewhat lower.

Measures:

Examples of measures:

1. Improve conditions that result in reduced drinking water quality, including increased awareness of the pipeline system.
2. If necessary, water supply systems that supply more than 50 persons should be linked to an external specialist environment such as an operational assistance provider.
3. Whether there is a need to make changes to the Drinking Water Regulations regarding the legal basis for orders that ensure the implementation of necessary measures must be considered.
4. For target c), an overview of small water supply systems must first be obtained.
5. The stricter use of current means, and new means if necessary, must be considered.
6. Protect sources of drinking water against pollutants.

Parties responsible for the measures:

- The waterworks owners for measures 1 and 2.



Final targets document

- The Norwegian Food Safety Authority for obtaining an overview of water supply systems included under targets c) and d), and for measures 3, 4, 5 and 6.
- The Ministry of Health and Care Services for any changes to legislation relating to drinking water.
- The Ministry of Climate and Environment and the Ministry of Local Government and Modernisation for ensuring that the planning authorities and pollution control authorities, through appropriate legislation and the enforcement of this, contribute to the protection of drinking water sources against pollution both locally and regionally.

Supervisory authorities:

- The Norwegian Food Safety Authority in accordance with the Drinking Water Regulations.
- The municipalities and county governor in accordance with the Pollution Regulations.

Costs:

The measures incur no extra costs for the waterworks owners beyond those which already exist as prerequisites for compliance with applicable regulations. If there is a maintenance backlog relating to the pipeline system and other infrastructure, costs will naturally be incurred in the clearing of this.

No new tasks are assigned to the state. However, since the Norwegian Food Safety Authority must use more time than previously on targets c) and d), the work will be somewhat more resource intensive and costly.

Administrative consequences:

No new administrative consequences.



(b) Reduction of the scale of outbreaks and incidence of water-related disease

Targets:

- a) Outbreaks and endemic disease caused by waterborne infection shall have low probability and consequence.
- b) More reliable estimation methods for determining the scope of endemic disease due to drinking water shall be incorporated.

Target b) has not been concretely expressed previously.

Target date no later than the end of:

2017.

Responsible ministries:

The Ministry of Health and Care Services in collaboration with the Ministry of Climate and Environment, the Ministry of Agriculture and Food and the Ministry of Local Government and Modernisation.

Status:

It is difficult to survey how many individuals are infected through drinking water or bathing water. Most instances of waterborne infections result in diarrhoeal disease. However, most individuals who experience short cases of diarrhoea do not visit their doctor, nor are samples taken to determine the cause of the illness. In the event of sporadic cases of diarrhoea it can be impossible to identify the cause of infection with any certainty.

MSIS is the Norwegian system for the reporting of infectious diseases, but only individual cases are registered. MSIS does not state whether food, water or other sources of infection were the cause of the disease.

Vesuv is the Norwegian outbreak monitoring system, through which the source of infection is also registered. The number of persons who were affected in connection with clarified drinking water-borne outbreaks registered in Vesuv in the period 2005-2009, was around 2,000. Most of these were linked to an outbreak of Campylobacteriosis in Røros in 2007. If we include the Giardia outbreak in Bergen in late 2004, this totals at least 8,000 persons who were affected over the course of just a few years. As previously mentioned, these figures do not include sporadic cases, and there is therefore reason to believe that the number of instances of waterborne infections is significantly greater. How much greater, however, is difficult to estimate.

The cases of infection are probably partially due to the insufficient protection of raw water sources or inadequate water treatment, partially due to leaking water pipes, and partially due to deficient safety procedures during the execution of improvement works on the water



Final targets document

distribution system. If wastewater enters the drinking water network, there is a high risk that pathogenic microorganisms will be present in the drinking water. Such intakes may be due to under pressure in the water pipes due to cracks, a too-low line of pressure combined with transient pressure, too large short-term bleed-offs, illegal cross-connections with an intake of wastewater, or non-functioning check valves. In addition, discharges of wastewater or run-off containing faecal bacteria from areas densely populated with wild or domestic animals may be a cause of disease when bathing in contaminated water.

In some cases, disease due to *Legionella* bacteria has been registered as a result of the inhalation of aerosols contaminated with the bacteria. In 2001, 28 persons were registered ill and in 2005 103 persons were registered ill due to *Legionella*, where the source of infection was water cooling towers and air scrubbers.

Measures:

Examples of measures:

1. Strengthen the hygienic barriers in the water supply system, and implement improved procedures for the operation and maintenance of water treatment plants and the distribution network.
2. Increase the improvement rate for the worst water distribution networks.
3. Prevent pipelines containing wastewater from contaminating the drinking water network.
4. Improve the surveying of microbiological agents (viruses, bacteria, fungi and parasites) in the drinking water that may have an impact upon public health.
5. Reduce polluting run-off from acreage or other sources that results in discharges to water sources.
6. Improve the methods for identifying and reporting cases of waterborne disease or outbreaks. It is important that funding for the improvement of the MSIS and Vesuv reporting systems is prioritised at the Norwegian Institute of Public Health, and that an assessment is undertaken regarding whether the mandatory reporting of additional microorganisms should be introduced. "Sykdomspulsen" (a survey based on data from the primary health service) should also be initiated and developed.

Parties responsible for the measures:

- The waterworks owners for supplying safe drinking water and maintaining a good distribution network.
- The Ministry of Health and Care Services for developing a better system for the registration of cases of waterborne disease, and for promoting the need for national efforts to improve the pipeline systems for both drinking water and wastewater. This must be viewed in the context of the municipalities' obligation to undertake public health work, cf. the Public Health Act.
- The Ministry of Climate and Environment and the Ministry of Local Government and Modernisation for regulations that ensure that wastewater does not contaminate water sources and that the pipeline network is of a high standard.
- The municipalities for maintaining a sewerage system that has as few leaks to recipients (water bodies) with a potential impact on drinking water as possible.



Final targets document

Supervisory authorities:

- The Norwegian Food Safety Authority for supervision of the water supply systems.
- The chief municipal medical officers for the surveying and reporting of waterborne disease outbreaks.
- The municipalities for supervision relating to contamination.
- The Directorate for Building Quality for ensuring that high-quality materials are utilised in drinking water and sewerage system pipelines.
- The county governor shall ensure that the largest sewerage systems are of a good standard.

Costs:

In principle, the measures incur no extra costs for the waterworks owners beyond those which already exist as prerequisites for compliance with applicable regulations relating to safe drinking water and security of supply. Measures requiring further clarification must be cost-assessed in this context.

Administrative consequences:

No new administrative consequences.

(c) Areas requiring increased connection to the collective water supply or where the drinking water supply may be improved by other means

Targets:

- a) When laying out new residential (including holiday homes) or industrial areas, or upon increasing the concentration of existing developed areas, the possibility to connect these to nearby existing water supply systems, or if necessary to new collective systems, shall be assessed in order to achieve hygienically satisfactory, appropriate, cost-effective and operationally efficient units.
- b) Existing private water supply systems with unclear ownership and/or unsatisfactory water quality and security of supply shall be upgraded or connected to existing water supply systems in order to achieve hygienically satisfactory, appropriate, cost-effective and operationally efficient units.

The targets are in line with existing requirements in relevant regulations.

Target date no later than the end of:

No target date is set, since this is an ongoing target.

However, the following indicator for achievement of the target is set:

- i. Number of persons connected to water supply systems with unsatisfactory quality or security of supply.

Responsible ministries:

The Ministry of Climate and Environment and the Ministry of Local Government and Modernisation.

Status:

Most people receive drinking water from water supply systems that supply more than 500 persons. It is estimated that around half a million people in Norway receive drinking water from small water supply systems in which the water quality is largely unknown to the authorities. The gradual transfer of smaller water supply systems to larger units is currently underway. There is still a certain amount of potential, but this largely depends upon voluntary willingness to merge.

Measures:

Examples of measures:

1. The requirement regarding a satisfactory water supply must be met through municipal plans, master plans for water, area development plans and when processing planning applications.



Final targets document

2. During their planning work, the municipalities should consider whether it is possible to establish collective water supply systems in areas that feature unsatisfactory separate solutions and small collective systems.
3. Give orders regarding improvements.
4. Increase connections to existing water supply systems.
5. Provide guidance regarding how the terms “over the neighbouring area” and “disproportionately large cost” shall be understood; cf. sections 27-1 and 27-2 of the Planning and Building Act.
6. Clarify the municipalities’ responsibility to ensure a water supply to the municipality’s inhabitants in further detail.
7. Cross-subsidisation of costly connections.

Parties responsible for the measures:

State sector authorities, the municipalities and waterworks owners.

Supervisory authorities:

- The Norwegian Food Safety Authority undertakes inspections of the water supply systems, gives orders regarding measures and provides statements regarding drinking water for area development plans and municipal plans.
- The county governors shall oversee municipal plans and area development plans in order to ensure that they are in accordance with state guidelines for area development.

Costs:

The measures incur no extra costs for the developments beyond those which already exist as prerequisites for compliance with current regulations. However, those who are connected to the systems must pay a connection fee.

Connection to existing systems is expected to provide operational benefits, and often also provides financial benefits.

Administrative consequences:

No new administrative consequences.



(d) Areas requiring increased connection to the collective sewerage systems or where sanitation can be improved by other means

Targets:

- a) Everyone within densely populated areas shall be connected to a collective sewerage pipeline network or have other acceptable treatment solutions.
- b) Separate sewerage systems shall be adapted to the recipient's capacity and function effectively.

The targets are in line with existing requirements in relevant regulations.

Target date no later than the end of:

No target date is set, since this is an ongoing target.

However, the following indicators for achievement of the target are set:

- i. Within an area that the municipality has defined as the treatment district for a specific treatment plant, at least 98 per cent of persons shall be connected.
- ii. The number of persons connected to sewerage systems for less than 50 person equivalents which do not have satisfactory treatment solutions.

Responsible ministry:

The Ministry of Climate and Environment.

Status:

The condition of many separate treatment plants is partially unknown and partially poor. This applies for 17 per cent of the population. Standardised treatment requirements have been established, depending on the recipient. Municipalities may also adopt stricter requirements.

The number of properties that are not connected to the municipal pipeline system in an existing treatment district is extremely low. Most of those who are not connected have separate treatment solutions. The condition of such solutions has not been surveyed in detail, but does not represent a significant environmental problem.

Measures:

Examples of measures:

1. The municipalities must survey the condition of the plants and need for improvements as the basis for setting treatment requirements in line with the targets for recipients. Systems that do not feature treatment should also be included here.
2. Ensure that discharge requirements are complied with.
3. Advise the municipalities regarding the supervision of smaller sewerage systems.



Final targets document

4. Systems serving over 50 person equivalents should be assessed for inclusion in an operational assistance scheme.
5. In rural areas, connection to public sewerage systems shall be considered.
6. The pollution control authority shall ensure that the health authorities are involved when discharge applications are received, cf. the Regulations regarding environmentally-targeted health care.
7. Requirement for a service agreement from an approved company for mini treatment plants and equivalent supervision for other smaller plants.
8. Cross-subsidisation of costly connections.

Parties responsible for the measures:

The municipalities and sewerage system owners. In some cases, other agencies/authorities may be contributors/participants.

Supervisory authorities:

The county governor and the municipalities.

Costs:

Nationally, there are small investments relating to the necessary connection to the pipeline network. The majority of the population is already connected to the public pipeline network, and further development largely follows from the expansion of other infrastructure such as roads and the densification of housing stock. Costs vary for individuals who are ordered to connect to the network. Some municipalities subsidise extremely costly connections.

Administrative consequences:

There are no administrative costs associated with ensuring that remaining properties are connected to the pipeline network.

(e) Performance to be achieved by the water and sewerage network

Water supply

Targets:

- a) Non-planned interruptions in the water supply should be less than 0.5 hours on average per inhabitant per year.
- b) The security of supply shall be better than 99.95 per cent. (Security of supply = the number of inhabitant hours without an interruption in the supply / the number of inhabitant hours in total x 100).
- c) Annual replacement/renovation of the water distribution network should on average be two per cent at national level towards 2035.
- d) Leaks from the individual pipeline network should be less than 25 per cent by 2020.

These are new, concrete targets based on the expectation that awareness of system performance must be taken into account.

Target date no later than the end of:

By 2020, the annual rehabilitation for the entire country should be two per cent of the total water supply network. Private branch lines are not included in this figure.

Responsible ministries:

The Ministry of Health and Care Services in collaboration with the Ministry of Local Government and Modernisation.

Status:

Significant leaks from the pipeline network exist in several areas – in some locations up to 40-50 per cent. It is estimated that 25 per cent of the total pipeline network consists of pipes that are “out of date”, which should have already been replaced/renovated, or which must be replaced/renovated within a short period of time in order to clear the maintenance backlog. Around 230 waterworks (which supply around 60 per cent of persons connected to the system) have over 10 kilometres of pipelines that were laid before 1971. This constitutes around nine million metres of drinking water pipelines. This figure excludes private branch lines. Approximately 60 waterworks (which supply around 1 million persons) have more than 10 kilometres of asbestos cement pipe.

According to reports from the waterworks, the security of supply for the systems that supply at least 50 persons is better than 99.99 per cent on a national basis. However, individual systems may perform more poorly than the target.

The annual replacement of the water distribution network is generally poorer than the target in point c). The status for smaller waterworks is often unknown.



Measures:

Examples of measures:

1. Improve conditions that result in reduced security of supply.
2. Efforts to increase the rate of renewal of the municipal water pipeline network.
3. The status overview for the waterworks must be improved.
4. Consider stricter requirements regarding maintenance in the Drinking Water Regulations.
5. Ensure effective recruitment within the water and sewerage field, along with good professional competence regarding water within the waterworks.
6. National incentives to stimulate increased improvement of the pipeline network.
7. Undertake an assessment of what constitutes the necessary security level and acceptable vulnerability for waterworks.
8. An inter-agency group should be established, led by the Ministry of Health and Care Services, to assess which incentives the state may contribute in order to promote increased performance of the water and sewerage systems in Norway in line with these targets.

Parties responsible for the measures:

- The waterworks owners for the improvement and operation of the pipeline network.
- The Norwegian Food Safety Authority for status surveying, including for the private waterworks.
- The Ministry of Health and Care Services for any changes to the Drinking Water Regulations.

Supervisory authorities:

The Norwegian Food Safety Authority supervises the water supply systems and shall give orders to the waterworks owners regarding necessary measures.

Costs:

The annual replacement of an average of two per cent of both the water and sewerage systems on a national basis is roughly estimated to cost NOK 4 billion per year. For the water distribution system, this is estimated at around NOK 2 billion per year. However, such replacement is a natural part of the operation of the systems if gradual deterioration is to be avoided. How large a part of the network should be replaced annually will vary from system to system. For small systems with old pipelines, the costs per subscriber may be significant.

Administrative consequences:

No new administrative consequences.



Sewerage system

Targets:

- a) Leaks and overflows shall not have a negative impact on the water quality over time.
- b) The total overflow should generally be less than two per cent of the produced pollution (phosphorus) of those connected to the sewerage system. In the event of large overflow discharges, separation of collective pipelines and the equalisation of surface water shall be considered.
- c) Integrate future climate prognoses with surface water management in order to avoid the overloading of the sewerage system.
- d) Operation, repair and renewal/renovation of the pipeline network must be of a scope that ensures established targets are achieved.
- e) The upgrading of the public pipeline network should normally include the upgrading of associated branches.
- f) The addition of extraneous water shall not have a negative impact on other targets.

This is predominantly in line with existing targets and regulatory requirements.

Target date no later than the end of:

2015 for the preparation of municipal action plans.

Responsible ministries:

The Ministry of Climate and Environment in collaboration with the Ministry of Local Government and Modernisation.

Status:

Significant leaks in the sewerage system result in the leakage of wastewater, which may result in the contamination of waterways and the potential contamination of the drinking water network. Leaks may result in the overloading of pumping stations and sewage treatment plants during periods with intense or prolonged precipitation, and therefore discharges of untreated wastewater.

Leaks from the pipeline network and the control of overflows constitute a general challenge for wastewater in Norway. Benchmark surveys undertaken by Norsk Vann and inspections carried out by the Norwegian Environment Agency/county governor show that there are great geographical variations in the need to maintain and upgrade the pipeline network. It is also a challenge for sewerage system owners to acquire an overview of their own leaks, overflows and the consequences of discharges from these.

A lack of specialists, both within the authorities and in advisory and executing capacities, is a significant obstacle to the implementation of necessary upgrades to the water and sewerage network.

Measures:

Examples of measures:



Final targets document

1. Improve the sewerage network in order to reduce leaks in/out and to/from the pipelines and reduce overflow operations.
2. Reduce the addition of extraneous water.
3. Dimension the pipeline network so that it is able to handle increased volumes of water.
4. Combine the construction of surface water pipelines with local surface water management.
5. Obtain a better overview of the status of the pipeline network as the basis for assessing necessary upgrades.
6. Ensure effective recruitment within the water and sewerage field, along with the necessary competence among system owners.
7. An inter-agency group should be established, led by the Ministry of Health and Care Services, to assess which incentives the state may contribute in order to promote increased performance of the water and wastewater systems in Norway in line with these targets.

Parties responsible for the measures:

- The sewerage system owners.
- The county governors for giving necessary orders.
- The municipalities for following up their systems, as well as giving orders to private systems.
- The ministries for ensuring education and training.

Supervisory authorities:

The Norwegian Environment Agency, county governor and the municipalities.

Costs:

There are significant costs associated with increasing the quality of the pipeline network, and too few resources are currently used. There is a need to reduce problems associated with overflow that is directed to the sewerage network.

Example: If, as a basis, we use an increase in the rate of replacement at national level from around 0.45 per cent to around 0.75 per cent (equivalent to 150 kilometres annually), this will result in an increase in costs of around NOK 1.5 billion per year. Increased annual costs for subscribers will probably constitute between NOK 0-2,000 per year per subscriber.

Administrative consequences:

No new administrative consequences.

(f) The quality of operating procedures at water and sewerage plants for the protection of water sources

Targets:

- a) All water and sewerage works that serve 50 persons/person equivalents or more shall have a satisfactory internal control system that includes a risk and vulnerability analysis which covers the effects of climate change.
- b) Through processes in accordance with relevant regulations, drinking water sources shall be protected from pollutants so that the need for the treatment of drinking water is minimised.

The targets are in line with existing requirements in relevant regulations.

Target date no later than the end of:

2016 for targets a) and b).

Responsible ministries:

The Ministry of Health and Care Services and the Ministry of Climate and Environment.

Status:

Today, there is insufficient compliance with the requirement regarding internal control. Requirements regarding risk and vulnerability analyses, internal control and inspection are incorporated in the Drinking Water Regulations and in the chapters of the Pollution Regulations relating to sewerage, with references to the Internal Control Regulations, under which the sewerage systems are also controlled. The requirements regarding written documentation are generally comprehensive, but there is potential for improvement. Inspections of 25 per cent of the large sewerage plants undertaken in 2008 showed that risk assessments relating to the external environment were not carried out at 70 per cent of these. Inspections carried out in 2010 showed somewhat improved conditions.

Measures:

Examples of measures:

1. Improve the internal control routines and carry out internal control and internal audits.
2. Coordinate emergency preparedness exercises.
3. Undertake more supervisory actions at the plants and follow these up. Stricter means should be considered to ensure that nonconformities are rectified.
4. The authorities must follow up the sewerage systems at an overall level in order to ensure that the quality and scope of operations and maintenance provide stable operation and prevent degradation.
5. Establish operational assistance schemes for waterworks.



Final targets document

6. Ensure that drinking water is taken into account throughout planning processes and in the issuance of permits in accordance with relevant regulations.
7. Control sources of contamination.
8. Improve the surveying of microbiological agents (viruses, bacteria, fungi and parasites) in the drinking water that may have an impact upon public health.
9. Use of benchmarking.
10. Access to a crisis support unit for waterworks.

Parties responsible for the measures:

The municipalities and/or waterworks and sewerage system owners.
State authorities for stimulation measures and guidance.

Supervisory authorities:

- The country governor and municipalities as the pollution control authority for the sewerage systems.
- The Norwegian Food Safety Authority is responsible for supervision of the water supply systems, including the distribution network.

Costs:

There will be low costs relating to the execution of risk and vulnerability analyses, and probably also relating to the follow up of recommended follow-up measures. State incentives should be considered for measure 5. Measure 8 will result in increased costs during the survey period, and measure 10 will result in somewhat increased costs if such a unit is established.

Administrative consequences:

No new administrative consequences.

(g) Overflows that may impact upon water sources

Targets:

- a) Ensure that leaks and discharges from overflows do not come into conflict with user interests such as drinking water, agricultural irrigation and bathing.
- b) The total overflow for a treatment district should generally be less than two per cent of the produced pollution (phosphorus).
- c) To the extent that is financially viable, surface water should not be directed to the wastewater sewerage network.
- d) Direct discharges of untreated wastewater shall be sanitised.

The targets are in line with existing regulatory requirements or expectations.

Target date no later than the end of:

No target date is set for target a) since this is an ongoing target.

For target b), municipal plans shall be prepared by the end of 2016.

Target c) should especially be considered in the event of new, large construction projects.

Target d) should be achieved by the end of 2015. This is in line with the Water Regulations.

Responsible ministry:

The Ministry of Climate and Environment.

Status:

The Planning and Building Act requires that when a building is registered, the derivation of ground and surface water shall be secured. The same applies when maintaining drainage for existing constructions.

It is a regulatory requirement that the system owner shall maintain an overview of overflows of untreated wastewater and register the attended time for these. Overflow at the treatment plant shall be covered by the discharge permit. Inspections show that overflow volumes are rarely quantified. In 2010, 476 direct discharges were surveyed, mainly with discharges to sea and fjords. There are probably no/few consequences throughout the food chain relating to these.

Measures:

Examples of measures:

1. Follow-up of supervision, carry out new inspections, and ensure that owners of the sewerage systems carry out surveys and risk assessments of overflows.
2. Through discharge permits, the county governor and municipalities must follow up overflow requirements, as well as ensure that system owners prepare overviews and implement necessary measures.



Final targets document

3. With regard to planning, the municipalities must work to prevent floodwater entering the sewerage network such that untreated wastewater may contaminate drinking water.
4. The separation and equalisation of the overflow shall be considered, particularly for vulnerable recipients.
5. Rules regarding the management of run-off water should be clarified and coordinated.
6. A national run-off water authority should be appointed if this is deemed appropriate.
7. Treat direct discharges of wastewater to waterways/sea.

Parties responsible for the measures:

- The Ministry of Climate and Environment for coordinating the regulations for run-off water.
- The Norwegian Water Resources and Energy Directorate for surveying areas vulnerable to flooding.
- System owners for dimensioning and operating the sewerage systems in line with the requirements specified in the Pollution Regulations and in the Planning and Building Act.
- The country governor and municipalities as the pollution control authority.

Supervisory authorities:

- The Norwegian Environment Agency, county governor and municipalities in accordance with the Pollution Regulations.
- The Norwegian Food Safety Authority in accordance with the Drinking Water Regulations.

Costs:

There are probably significant costs associated with the reduction of overflows, but most of these are included in the estimated NOK 1.5 billion per year for necessary improvements to the sewerage network.

Administrative consequences:

No new administrative consequences for measures 1-5. To the extent that measures against run-off water are included in these, costs will be incurred. The Norwegian Water Resources and Energy Directorate has suggested that it will cost in excess of NOK 10 million annually if they are to be allocated the role of a national run-off water authority, although this figure has not been accurately calculated.

(h) Discharges of municipal wastewater

Targets:

- a) Discharges from the municipal sewerage sector shall be in accordance with the requirements set in the Pollution Regulations or individual permits.
- b) In the event of discharges to drinking water sources, or water sources that are used for agricultural irrigation, treatment and discharges from the sewerage systems shall be individually assessed in order to prevent any impact upon the raw water quality.

Target a) is in line with existing regulatory requirements, while b) is a clarification of existing expectations for administrative processing.

Target date no later than the end of:

No target date is set for target a) since this is an ongoing target.

For target b), municipal plans based on a risk assessment should be prepared by the end of 2016.

However, the following indicators for achievement of the targets are set for targets a) and b) respectively:

- i. The number of sewerage systems in breach of the discharge permit to normal and sensitive areas along the coast, and to waterways with an environmental condition of moderate or worse.
- ii. The number of discharge points that may result in conflicts with the drinking water supply or other use.

Responsible ministry:

The Ministry of Climate and Environment.

Status:

In 2007, the wastewater legislation in Norway was changed in that standardised requirements were largely set through regulations (chapters 12¹, 13² and 14³ of the Pollution Regulations), i.e. that minimum requirements are stated in the regulations. In addition, requirements are often formalised through a separate permit issued by regional or local authorities, where the

¹ Chapter 12 regulates discharges of wastewater from private residences, cabins, tourism companies and similar organisations with discharges of less than 50 person equivalents.

² Chapter 13 regulates discharges of municipal wastewater from densely populated areas with total discharges of less than 2,000 person equivalents to fresh water, less than 2,000 person equivalents to estuaries, or less than 10,000 person equivalents to sea.

³ Chapter 14 regulates discharges of municipal wastewater from densely populated areas with total discharges greater than or equal to 2,000 person equivalents to fresh water, greater than or equal to 2,000 person equivalents to estuaries, or greater than 10,000 person equivalents to sea.



Final targets document

authority location depends upon the size of the system. It is therefore possible to set stricter requirements.

Most treatment facilities have been built, but many do not function adequately and there are calls for a certain increase in the expansion of the treatment effect, particularly towards 2015. In certain areas the volumes discharges via overflow are too large, even though this is somewhat weakly documented.

- **Densely populated areas:**

Discharges from the large municipal treatment facilities which have the sea as the recipient (applies to most facilities) rarely constitute a problem for the recipient or user interests if the discharges are directed out to an area with adequate current flow. Treatment plants with discharges to inland recipients have requirements regarding the removal of phosphorous and organic substances, through the enforcement of the Pollution Regulations and Planning and Building Act. In 2010, 476 of 2,704 sewerage systems with a capacity of over 50 person equivalents were found to not feature treatment of the wastewater.

- **Sparsely populated areas:**

In 2010, 17 per cent of households in Norway were connected to systems with a capacity of less than 50 person equivalents. The municipalities are the pollution control authority, and ensure that the provisions and decisions made pursuant to the Pollution Regulations are followed. Problems may occur with discharges from overflows and discharges from smaller treatment facilities, particularly those that are not connected to the public pipeline network. There is a need to follow up the municipalities as the authority for collective public systems and those for individual homes.

There are almost no treatment facilities that disinfect their discharges based on considerations relating to drinking water. Such user conflicts are sought to be solved through a coordination of the discharge location and intake for raw water. In addition, there is a strategy to build up sufficient hygienic barriers in the drinking water system in order to ensure the necessary safety. There are no plans to set requirements regarding disinfection as a treatment stage at treatment facilities. However, there is a need to improve the internal control and risk and vulnerability analyses in this area. This should be done during 2015 for the facilities that have not established adequate systems.

For small treatment plants, conflicts between drinking water wells and discharges are regularly identified. This is often due to infiltration systems that do not function appropriately, poorly planned discharge locations or insufficient treatment in other systems.

Measures:

Examples of measures:

1. Ensure that the discharge requirements are complied with, including through increased supervision and the follow-up of untreated discharges.
2. Upgrading of facilities that function ineffectively.
3. Other users of the water systems shall be taken into consideration when carrying out risk and vulnerability analyses.



Final targets document

4. User conflicts shall be taken into consideration in the internal control systems of individual organisations that are responsible for discharges of wastewater and which are required to have an internal control system.
5. Requirement to have a service agreement with an approved company for mini treatment plants.
6. The municipalities must follow up the quality of small wastewater systems and ensure that user conflicts do not arise.
7. Consider disinfection of the wastewater.
8. Consider the need to introduce reporting procedures in the event of incidents that may affect drinking water, bathing water, water used for agricultural irrigation or water treatment facilities.

Parties responsible for the measures:

The sewerage system owners.

Supervisory authorities:

The Norwegian Environment Agency, county governor and the municipalities.

Costs:

It will probably cost a significant amount to ensure that existing treatment facilities function adequately. These are however costs that the system owners must already cover on the basis of current regulations. No overview exists, but the total need to upgrade run down systems probably represents a cost of NOK 5-10 billion.

There is a need to develop effective information systems for local pollution control authorities. However, such costs are a result of identified needs and not a result of the Protocol.

Administrative consequences:

Costs will be incurred in the event of any changes to the division of authority between the municipalities and county governor.



(i) Use or reuse of fertiliser products of organic origin

Targets:

- a) Reuse at least 70 per cent of produced wastewater sludge as a resource and ensure that the quality of the sludge is in accordance with this.
- b) Organic waste products/waste shall be used as fertiliser or soil conditioner as long as they are of a quality that dictates such use. They shall be used in quantities that are agronomically, environmentally and medically justifiable.
- c) Facilitate the improved utilisation of resources found in waste products of organic materials, including the production of biogas.
- d) Ensure the correct use of organic fertiliser in accordance with planting needs and weather conditions in order to reduce run-off from agricultural areas.
- e) The use of fertilisers of organic origin shall be in accordance with the regulations for this, including that: The use of wastewater sludge shall not result in increased run-off to waterways, and: The storage of wastewater sludge shall not result in user conflicts due to smell.

The targets are in line with existing requirements in relevant regulations.

Target date no later than the end of:

Target a): Achieved. Target b): 2016. Target c): 2020.

Responsible ministries:

The Ministry of Health and Care Services, the Ministry of Agriculture and Food, the Ministry of Climate and Environment, the Ministry of Local Government and Modernisation and the Ministry of Trade, Industry and Fisheries.

Status:

The depositing of wastewater sludge is prohibited in Norway. The depositing of filtered masses is permitted.

Today, around 60 per cent of the produced wastewater sludge is used on agricultural areas, and around a further 25 per cent is used as a resource in other ways. In 2009, the human consumption of contaminants through food and drinking water due to the spreading of sludge on agricultural areas was assessed as being insignificant for the substances that were investigated. In the administrative processing within the municipalities and by the municipal chief physicians, the proximity of drinking water sources to the spreading of sludge is examined in particular. The addition of phosphorous to waterways is a challenge that is currently being addressed. The amount of wastewater sludge will increase as secondary treatment is introduced at several wastewater treatment facilities and as the population increases.



Final targets document

Norwegian sludge generally contains low concentrations of environmental pollutants, though some of these are accumulated and measures may become relevant. Principally, the measures will be to reduce discharges to the pipeline network through product regulation, requirements regarding discharges to the pipeline network and control of the water quality in the pipeline network. An ongoing assessment of the sludge quality is undertaken in order to ensure that the sludge is stabilised and hygienised, and that the level of heavy metals and organic environmental pollutants is low.

The regulations regarding the use of fertiliser products, etc. of organic origin are currently subject to an audit that also covers the assessment of limit values and the risk of run-off from fields where sludge is used. The time of spreading in sensitive areas, cf. Section 24 of the regulations, will be assessed.

The use of organic waste as fertilisers and soil conditioners is expected to increase. Many facilities are currently in the start-up phase for the production of biogas from organic waste. Research and development work is currently being undertaken in order to see whether the digestate from such plants can be used as fertilisers and soil conditioners. Several composite products resulting from source material from various types of organic waste, such as manure, wastewater sludge, fish waste, food waste, waste from the foodstuffs industry and waste from the pulp and paper industry, will probably be seen in the future.

In areas predominated by agriculture, run-off from agricultural areas can significantly affect bodies of water. This particularly applies to surface run-off (diffuse run-off) and the loss of nutrients. The extensive run-off of nutrients may result in poor water quality and a risk of algal blooms. Measures have been implemented to reduce run-off to acceptable levels, and follow-up of the Water Regulations involves continued focus on this area.

Measures:

Examples of measures:

1. Fertilisation must be carried out in line with regulations that regulate the time of spreading.
2. Ensure that the requirement regarding the use of fertilisation plans is followed up.
3. Increase affected parties' competence within their areas of responsibility in accordance with the Regulations regarding fertiliser products etc. of organic origin and other relevant legislation.
4. Provide information to involved parties when new legislation regarding organic fertilisers is released.
5. Follow up the sludge industry's own measures (Norsk Vann's industry norms for sludge) in order to improve the quality of fertilisers and soil conditioning products based on sludge.
6. Ensure that the quality of sludge satisfies requirements regarding reuse and that reuse is facilitated.
7. Follow up the report from the Norwegian Scientific Committee for Food Safety regarding recommended microbial indicators for organic fertiliser.
8. Follow up the work with the EU's expansion of the Harmonised Fertiliser Regulations for organic fertilisers.
9. Ensure effective control of the entry of environmental pollutants to the treatment facilities.



10. Consider increased utilisation of waterworks sludge.

Parties responsible for the measures:

The municipalities, agricultural participants, the sludge industry and producers and suppliers of sludge and other waste-based fertilisers and soil conditioners, the aquaculture industry.

Supervisory authorities:

The municipalities, the county governor, the Norwegian Food Safety Authority, the Norwegian Agriculture Agency and the Norwegian Environment Agency.

Costs:

There are probably minor costs associated with improvements in this area, but it is possible that there may also be a need for improved quality documentation. However, there are no costs resulting from the Protocol, only costs which result from existing national regulations.

Administrative consequences:

No new administrative consequences.

(j) The quality of raw water for drinking water, bathing water, or water that is used in the production of food

Targets:

- a) Bodies of water that are used for the water supply and in the production of food⁴ shall be protected against the addition of contaminants to the greatest extent possible in order to avoid user conflicts. This is particularly important if the use of the water for food production is not subject to special water treatment requirements.
- b) All bodies of water shall be of at least “good ecological and chemical condition” in accordance with the deadlines set in approved management plans in accordance with the Frame Water Regulations.
- c) Waterways used for agricultural irrigation shall be protected against discharges of pathogenic microorganisms.
- d) Locations that are adapted for bathing should have excellent water quality in accordance with the EU Bathing Water Directive.

The targets are in line with existing expectations.

Target date no later than the end of:

- a) – c): For natural bodies of surface water (rivers, lakes and coastal waters) and for ground water that is included in the first planning period, by 2015. This applies to 20 per cent of Norway’s bodies of water. For the remaining natural bodies of water (second planning period), the target shall be achieved by 2021.
- d): All outdoor bathing areas should have excellent water quality by 2015.

Responsible ministries:

- The Ministry of Climate and Environment, the Ministry of Agriculture and Food, and the Ministry of Trade, Industry and Fisheries for measures that protect bodies of water.
- The Ministry of Health and Care Services for setting water quality requirements for water used for the water supply and food production.

Status:

Most sources of water in Norway that are used as drinking water and bathing water have “good” status. However, the overview is inadequate. Aquaculture and the production of shellfish are generally undertaken in salt water, while hatcheries have a fresh water intake. Discharges from aquaculture and hatcheries are regulated through dedicated regulations and discharge permits.

⁴ The Protocol only mentions aquaculture and shellfish, but in Norway the requirements shall apply to all food production in which water is an important production factor.



Measures:

Examples of measures:

1. Follow up the work with the characterisation and classification of the water bodies in accordance with the Frame Water Regulations, as well as the execution of analyses of measures and the preparation of a programme of initiatives.
2. Consider introducing stricter localisation requirements and expanding the requirements regarding environmental surveys from aquaculture facilities in order to ensure adequate water quality.
3. In areas with poor water quality, the expansion of existing or the establishment of new organisations or activities that may further affect the water quality will not normally be permitted.
4. All types of discharge (principally from industry, the municipality and agriculture) that affect the water quality shall be followed up through the monitoring of the water quality and frequency-based inspections of the activities.
5. Increase activities relating to the monitoring of bathing water quality within the municipalities.
6. Improved development of receiving station locations for wastewater from leisure boats.
7. Intake points for water used for drinking water or agricultural irrigation shall be placed so that the placement and water treatment in combination provide safe, fit-for-purpose water.

Parties responsible for the measures:

- The system owners for the implementation of contamination-reducing measures.
- The Ministry of Agriculture and Food in collaboration with the Ministry of Climate and Environment for regulatory changes that may regulate discharges from agricultural activities.
- The regional water authorities for surveying the status of the water sources in accordance with the Frame Water Regulations.
- The Ministry of Climate and Environment and the Ministry of Trade, Industry and Fisheries for any regulatory changes regarding environmental surveys within their respective areas of responsibility.
- The municipalities for the improved development of receiving station locations for wastewater from leisure boats.
- The Norwegian Food Safety Authority for requirements for the foodstuffs sector.

Supervisory authorities:

The Norwegian Food Safety Authority, the county governor, the county municipalities, the municipalities and the Directorate of Fisheries' regional offices.

Costs:

Difficult to estimate, but new costs relating to measure 5 in areas where this is important must be expected.



Final targets document

Administrative consequences:

No new administrative consequences.



(k) Operating routines at pool facilities that are open to the public for bathing

Targets:

- a) Bathing in pool facilities (outdoor or indoor) shall not put individuals at risk of contracting an illness due to the quality of the water.

The target is in line with existing expectations.

Target date no later than the end of:

2015.

Responsible ministry:

The Ministry of Health and Care Services.

Status:

Pools used for bathing shall follow the Regulations of 13 June 1996 no. 592 for bathing facilities, swimming pools and saunas, etc. (the Swimming Pool Regulations), which shall ensure a safe, hygienic standard. The municipalities follow this up through environmentally-targeted health care services. Internal control is lacking in many areas, but no outbreaks of infectious disease due to bathing water quality have been registered during the past five years. Some instances of Pontiac fever have been reported due to inadequately cleaned spa pools.

Measures:

Examples of measures:

1. Supervision including the reviewing of internal control routines.
2. Monitoring of microbiological parameters (intestinal bacteria, Legionella, etc.).

Parties responsible for the measures:

The municipalities and/or the facility owners.

Supervisory authority:

The municipalities via environmentally-targeted health care services.

Costs:

No new costs.



Final targets document

Administrative consequences:

No new administrative consequences beyond possible expanded supervision.



(1) Identification and treatment of contaminated sites which may affect waters, or which may give rise to waterborne disease

Targets:

- a) Contaminated sites that threaten bodies of water covered by the Protocol shall be risk assessed and treated/improved if necessary.

The target is in line with existing expectations.

Target date no later than the end of:

For sites identified prior to 2012, risk assessments shall be carried out if necessary and be completed along with any associated action plan by 2015.

For sites identified during the years 2011-2015, the equivalent shall be completed by 2021.

Responsible ministry:

The Ministry of Climate and Environment.

Status:

“Contaminated sites” covers the term “contaminated ground” and contaminated sediments in harbours.

Measures:

Examples of measures:

1. Contaminated sites will be identified through the work to survey the water quality and sources of contamination in accordance with the Frame Water Regulations.
2. Identification also requires the implementation of measures described in management plans and programmes of initiatives relating to the follow up of the Frame Water Regulations. The progress shall follow the work in accordance with the Frame Water Regulations.

Parties responsible for the measures:

The party responsible for contamination in each individual instance.

Supervisory authorities:

The Norwegian Environment Agency, county governor, municipalities and regional water authority in accordance with the Frame Water Regulations.



Final targets document

Costs:

Costs associated with the “polluter pays principle” are already incorporated in Norwegian legislation in several areas. The costs associated with achieving these targets are therefore not new costs.

Administrative consequences:

No new administrative consequences.



(m) Effective management systems, including methods, to limit pollution

Targets:

- a) The water resources shall be protected against pollution as effectively as possible. The protection shall be sufficient with regard to the interests associated with the use of the water.
- b) There shall be no discharges via treatment plants, overflows or large leaks that may represent an unacceptable risk to the recipient or user interests.
- c) Measures against run-off from agricultural activities shall help to achieve the targets set for water quality.
- d) Aquaculture facilities shall be located and operated in an environmentally sustainable manner.
- e) The regulations shall make expectations, requirements and responsibilities clear for all parties.

The targets are in line with existing expectations.

Target date no later than the end of:

No target date is set, since these are ongoing targets.

Responsible ministries:

The Ministry of Climate and Environment, the Ministry of Agriculture and Food, the Ministry of Trade, Industry and Fisheries and the Ministry of Health and Care Services.

Status:

Most raw water sources that are used for the supply of drinking water for waterworks subject to approval shall be protected with regard to the identified needs relating to water treatment and the size of the water source and supply.

Annual reporting from the sewerage facilities to central authorities provides an overview of whether the requirements are complied with. Findings from frequency-based inspections are followed up through orders regarding corrective measures and audits of permits where these are required.

Discharges from treatment facilities and overflows are normally assessed in order to prevent user conflicts. There is less control of leaks to recipients via storm water sewers. Discharges from individual residences may be in conflict with drinking water wells in particular.

Measures:

Examples of measures:



Final targets document

1. By 2015, the Norwegian Food Safety Authority must review all waterworks where the water source and/or the water treatment are not approved in order to identify any need for improved protection of the water source.
2. All densely populated areas shall have sewerage systems that fulfil the requirements of the Pollution Regulations.
3. Storage facilities for organic fertilisers (manure and silage, etc.) shall be constructed and operated in accordance with relevant regulations.
4. Diffuse run-off from agricultural areas shall be reduced to environmentally acceptable levels through environmental regulations, requirements and programmes that stimulate environmental operation. These may include environmental plans, fertilisation plans, fertilisation practice, marginal areas and soil tillage measures, as well as advisory services and information measures.
5. Operating procedures at aquaculture facilities must be implemented in order to ensure environmentally sustainable production, e.g. through the use of sustainability indicators.
6. Affected authorities must consider whether relevant legislation is sufficiently clear with regard to expectations, requirements and responsibilities.
7. The need to regulate traffic in drinking water sources, during both summer and winter, should be assessed.

Parties responsible for the measures:

The municipalities, system owners, farmers and breeders.

Supervisory authorities:

The Norwegian Environment Agency, the county governor, the municipalities, the Norwegian Agriculture Agency, the Directorate of Fisheries and the Norwegian Food Safety Authority.

Costs:

No new costs.

Administrative consequences:

No new administrative consequences.

(n) Information for the public regarding the quality of drinking water and water for other uses

Targets:

- a) The waterworks owners shall provide information about the drinking water quality and their water supply system, and other relevant authorities shall provide information about the bathing water quality and pollution conditions to the local population and others who require it.
- b) All municipalities and the Norwegian Food Safety Authority shall have websites featuring a relevant and up-to-date drinking water overview, including a condition description and overview of status/assessments.
- c) Private waterworks owners who supply permanent settlements of over 500 persons shall make up-to-date information available in the same way as the municipalities.
- d) Other waterworks owners shall make the information available in an appropriate manner.
- e) Information shall be reported and communicated to relevant authorities in accordance with national and international obligations.
- f) Information regarding the pollution condition of the waterways shall be made available through www.vannportalen.no.

These are new, concrete targets based on existing requirements or expectations in various regulations.

Target date no later than the end of:

2014 for targets a) and b).

2015 for targets c) and d).

For target e), the deadlines set by relevant obligations apply.

For target f), deadlines set in accordance with ongoing work under the Frame Water Regulations apply.

Responsible ministries:

- The Ministry of Health and Care Services for information pertaining to drinking water.
- The Ministry of Climate and Environment for information pertaining to environmental conditions in general.

Status:

There is a requirement regarding annual reporting from the waterworks to the Norwegian Food Safety Authority. These reports are made available to the Norwegian Institute of Public Health. Some information is forwarded to Statistics Norway. Otherwise, the availability of this information is limited for the general public. Most of the large waterworks have dedicated



Final targets document

websites featuring some information about water supply conditions and any supplied drinking water. The information available from the private waterworks is somewhat poorer.

Information about waterways in general can be obtained from the Norwegian Environment Agency and the Norwegian Water Resources and Energy Directorate.

www.vannportalen.no is already operational, and will be further developed when a basis for this exists.

Measures:

Examples of measures:

1. The state, the municipalities and the individual waterworks owners must, while considering information security, adhere to the requirement regarding the provision of information to the public, the requirements in the Drinking Water Directive, the Water Framework Directive and the Environmental Information Act.
 - a. Publish information on websites.
 - b. Larger private waterworks should establish websites.
 - c. Preparation of reports or brochures.
 - d. Send information regarding water quality to the subscribers together with invoices for municipal charges.
- 2 In the event of incidents that result in the pollution of a body of water that is used for bathing or agricultural irrigation purposes, the responsible authority and users of the water shall be immediately notified.

Parties responsible for the measures:

The waterworks owners, the municipalities, the county municipalities, the Norwegian Food Safety Authority and the Norwegian Environment Agency.

Supervisory authorities:

The municipalities, the Norwegian Food Safety Authority and the Norwegian Environment Agency.

Costs:

The requirement regarding the provision of information is already incorporated in several areas of Norwegian legislation. The costs associated with achieving these targets are therefore not new costs.

Administrative consequences:

No new administrative consequences.



Final targets document