

# Template for summary reports from Norway under the Protocol on Water and Health

## Part One General aspects

1. Were targets and target dates established in your country in accordance with article 6 of the Protocol?

*Please provide detailed information on the target areas in Part Three.*

YES  NO  IN PROGRESS

*If targets have been revised, please provide details here.*

2. Were they published and, if so, how?

*The target and target dates were approved by the Government May 22 2014 and have been submitted to the Protocol Secretariat. An action plan for targets under the Ministry of Health and Care Services was approved in October 2015. Information about this is found on internet pages at Norwegian Food Safety Authority: [http://www.mattilsynet.no/mat\\_og\\_vann/vann/Protokoll\\_om\\_vann\\_og\\_helse/](http://www.mattilsynet.no/mat_og_vann/vann/Protokoll_om_vann_og_helse/)*

*The information is only available in Norwegian.*

3. Has your country established national or local arrangements for coordination between competent authorities for setting targets? If so please describe, including information on which public authority(ies) took the leadership and coordinating role, which public authorities were involved and how coordination was ensured.

*The Ministry of Health and Care Services was in the lead of the process of setting targets. Other relevant Ministeries participated. The Norwegian Food Safety Authority (NFSA) acted as a secretariat. For further information see summary report from Norway 2013.*

4. Which existing national and international strategies and legislation were taken into account?

*Drinking Water Directive, Water Framework Directive, Norwegian Act on Pollution Control, Plan and Building Act.*

5. Was cost-benefit analysis of targets set performed, and if so how?

*In Norway a survey related to the status of public infrastructure is published with some years interval by RIF – Association of Consulting Engineers, Norway. RIF is the organisation for approved consulting companies in Norway, and the Norwegian member association of the global consulting association FIDIC. For several issues of the publication, RIF has pointed to water and sanitation as two areas where standards are poor due to aging pipes and the trends show worsening conditions over time.*

*Another association, Norwegian Water (in Norwegian: Norsk Vann) which is a national association representing Norway's water industry has estimated that over 200 billion NOK (about 21 billion €) needs to be invested in maintenance up to 2030, and another 300 billion NOK in new infrastructure.*

*When suggesting the national targets, the reports from these associations, with the addition of results from inspection data from the Norwegian food safety authority, was chosen as baseline data regarding the need and the costs of targets related to maintenance. The data and the recommendations from these sources were found solid enough to be trusted and hence no new cost-benefit analysis was found needed.*

*In Norway all costs and all investments for such infrastructure are paid by the consumer through the municipal taxes or directly to private companies. 90 % of the population get their water from companies that are owned by the municipality. For all public systems the law sets a "full cost recovery" principle meaning that the consumer cannot be charged more than the costs of running the service.*

6. What has been done in your country to ensure public participation in the process of target setting in accordance with article 6, paragraph 2, and how was the outcome of public participation taken into account in the final targets set?

*The draft targets were on public consultation in 2013 where stakeholders, NGOs, municipalities etc. were requested to comment.*

7. Provide information on the process by which this report has been prepared, including information on which public authorities had the main responsibilities, which other stakeholders were involved, etc.

*This report was prepared in collaboration with the relevant national authorities, i.e. the National Institute of Public Health and the Norwegian Environment Agency, coordinated by The Norwegian Food Safety Authority.*

8. Report any particular circumstances that are relevant for understanding the report, e.g., whether there is a federal and/or decentralized decision-making structure, or whether financial constraints are a significant obstacle to implementation (if applicable).

Norway has a high number of small drinking water systems serving between 50 and 500 persons. Many of these small systems have difficulties linked to competence, maintenance and water quality. Larger plants are more professionally managed but challenges occur here as well. The larger systems are naturally located to the cities. According to Norwegian Food Safety Authority's system MATS about 2/3 of the systems is owned by the local municipalities, the rest by private companies.

Most of the sanitation systems with a capacity of more than 50 persons are owned by the municipalities. About 17% of the households are served by mostly private systems serving less than 50 persons.

Norway has to a large extent a decentralized management system. Local authorities are therefore responsible for necessary actions in order to follow up the targets. Financial constraints may be an obstacle for the smallest municipalities because of high costs per capita.

9. Please describe whether and, if so, how emerging issues relevant to water and health (e.g., climate change) were taken into account in the process of target setting.

*Where relevant, focus on preparedness and climate changes has been taken into consideration when setting targets.*

## Part Two

### Common indicators<sup>1</sup>

#### I. Quality of the drinking water supplied

##### A. Context of the data

*Please provide general information related to the context of the data provided under sections B and C below:*

1. What is the population coverage (in millions or per cent of total national population) of the water supplies reported under this indicator?

According to Statistics Norway the population of Norway was 5 213 985 people on 1st January 2016. The whole population has access to improved drinking water according to WHO standards. For approximately 600 000 persons there is little or no information about the water supply systems in use and the water quality as such. For the remaining 4.6 million persons information about the water supply systems and the water quality is registered in "MATS".

2. Do the water supply systems reported here supply the urban population only or both the urban and rural populations?

*The numbers presented in this report refer to both urban and rural population. However, there is only confirmed data for those supply systems serving more than 50 persons.*

3. Specify where the samples/measurements are taken (e.g., treatment plant outlet, distribution system or point of consumption).

*The samples are mainly taken on the distribution network at a point of consumption, but can also be taken from the water treatment plant outlet.*

4. In the reports, the standards for compliance assessment signify the national standards. If national standards for reported parameters deviate from the WHO guideline values, provide information on the values (standards) used for calculation.

The national standards for reported parameters does not deviate from the WHO guideline values.

##### B. Bacteriological quality

Indicator to be used: WatSan\_S2: The percentage of samples that fail to meet the national standard for E. coli and the percentage of samples that fail to meet the national standard for Enterococci.

*Please comment on the trends or any other important information supporting interpretation of the data.*

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<sup>1</sup> In order to allow an analysis of trends for all Parties under the Protocol, please use wherever possible 2005—the year of entry into force of the Protocol — as the baseline year.

<i>WatSan_S2</i>	<i>Baseline value (2004)</i>	<i>Value reported in the previous reporting cycle (2011 data)</i>	<i>Current value (2014 ?)</i>
E. coli	9 % of the samples taken from supplies that had one or more positive samples.	8 % of the samples taken from supplies that had one or more positive samples, and 0,7 % of all samples taken.	3,8 % of the samples taken from supplies that had one or more positive samples, and 0,4 % of all samples taken
Enterococci	23 % of the samples taken from supplies that had one or more positive samples.	24 % of the samples taken from supplies that had one or more positive samples.	1,3 % of the samples taken from supplies that had one or more positive samples, and 0,3 % of all samples taken

The percentage show the amount of tests which out of all samples that indicated some deviation from the national standard, had E. coli or Enterococci present i.e. in 2011, 8 % of the deviating samples were positive for E. coli, but E. coli was only present in 0,7 % of all samples taken.

The data for E. coli are in 2014 based on analyses representing 66 % of the total number of supplies (approx. 1500) serving 88 % of the Norwegian population. For enterococci the corresponding numbers are 86 % of the total number of supplies serving 85 % of the Norwegian population

### C. Chemical quality

Indicator to be used: WatSan\_S3. All countries shall monitor and report on the percentage of samples that fail to meet the national standard for chemical water quality with regard to the following:

- (a) Fluoride;
- (b) Nitrate and nitrite;<sup>2</sup>
- (c) Arsenic;
- (d) Lead;
- (e) Iron.

Parties shall also identify up to five additional physico-chemical parameters that are of special concern in their national or local situation (e.g., pesticides).

*Concerning Fluoride: 1 waterwork serving 1170 persons had 16 % of the samples and 62 % of the deviations. That waterwork is not included in the figures in the table below.*

<sup>2</sup> As defined in the WHO Guidelines for drinking-water quality.

*Concerning Lead: 1 waterwork serving 64 persons had 17 % of the samples and 100 % of the deviations. That waterwork is not included in the figures in the table below.*

<i>Substance</i>	<i>Baseline value (2004)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2014)</i>
Fluoride	0 %	0 %	3,4 %
Nitrate	0,8 %	0 %	0 %
Nitrite	0 %	0 %	0,2 %
Arsenic	0 %	0 %	0 %
Lead	0 %	0 %	0 %
Iron	6 %	0 %	2,7 %
Additional physico-chemical parameter 1: _ pH_____	30 %	18 %	3,9 %
Additional physico-chemical parameter 2: colour_____	21 %	18 %	1,2 %
Additional physico-chemical parameter 3: _____			
Additional physico-chemical parameter 4: _____			
Additional physico-chemical parameter 5: _____			

## **II. Reduction of the scale of outbreaks and incidence of infectious diseases potentially related to water**

In filling out the following table, please consider the following points:

- (a) For reporting outbreaks, please indicate if the numbers reported are related to all exposure routes or only related to water (i.e., for which there is epidemiological or microbiological evidence for water to have facilitated infection);
- (b) For reporting incidents:
  - (i) Please report cases per 10,000 persons;
  - (ii) Please differentiate between zero incidents (0) and no data available (-);
  - (iii) If possible, please distinguish between autochthonous and imported cases.

	<i>Incidence</i>			<i>Number of outbreaks</i>		
	<i>Baseline (2004)</i>	<i>Value reported in the previous reporting cycle</i>		<i>Baseline (2004)</i>	<i>Value reported in the previous reporting cycle</i>	
		<i>(2012)</i>	<i>Current value (specify the year)</i>		<i>(2011)</i>	<i>Current value (2014)</i>
Cholera	0 %	0 %	0 %	0 %	0 %	0 %
Bacillary dysentery (shigellosis)	0 %	0 %	0 %	0 %	0 %	0 %
EHEC	0 %	0 %	0 %	0 %	0 %	0 %
Viral hepatitis A	0 %	0 %	0 %	0 %	0 %	0 %
Typhoid fever	0 %	0 %	0 %	0 %	0 %	0 %

### III. Access to drinking water

*Please comment on the trends or any other important information supporting interpretation of the data.*

<i>Percentage of population with access to drinking water</i>	<i>Baseline value (2004)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
<b>Total</b>	All	All	All
Urban	100 %	100 %	100 %
Rural	100 %	100 %	100 %

Access to drinking water is defined as having water inside or few meters from the building. It is 100 % coverage in both urban and rural areas according to this definition.

### IV. Access to sanitation

*Please comment on the trends or any other important information supporting interpretation of the data.*

<i>Percentage of population with access to sanitation</i>	<i>Baseline value (2004)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
<b>Total</b>	All	All	All
Urban	100 %	100 %	100 %
Rural	100 %	100 %	100 %

The whole population has access to sanitation. 83 % are connected to sewage plants serving 50 persons or more and 17 % are connected to those serving less than 50 persons.

## V. Effectiveness of management, protection and use of freshwater resources

### Water quality

On the basis of national systems of water classification, the percentage of the number of water bodies or the percentage of the volume (preferably) of water<sup>3</sup> falling under each defined class (e.g., in classes I, II, III, etc. for non-EU countries; for EU countries, the percentage of surface waters of high, good, moderate, poor and bad ecological status, and the percentage of groundwaters/surface waters of good or poor chemical status).

### For non-European Union Countries

#### Status of surface waters

<i>Percentage of surface water falling under class<sup>a</sup></i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (specify the year)</i>	<i>Current value (specify the year)</i>
I			
II			
III			
IV			
V			
<b>Total number/volume of water bodies classified</b>			
<b>Total number/volume of water bodies in the country</b>			

<sup>a</sup> Rename and modify the number of rows to reflect the national classification system.

#### Status of groundwaters

<i>Percentage of groundwaters falling under class<sup>a</sup></i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (specify the year)</i>	<i>Current value (specify the year)</i>
I			

<sup>3</sup> Please specify.

<i>Percentage of groundwaters falling under class<sup>a</sup></i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (specify the year)</i>	<i>Current value (specify the year)</i>
II			
III			
IV			
V			
<b>Total number/volume of groundwater bodies classified</b>			
<b>Total number/volume of groundwater bodies in the country</b>			

<sup>a</sup> Rename and modify the number of rows to reflect the national classification system.



## For European Union countries

Norway is a member of the EEA. Through the EEA agreement Norway adheres to the EU water legislation. The Norwegian legislation is therefore based on the water framework directive, the drinking water directive and the waste water directive. Due to this Norway reports under the For European Union countries part.

### Ecological status of surface water bodies

<i>Percentage of surface water classified as:</i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
High status		11 %	21,0 %
Good status		38 %	41,6 %
Moderate status		24 %	21,9 %
Poor status		9 %	6,7 %
Bad status		2 %	1,8 %
<b>Total number/volume of water bodies classified</b>		<b>22741</b>	<b>26568</b>
<b>Total number/volume of water bodies in the country</b>		<b>27186</b>	<b>28580</b>

### Chemical status of surface water bodies

<i>Percentage of surface water bodies classified as</i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
Good status		2 %	2,1 %
Poor status		1 %	0,8 %
<b>Total number/volume of water bodies classified</b>		<b>689</b>	<b>829</b>
<b>Total number/volume of water bodies in the country</b>		<b>27185</b>	<b>28580</b>

### Status of groundwaters

<i>Percentage of groundwaters classified as</i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
Good quantitative status		25 %	52 %
Good chemical status			n/a
Poor quantitative status		1,4 %	1,1 %

<i>Percentage of groundwaters classified as</i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2015)</i>
Poor chemical status			n/a
<b>Total number/volume of groundwater bodies classified</b>		333	734
<b>Total number/volume of groundwater bodies in the country</b>		1260	1381

Please provide any needed information that will help put into context and aid understanding of the information provided above (e.g., coverage of information provided if not related to all water resources, how the quality of waters affects human health).

### Water use

Please provide information on the water exploitation index at the national and river basin levels for each sector (agriculture, industry, domestic), i.e., the mean annual abstraction of freshwater by sector divided by the mean annual total renewable freshwater resource at the country level, expressed in percentage terms.

<i>Water exploitation index</i>	<i>Baseline value (specify the year)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (specify the year)</i>
Agriculture		3 %	n/a
Industry <sup>a</sup>		13 %	n/a
Domestic use <sup>b</sup>		41 %	n/a

<sup>a</sup> Please specify whether the figure includes both water abstraction for manufacturing industry and for energy cooling.

<sup>b</sup> Please specify whether the figure only refers to public water supply systems or also individual supply systems (e.g., wells).

For "Industry" the figure includes both water abstraction for manufacturing industry and for energy cooling.

For "Domestic use" the figure only refers to public water supply systems.

Water as a resource is in general not a problem in Norway. Our figure presents the use of produced drinking water. The values from 2011 are based on information about water delivered from about 1100 water plants owned by the municipalities. Approximately 30-40 % of the water never reach its point of delivery due to leakage from the pipe lines.

Values are not available from National Statistics after 2011 due to different priorities.

## Part Three

### Targets and target dates set and assessment of progress

*For countries that have set targets and target dates, please provide information specifically related to the progress towards achieving them. If you have not set targets in a certain area, please explain why.*

*For countries in the process of setting targets, please provide information on the relevant target areas (e.g., baseline conditions, provisional targets, etc.)*

*Suggested length: one page (330 words) per target area.*

#### I. Quality of the drinking water supplied (art. 6, para. 2 (a))

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a. For each water supply system which supplies more than 500 people, the number of exceedances of the limit value for a chemical parameters in the drinking water regulation shall not be more than 2 per year. The maximum value shall not exceed the limit by more than a factor of 5. For microbiological parameters, with 0 as the threshold, the number of exceedances shall be less than 1 per year.
- b. For each water supply system that supplies between 50 and 500 people, the number of exceedances of the limit value for a chemical parameters in drinking water regulations shall not be more than 3 per year. The maximum value shall not exceed the limit by more than a factor of 5. For microbiological parameters, with 0 as the threshold, the number of exceedances shall be less than 3 per year.
- c. For each water supply system which supplies less than 50 persons, a random sample taken within one year shall not exceed the threshold value for the chemical parameters by more than a factor of 3. E. coli should not be detected.
- d. The supervisory authority shall have up to date overview of drinking water quality for all water systems that supply more than 50 people. In addition, the supervisory authority shall maintain an overview of a representative selection of water supply systems that supply fewer than 50 people.

Target dates are as follows: for objective a and b no later than 2016, for objective c no later than 2020 and for objective d no later than 2015.

Responsible ministries are:

- The Ministry of Health and Care Services is responsible for legislation on drinking water.

- The Ministry of Climate and the Environment is responsible for legislation that protects all types of sources.

Baseline situation:

The EU drinking water directive (98/83/EC) is incorporated in the Norwegian drinking water regulations. The National Food Safety Authority does not have a complete overview of the number of people receiving drinking water from the different sources or the quality of the water received.

The biggest challenge when it comes to the quality of drinking water is associated with the small water supply systems which serve less than 50 persons. As mentioned these are not registered in the waterwork register (MATS). Of those water supply systems which reported to the NFSA in 2009 95 % did not exceed the parameters set for E.coli and colour. This is self-reported data from the presumptive best water suppliers. When inspected by the NFSA the compliance is weaker.

**Water supply system which supplies more than 500 people:**

a) chemical parameters (2014):

*Parameters with 2 or fewer exceedences per year and maximum value not exceeding the limit by more than a factor of 5:*

1,2-dichloroethane, Ammonium, Antimony, Arsenic, Benzene, Benzo(a)pyrene, Lead, Boron, Bromate, Cyanide, Glycols, Hydrocarbons and mineral oils, Cadmium, Chloride, Copper, Chrome, Mercury, Sodium, Nickel, Nitrate (NO<sub>3</sub> -N), Nitrite (NO<sub>2</sub> -N), Pesticides – individual, Pesticides – total, Polycyclic aromatic hydrocarbons (PAH), Radon, Selenium, Sulphate, Tetrachloroethene og trichloroethene, Total indicative dose, Trihalomethanes –

<b>Parameter</b>	<b>Number of waterworks &gt;2 exceedance and &lt; 95 % satisfactory results</b>	<b>Number of persons &gt;2 exceedance and &lt; 95 % satisfactory results</b>	<b>Number of waterworks &gt; 5 x limit</b>
Aluminium	6	27 000	3
Fluoride	1	1 170	0
Iron	5	46 900	3
Manganese	5	46 300	2

total and

Tritium

Total organic carbon (TOC)	1	11 00	0
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b) microbiological parameters (2014):

Parameter	Number of waterworks $\geq 1$ exceedance and $< 95\%$ satisfactory results	Number of persons served $\geq 1$ exceedance and $< 95\%$ satisfactory results
<i>E. coli</i>	14	19 100
Intestinal enterococci	4	6 700

**Water supply system which supplies 50 - 500 people:**

c) chemical parameters (2014):

*Parameters with 3 or fewer exceedences per year and maximum value not exceeding the limit by more than a factor of 5:*

1,2-dichloroethane, Ammonium, Antimony, Arsenic, Benzene, Benzo(a)pyrene, Boron, Bromate, Cyanide, Glycols, Hydrocarbons and mineral oils, Cadmium, Chloride, Copper, Chrome, Mercury, Sodium, Nickel, Nitrate (NO<sub>3</sub> -N), Nitrite (NO<sub>2</sub> -N), Pesticides – individual, Pesticides – total, Polycyclic aromatic hydrocarbons (PAH), Radon, Selenium, Sulphate, Tetrachloroethene og trichloroethene, Total indicative dose, Trihalomethanes – total and Tritium

Parameter	Number of waterworks $> 3$ exceedances and $< 95\%$ satisfactory results	Number of persons served $> 3$ exceedances and $< 95\%$ satisfactory results	Number of waterworks $> 5 \times$ limit
Aluminium	2	400	0

Lead	1	64	1
Fluoride	0	190	0
Iron	1	180	2
Manganese	5	1 400	0

d) microbiological parameters (2014):

Parameter	Number of waterworks >=3 exceedances and < 95 % satisfactory results	Number of persons served >=3 exceedances and < 95 % satisfactory results
<i>E. coli</i>	8	1 800
Intestinal enterococci	1	75

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*An action plan for targets under the Ministry of Health and Care Services was approved in October 2015.*

*According to this, information about the targets have been sent to municipalities and waterworks. A lot of presentations are held at relevant conferences and meetings often in cooperation with Norwegian Water (in Norwegian: Norsk Vann) which is the national association representing Norway's water industry.*

*Information about the targets, action plan, and promotional material are presented at the website of the Norwegian Food Safety Authority and the National Institute of Public Health.*

*Examples:*



Water and health brochure.pdf



MATI0002\_Vann og helse\_plakat A3\_3.p

3. Assess the progress achieved towards the target.

*Too early to assess.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No

5. If you have not set a target in this area, please explain why.

## II. Reduction of the scale of outbreaks and incidents of water-related disease (art. 6, para. 2 (b))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) Outbreaks of disease due to waterborne transmission should have a low degree of probability and consequence.
- b) There shall be prepared more accurate methods to determine endemic disease caused by drinking water.

Proposed target dates: no later than the end of 2017.

Responsible ministries are:

- The Ministry of Health and Care Services
- The Ministry of Agriculture and Food
- The Ministry of Local Government and Modernisation.

The targets are national.

Baseline situation:

The targets do not include fixed numbers for the reduction of diseases caused by drinking water. The reason for this is that it is difficult to estimate how many people fall ill from water-borne infections caused by poor quality drinking water. Those who fall ill most often experience diarrhoea. Most patients experiencing short-term diarrhoea do not consult with a doctor therefore it is seldom taken tests to determine the cause of the infection. In sporadic cases of diarrhoea it may be impossible to say with certainty what people have been infected of.

MSIS is the Norwegian system for notification of infectious diseases. Only those cases reported by doctors will be registered in MSIS. It is not shown in MSIS whether it is food, water or other sources of infection which is the cause of disease.

In 2005, the Norwegian Institute of Public Health established a web-based outbreak rapid alert system called Vesuv. The system is used for mandatory outbreak alerts from municipal medical officers, healthcare institutions, and food safety authorities.

The table below shows number of outbreaks reported where drinking water was the suspected source as well as number of people sick in the period 2010-2014.

Year	Number of outbreaks	Number of cases
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2010	0	0
2011	4	73
2012	2	85
2013	2	40
2014	2	14

e consider the numbers presented to be an underestimation of the true occurrence. Several small outbreaks that involve a single-household water supply could have gone unidentified. These figures do not include sporadic cases. Because of this, we can assume that the number of cases of waterborne infections are larger. How much larger is difficult to estimate.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Target a):*

*The cause of illness are partly due to inadequate protection of water sources, inadequate water treatment, leaking water pipes and inadequate safety procedures while carrying out repair work on water mains. If the waste water enters the drinking water system, there is great danger of pathogenic microorganisms in drinking water. Such induction may be due to negative pressure in the water lines because of breakage, the low pressure line and pressure, shocks, large short-term tapping, illegal cross-connections with the intake of wastewater or back flush valves that do not work.*

*Satisfactory operation and maintenance of the water works are of great importance to secure clean drinking water. The following actions have been taken:*

- o Awareness-raising information to all the water works serving more than 20 household/50 persons about the national targets and the consequences in form of illness if unsatisfactory operation, maintenance and control of the water works*
- o A brochure targeting the smallest waterworks on how to secure safe water supply*

*Target b)*

- Vesuv (The Norwegian outbreak surveillance system) is being upgraded. The new platform will be more flexible and will facilitate a more effective information sharing and better collaboration and coordination among the different actors involved in an outbreak investigation (food safety authorities, municipal medical officers, Norwegian Institute of Public Health). In addition it will improve access for municipal medical officers to data in Vesuv on all outbreaks reported in their municipality and neighbouring areas. This will be a useful source of information to provide municipal medical officers with an overview of the epidemiological situation in their municipality*

*We are planning research activities to improve the knowledge of endemic infections caused by drinking water. The activities are costly, and the implementation depends on the funding.*

3. Assess the progress achieved towards the target.



*The progress is according to the target.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*Target II b) has been changed from the draft version presented in our report from 2013: “The number of people per year who become acutely ill from drinking water in Norway should be averaged over a period of 5 years to less than 0.1 parts per thousand (1 per 10 000)” to “There shall be prepared more accurate methods to determine endemic disease caused by drinking water”. The reason was the difficulty to estimate how many people that get ill from water-borne infections caused by poor quality drinking water, as explained above.*

5. If you have not set a target in this area, please explain why.

### **III. Access to drinking water (art. 6, para. 2 (c))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) When planning areas for new housing (including recreational cottages) or industrial areas or concentration within existing settlement areas, consideration should be given to the opportunity to connect these to existing water supply systems nearby or, if necessary, make a new local common system, so as to achieve hygienic adequate, appropriate and cost and operating efficient devices.
- b) Existing private water supply systems with unclear ownership and / or unsatisfactory water quality and supply security shall be upgraded or linked to existing water supply systems in order to achieve hygienically satisfactory, appropriate and cost-effective operation and devices.

The proposed targets are in line with existing requirements in relevant legislation.

No target date has been proposed as this is an ongoing objective.

However, the following indicator of achievement is proposed:

- Number of people associated with water supply systems with unsatisfactory quality or supply security.

Responsible ministries are:

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

Baseline situation:

Most people receive drinking water from water supply systems that supply more than 500 people. It is estimated that less than 600 000 persons are drinking water from small water supply systems (<50 people) where the quality of the water is largely unknown to the authorities. There is a gradual development where smaller water systems are integrated into larger units. There is still some potential here, but this is to a large extent based on willingness from the owners.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The Planning and Building Act requires that all homes must have access to drinking water. Further actions pending.*

2. Assess the progress achieved towards the target.

*Too early to assess.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

#### **IV. Access to sanitation (art. 6, para. 2 (d))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) All within a wastewater collection area shall be connected to the public network or have other acceptable treatment solutions.
- b) Single house treatment systems should be adjusted to the capacity of the recipient and operate well.

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

No target date has been proposed as this is an ongoing objective.

However, the following indicators of achievement are proposed:

- i. The connection to public sewers within a collection area shall be at least 98 percent.

- ii. Number of people associated with wastewater for less than 50 person equivalents that do not have adequate treatment systems.

Responsible department is:

- Ministry of Climate and Environment.

Baseline situation:

The number of households not connected to the municipal system in an existing wastewater districts is low. Approximately 17 % of the population are not connected to a public treatment plant, but are connected to single house treatment. The performance of these treatment systems is not well documented and partly unknown. However, this does not represent a major environmental problem, even though some of them are likely to be in poor or less good condition. Depending on the recipient the requirements are regulated. Municipalities may adopt more stringent requirements.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The Planning and Building Act requires that all homes must have access to sewage plant. The regulations set requirements for level of purification of the waste water.*

*The Pollution Control Authorities follow up on demands and they often give more strict permits, especially for phosphorous.*

*For discharges along the coast line nearly 50% of the municipalities are given new dates for compliance.*

3. Assess the progress achieved towards the target.

*The progress vary between regions, but is fairly good. Especially discharges along the coast and for single house dwellings have good progress.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

5. If you have not set a target in this area, please explain why.

*n/a*

## **V. Levels of performance of collective systems and other systems for water supply (art. 6, para. 2 (e))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also

include information on the background and justification for the adoption of the target.

### Water supply Targets

- a) Unplanned interruptions in water supply should be less than 0.5 hours on average per inhabitant per year and total disruption less than 1.0 hours on average per inhabitant per year.
- b) Supply security must be better than 99.95 percent. (Security of supply = Number capita hours without interruption in the supply / Number capita hours total \* 100).
- c) Annual rehabilitation of water network should on average be at least 2 per cent at the national level until 2035.
- d) Leakage from each network should be less than 25 percent by 2020.

The targets are new and are set with the expectation that there must be paid more attention to reliability of the systems.

Target dates:

- By 2020 the annual rehabilitation of the water supply network should on average be 2 percent.

Responsible ministries are:

- The Ministry of Health and Care Services
- The Ministry of Local Government and Modernisation.

Baseline situation:

There is significant leakage from pipe lines. In some places up to 50% of the water does not reach its point of destination. It is estimated that 25 percent of the pipe line system consists of pipes that have "expired", which already should have been replaced / rehabilitated, or to be replaced / rehabilitated in a short time to catch up with the maintenance backlog.

Approximately 230 water utilities (which supply about 1.5 million people) have more than 10 km of lines added in the period before 1971 and 259 water utilities (which supply about 1.7 million people) have more than 1 km asbestos cement pipes.

According to reports from waterworks the security of supply for municipal facilities is better than 99.99 percent nationwide. Some facilities may be less than the target.

Annual replacement of pipelines are essentially lower than the target of paragraph c). Status of the private water works is not known.

Some indicators based on information from municipal waterworks is given below.

<b>Indicator<sup>1</sup></b>	<b>2014</b>
Total disruption - planned and unplanned (hours of total disruption per person per year)	0,62
Unplanned interruptions in water supply (hours of unplanned interruption per person per year)	0,18
Supply security (%)	99,99
Annual rehabilitation of water network (%)	0,68

<sup>1</sup>Source: Statistics Norway

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The reporting system from the water suppliers to the Norwegian Food Safety Authority is improved in order to increase quality of the data in the database.*

*A new drinking water regulation is under development. The regulation introduces new requirements on maintenance.*

3. Assess the progress achieved towards the target.

*It seems to be a slight increase in renewal of pipelines, but the baseline data is uncertain.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

There have been a discussion about this target regarding leakage, but the target is gaining acceptance.

5. If you have not set a target in this area, please explain why.

## **VI. Levels of performance of collective systems and other systems for sanitation (art. 6, para. 2 (e) continued)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

### Wastewater Targets:

- a) Ensure that all within a wastewater district is connected to the municipal network.
- b) Leakage and overflow should not adversely affect the water quality over time.

- c) The overflow shall generally be less than 2 percent of the pollution production in a wastewater districts. For large overflow discharges separation and equalization shall be considered in addition to separating and retention of surface water.
- d) Integrate future climate projections in storm water management to avoid overloading of the sewerage network.
- e) Upgrading of public pipeline must include upgrading of the associated private pipeline.

The targets are largely in line with existing targets (not targets according to the Protocol) and regulatory requirements.

- Target dates: Municipal action plans shall be prepared no later than by the end of 2015.

Responsible ministries are:

- Ministry of Climate and Environment
- The Ministry of Local Government and Modernisation

Baseline situation:

Significant leakages in the sewerage systems may result in overflow discharges of wastewater that can lead to contamination of waterways and potential contamination of the drinking water network.

Leakage into and from pipelines and control with overflow are general challenges in Norway. Benchmarking surveys done by the Norwegian Water Association and audits conducted by the Climate and Pollution Control Agency / County Governors show that there is a need to maintain and upgrade the pipelines.

Lack of professional staff is a major obstacle to implement the necessary upgrading of water and sewerage systems.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Ongoing activities from the authorities.*

3. Assess the progress achieved towards the target.

*A comprehensive control was carried out in 2014 and -15. The owners of wastewater systems have a reasonable good overview of the situation but need to increase upgrading of the systems.*

*In less sensitive areas the technology seems to be too poor to meet the demands and more time are needed in some areas.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical

knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No.*

5. If you have not set a target in this area, please explain why.

*N/A*

## **VII. Application of recognized good practices to the management of water supply, (art. 6, para. 2 (f))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) All water and wastewater plants serving more than 50 persons, shall have an adequate internal control system that includes a risk analysis where climate impacts are included.
- b) Drinking Water Sources shall be protected from contamination in order to minimize the need for water treatment.

The proposed targets are in line with existing requirements in relevant legislation.

Proposed target dates: no later than by the end of 2016.

Responsible ministries are:

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

Baseline situation:

Requirements for risk analyses, internal control and audit are incorporated in the drinking water regulations. Written performance requirements are to a large extent adequate, but there are potential for improvement in how they follow up the described routines.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The Norwegian Food Safety Authority (NFSA) encourage the municipalities to protect drinking water sources preferentially through municipal planning according to the Planning and Building Act. If this process is not satisfactory, the NFSA may intervene.*

*A new drinking water regulation is under development. The regulation enhance the principles of Water Safety Planning as basis for management..*

3. Assess the progress achieved towards the target.

Too early to assess.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **VIII. Application of recognized good practice to the management of sanitation (art. 6, para. 2 (f) continued)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) All water and wastewater plants serving more than 50 persons, shall have an adequate internal control system that includes a risk analysis where climate impacts are included.
- b) Drinking Water Sources shall be protected from contamination in order to minimize the need for water treatment.

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

Target dates: No later than by the end of 2016.

Responsible ministries:

- Ministry of Health and Care Services
- Ministry of Climate and Environment.

Baseline situation:

The compliance with the requirement of internal control is not good enough at the given time. Requirements for risk analysis, internal control and audit are incorporated in the sewage chapters in the pollution regulations. Sewage plants are also regulated by the internal control regulation. Written performance requirements are to a large extent adequate, but there are potential for improvement. Audit conducted in 2008 on 25 percent of the large sewage plants showed that risk assessment on the environment is not completed in 70 percent of these facilities. Audit conducted in 2010 showed improvement.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*A new guideline is implemented and gradually enforced.*

3. Assess the progress achieved towards the target.



*The progress is fairly good. More and more municipalities are carrying out risk analyses.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No*

5. If you have not set a target in this area, please explain why.

## **IX. Occurrence of discharges of untreated wastewater (art. 6, para. 2 (g) (i))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) Ensure that leakages due to overflow are not in conflict with user interests such as drinking water, irrigation and bathing.
- b) Total overflow for a collection district should generally be less than 2 percent of the pollution production.
- c) Storm water should as far as feasible not be connected to a sewerage system.
- d) Direct discharge of untreated domestic waste should not take place.

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

No target date is proposed for target a) as this is an ongoing objective. For objective b) it is proposed that there shall be municipal plans by the end of 2016. Objective c) is proposed to be evaluated by new larger building projects. Objective d) is proposed to be met by the end of 2015.

Responsible ministry is:

- Ministry of Climate and Environment.

Baseline situation:

The Planning and Building Act requires that when new buildings are established, ground- and surface water shall be dealt with. The same applies to maintenance of drainage systems around existing buildings.

There are regulations requiring that the facility owner monitor the overflow of untreated sewage and record operating time for these. Overflow at the treatment plant will be covered by the discharge approval. Inspection shows that the overflow volumes are rarely quantified. 561 direct emissions was observed, primarily to open sea or to fjords in 2008. There is probably no health consequences throughout the food chain attached to these. Lack of a storm water authority makes it difficult to ensure that measures that keep water away from the sewer system are implemented.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Permits are strictly regulated and gradually few untreated discharges are taking place. For 2014 the number has decreased to 420, or 25% less than in 2008. Risk analysis are being used to a larger extent to avoid conflicts of interest. The impact from storm water seems to be increasing, even the municipalities are carrying out a systematic job, separating storm water from wastewater.*

3. Assess the progress achieved towards the target.

*The progress is acceptable, as these discharges are small and taking place in less sensitive areas. For storm water the progress could be better, but the costs connected to this measure are high.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No*

5. If you have not set a target in this area, please explain why.

## **X. Occurrence of discharges of untreated storm water overflows from wastewater collection systems to waters within the scope of the Protocol (art. 6, para. 2 (g) (ii))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

*This target area is incorporated in target area IX in our National Targets.*

*It is a national aim to reduce storm water from going into the sewage pipelines by establishing local treatment systems and have separate pipelines for sewage and storm water.*

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*A report was published in January 2016 with focus on climate and storm water in cities and with proposals on changes in some national regulations.*

3. Assess the progress achieved towards the target.
4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

5. If you have not set a target in this area, please explain why.

*This target area is incorporated in target area IX in our National Targets.*

## **XI. Quality of discharges of wastewater from wastewater treatment installations to waters within the scope of the Protocol (art. 6, para. 2 (h))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) Discharges from municipal wastewater sector shall comply with the requirements in pollution regulations or special permits.
- b) When outlet to a drinking water source, treatment and discharge of wastewater shall be evaluated in order to prevent influence on the drinking water source.

Objective a) is consistent with existing regulatory requirements, while b) is a clarification of existing expectations proceedings.

There has not been proposed a target date for goal a) as this is an ongoing objective. For object b) there has been proposed that municipal plans based on a risk assessment should be in place by the end of 2016.

The following indicators are proposed for achievement of respectively a) and b):

- i. Number of wastewater treatment plants with exceedance of the permit within none sensitive and sensitive areas along the coast, and within rivers with moderate or worse environmental status.
- ii. Number of person-equivalents connected to wastewater treatment plant with discharge to vulnerable drinking water sources where the discharge results in harmful microorganisms in the water source.

Responsible department is:

- Ministry of Climate and Environment.

Baseline situation:

Largely standardized requirements are set out in Chapter 12, 13 and 14 of the Pollution Control Regulations, i.e, the minimum treatment requirements are set out in the regulations. In addition formalized requirements are often given in a separate license granted by regional or local authority. The authority varies with the size of the wastewater plant. The authority is allowed to set stricter standards.

Most plants are operational, but many do not operate well enough and there is a demand for an increase in cleaning capacity, especially until 2015.

- Urban settlement:

Discharges from the larger municipal treatment plants which have sea as recipient (most often) is seldom a problem for the recipient or other user interests if the discharge is led out to a good conductive area. Discharges to freshwater recipients are entitled to treatment of phosphorus and organic matter, through enforcement of the pollution regulations and the Planning and Building Act.

- Rural settlement:

17 percent of the households in Norway in 2010 was connected to facilities with capacity below 50 persons-equivalents. The Municipalities are the Pollution Control Authority and shall supervise that the provisions and decisions made accordingly are followed. There may be problems with discharge from overflow and discharge from smaller plants, especially plants that are not connected to the public main system. There is a need to follow up the municipalities as authority on its own facilities and with their handling of outlet from separate houses.

There are almost no plants that disinfect their discharge in order to protect the drinking water. Such user conflicts are to be resolved by the coordination of the discharge site and raw water intake point. In addition, there is a strategy to build up adequate hygienic barriers in potable water systems to ensure the necessary security. There is at present no intention to put forward a requirement for disinfection as a treatment processes in sewage plants. However, there is a need to improve internal control and risk and vulnerability analyses in this area. It should be done by 2015 for those plants that do not have established good enough systems.

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

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Discharge Permits are controlled and the municipalities will have to upgrade the systems if needed.*

3. Assess the progress achieved towards the target.

*The situation is more or less stable. We are already close to achieving the targets but have to constantly control and adjust. Especially for storm water more actions are needed.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No*

5. If you have not set a target in this area, please explain why.

## **XII. Disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations (art. 6, para. 2 (i), first part)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

### Sludge and fertilizer products

Targets:

- a) Reuse at least 70 percent of produced sewage sludge as a resource and ensure that the quality of the sludge is consistent with this.
- b) Organic residuals / waste will be used as fertilizer or soil conditioner as long as it has a quality that matches such use. It shall be used in amounts that is agronomic, environmental and health justifiable.
- c) Facilitate better utilization of resources in residues of organic material, including the production of biogas.
- d) Have proper use of organic fertilizers in relation to plant needs and conditions to reduce runoff from agricultural areas.
- e) Use of fertilizers of organic origin shall be in accordance to the regulation for this, including that: The use of sewage sludge shall not result in increased runoff to waterways, and: The storage of sewage sludge shall not result in user conflicts due to smell.

The proposed targets are in line with existing requirements in relevant legislation.

For objective a) the proposed target date has been met. For objective b) the proposed target date is set to no later than 2016. For objective c) the target date is set to no later than 2020.

Responsible ministries are:

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

Baseline situation:

In 2014 about 2/3 of the produced sewage sludge were used on farmland and additional 25 percent were used as a resource in other ways (parks, along roads, etc.) In 2009, the human intake of pollutants through food and drinking water due to spreading of sludge on agricultural land considered to have little impact based on the substances examined. During the proceedings in the municipalities health and environmental sectors spreading of sludge near drinking water sources are especially looked upon. The run-off of phosphorus to waterways is an issue. The amount of sewage sludge will increase as the primary and secondary treatment are introduced at several wastewater treatment plants and as the population increases.

Norwegian sludge generally contains low concentrations of contaminants, although heavy metals are accumulating in the soil. Measures will contribute to reduce emissions to the pipelines, through product regulation, requirements for discharges and control of water quality in the distribution system. There is an ongoing assessment of sludge quality to ensure that the quality is improving, the sludge hygienic stabilised.

Regulations on fertilizer products of organic origin are to be revised and will include that limits and risks of runoff from fields where sludge is used are considered. The time for spreading in sensitive areas will be considered.

The use of organic waste as fertilizers and soil improvers is anticipated to increase. Most of the sludge are used for biogas before the residue is utilised. Most likely more mixed fertilizing products originating from different organic wastes such as manure, sewage sludge, fish waste, food waste, waste from food processing and waste from the pulp and paper industry will be developed.

In agriculture-dominated areas runoff often affect water bodies significantly. Large runoff of particles and nutrients may contribute to poor water quality and the risk of algal blooms. Measures have been made to reduce runoff to acceptable levels. The Norwegian water regulation is focusing on this problem.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The topic is adequately regulated. No special actions are needed.*

3. Assess the progress achieved towards the target.

*The progress is good as the targets are already met and the sources of contaminants are being reduced. The increased volumes may still be a challenges to be addressed.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No*

5. If you have not set a target in this area, please explain why.

### **XIII. Quality of wastewater used for irrigation purposes (art. 6, para. 2 (i), second part)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

*Wastewater is not allowed being used for irrigation purposes. Since it is prohibited to use wastewater for irrigation in Norway no target has been proposed in this area.*

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.
3. Assess the progress achieved towards the target.
4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.
5. If you have not set a target in this area, please explain why.

*Wastewater is not allowed used for irrigation.*

#### **XIV. Quality of waters which are used as sources for drinking water (art. 6, para. 2 (j), first part)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

- a) Water bodies used for water supply and food production should as far as practicable, be protected against supply of contaminants. This is particularly important if the use of water for food production is not subject to special requirements for water treatment.
- b) All water bodies should have at least "good ecological and chemical status" and specified deadlines in approved management plans according the water regulation.
- c) Waterways used for irrigation should as far as possible, be protected against discharge of pathogenic microorganisms.

The proposed targets are in line with current expectations. Proposed targets a) and b) relates to sources for drinking water (art. 6, para. 2 (j), first part).

For targets a) and b) proposed target dates for natural water bodies of surface water (rivers, lakes and coastal waters) and groundwater that are contained in the first planning period has been set to no later than the end of 2015. This covers 20 per cent of the water bodies in Norway. For the remaining natural water bodies (second planning period) the proposed targets are planned to be met within 2021.

Responsible ministries are:

- The Ministry of Climate and the Environment, The Ministry of Agriculture and Food and The Ministry of Trade, Industry and Fisheries on measures to protect water bodies.
- The Ministry of Health and Care Services to set standards for water quality for water supply and food production.

Baseline situation:

Most water sources in Norway used for potable water have "good status", but 3.5 % of the water sources in use had *E.coli*  $\geq$  10 count/100 ml. The median value was 0 (year 2014).

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Norway follow the EU Frame Water Directive, cf. Part Two, Section V.

3. Assess the progress achieved towards the target.

The progress is acceptable as shown in the table.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **XV. Quality of waters used for bathing (art. 6, para. 2 (j), second part)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

a) Locations that are suitable for bathing should have excellent water quality in accordance with the EU Bathing Water Directive.

The proposed targets are in line with current expectations. The target relates to waters used for bathing (art. 6, para. 2 (j), second part). Proposed target date for this target is no later than by the end of 2015.

Responsible ministries are:

- Ministry of Climate and Environment, The Ministry of Agriculture and Food and The Ministry of Trade, Industry and Fisheries on measures to protect water bodies.
- Ministry of Health and Care Services to set standards for water quality for water supply and food production.

Baseline situation:

Most marine water sources in Norway used for bathing have "Excellent quality" or "Good quality" according to EU directive 2006/7/EC although the directive is not a part of the EEA agreement.



2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

No special action taken.

3. Assess the progress achieved towards the target.

The progress is assessed to be acceptable.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **XVI. Quality of waters used for aquaculture or for the production or harvesting of shellfish (art. 6, para. 2 (j), third part)**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

These targets are set:

a) Water bodies used for water supply and food production should as far as feasible be protected against supply of contaminants. This is particularly important if the use of water for food production is not subject to special requirements for water treatment.

b) All water bodies should have at least "good ecological and chemical status" and specified deadlines in approved management plans according the water regulation.

The proposed targets are in line with current expectations. Proposed targets a) and b) relates to sources for drinking water (art. 6, para. 2 (j), first part).

For targets a) and b) proposed target dates for natural water bodies of surface water (rivers, lakes and coastal waters) and groundwater that are contained in the first planning period has been set to no later than the end of 2015. This covers 20 per cent of the water bodies in Norway. For the remaining natural water bodies (second planning period) the proposed targets are planned to be met within 2021.

Responsible ministries are:

- Ministry of Climate and Environment, The Ministry of Agriculture and Food and The Ministry of Trade, Industry and Fisheries on measures to protect water bodies.
- Ministry of Health and Care Services to set standards for water quality for water supply and food production.

Baseline situation:

Fish business that receives fish from the marine vessels are often located in enclosed harbors. The raw water is taken from the sea near by and may often contain fecal bacteria. Use of UV-light is installed to disinfect the water.

All aquaculture sites producing fish for food shall monitor the sediments near by the locality each year. Results from 2014 indicates that the sediments mainly are in very good and good condition.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Areas for production of shellfish must be approved by the Norwegian Food Safety Authority.*

*Areas for production of fish for food must not be located near by a sewage outlet.*

3. Assess the progress achieved towards the target.

The progress is assessed to be acceptable.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **XVII. Application of recognized good practice in the management of enclosed waters generally available for bathing (art. 6, para. 2 (k))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

Targets:

- a) Swimming in a pool (open or indoors) shall not cause danger for disease caused by water quality.

The target is in line with current expectations.

The target is to be reached no later than by the end of 2015.

Responsible department is:

- The Ministry of Health and Care Services.

Baseline situation:

A pool used for bathing shall follow Regulations 13 June 1996 no. 592, concerning swimming pools, spa pools and saunas, to ensure adequate hygienic standard. Municipalities and their environmental health section shall follow up. Internal control is deficient in many places, but it is not recorded any outbreaks of infectious diseases due to bathing water quality over the last five years. There have however been some cases of Pontiac fever due to poorly cleaned spa pools.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*Regulations 13 June 1996 no. 592 was updated December 2007, when requirements concerning legionella was included. The regulation is in the process of being updated by harmonizing with European requirements and by taking into consideration the technological development*

3. Assess the progress achieved towards the target.

*The progress is according to the target.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **XVIII. Identification and remediation of particularly contaminated sites (art. 6, para. 2 (l))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

Target:

- a) Contaminated areas that could threaten water bodies covered by the Protocol shall have a risk assessment and if necessary be decontaminated / repaired.

The target is in line with current expectations, ref. Water framework directive.

Target dates:

For areas which are known by 2012 a vulnerability analysis and associated action plan shall be implemented by 2015 if it is considered necessary. For areas which are identified in the years 2011–2015 a vulnerability analyses and action plan must be in place no later than by the end of 2021.

Responsible department is:

- Ministry of Climate and Environment.

Baseline situation:

Contaminated sites include contaminated sediments in harbours, runoff from mining, runoff from landfills etc. are registered and actions are taken according to priorities.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*For many years now contaminated sites are located, described and remediated according to priority.*

3. Assess the progress achieved towards the target.

*The progress is assessed as acceptable, as remediation is complex and often expensive.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

*No*

5. If you have not set a target in this area, please explain why.

## **XIX. Effectiveness of systems for the management, development, protection and use of water resources (art. 6, para. 2 (m))**

*For each target set in this area:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

Targets:

- a) Water resources must be protected as good as possible against pollution. Protection shall be adequate in relation to the interests that are related to the use of water.
- b) There shall be no discharge through the treatment plant, overflow or large leaks that may represent an unacceptable risk to the recipient or user interests.
- c) Runoff from agriculture shall not threaten target for water quality.
- d) Location and operation of aquaculture facilities shall be conducted in an environmentally sustainable manner.

- e) The rules should be clear to all parties in terms of expectations, requirements and responsibilities.

The targets are in line with current expectations.

No target date is set since the targets are ongoing.

Responsible ministries are:

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

Baseline situation:

Most raw water sources that are used for drinking water supply for approved waterworks, shall be protected according to the needs that are identified in terms of treatment and the size of the water source and supply.

Annual reporting for wastewater plants to the central authority provides an overview showing to what degree the requirements are complied with. Findings through frequency based supervision is followed up through imposition of corrective measures and audit of permits when required.

Discharges from treatment plants and overflows are normally considered in order to prevent user conflicts. There are however less control of leaks that end up in recipients via storm water outlets. Discharges from single houses may be in conflict with wells used for drinking water.

Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

*The targets are followed up through the work done according to the Water Framework Directive (WFD).*

*A new drinking water regulation is under development. The regulation introduces stricter regulations on protection of drinking water resources.*

3. Assess the progress achieved towards the target.

*The progress is according to the target.*

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

No.

5. If you have not set a target in this area, please explain why.

## **XX. Additional national or local specific targets**

*In cases where additional targets have been set, for each target:*

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.
  
2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.
  
3. Assess the progress achieved towards the target.
  
4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.
  
5. If you have not set a target in this area, please explain why.

## Part Four

### Overall evaluation of progress achieved in implementing the Protocol

In this part of the summary report, Parties shall provide an analysis and synthesis of the status of implementation of the Protocol. Such an overall evaluation should not only be based on the issues touched upon in the previous parts, but should also include, as far as possible, a succinct overview of implementation of activities related to, for example:

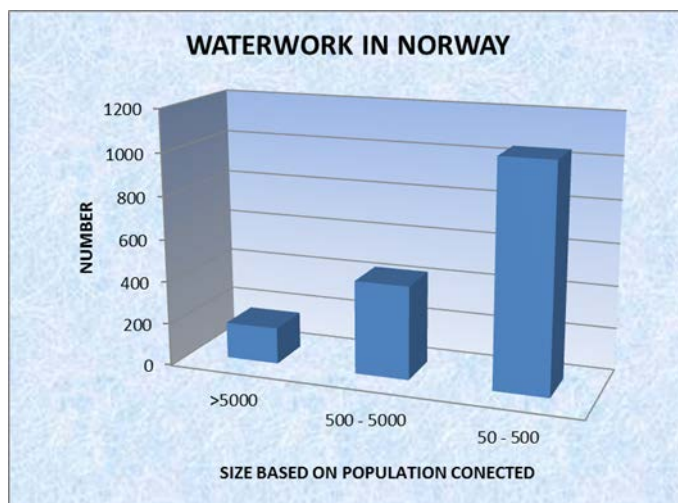
- (a) Response systems (article 8);
- (b) Public awareness, education, training, research and development and information (article 9);
- (c) Public information (article 10);
- (d) International cooperation (article 11);
- (e) Joint and coordinated international action (article 12);
- (f) Cooperation in relation to transboundary waters (article 13);
- (g) International support for national action (article 14).

This analysis or synthesis should provide a succinct overview of the status of and the trends and threats with regard to waters within the scope of the Protocol sufficient to inform decision makers, rather than an exhaustive assessment of these issues. It should provide an important basis for planning and decision-making as well as for the revision of the targets set, as needed.

Suggested length: up to 3 pages

#### *Background*

*Norway has a lot of water and about 5% of the surface area is water. If we take all water recourses and use it for drinking water - we can supply about 5 billion people. A small part of the country is city areas or agricultural areas. Forests and mountains dominate the Norwegian landscape.*



*A characteristic for Norway is the high number of small drinking water systems, serving between 50-500 persons. Such small water supply systems serving 50-500*

persons are the dominating size. About 75 of these systems do not have any water treatment.

The larger systems are naturally located to the cities.

Many of these small systems have difficulties of different kinds linked to competence, maintenance and water quality. The larger plants are more professionally managed, but even they have challenges.

The Water registry (MATS) is a centralized registry at the Norwegian Food Safety Authority and covers most of the residents. The rest of the population, maybe about 600.000 persons or 12 % are served by smaller facilities where water quality and water safety is little known to the authorities.

A large portion (about 65%) of the systems in MATS is owned by the local municipalities, the rest by private companies.

Most of the sanitation systems with the capacity of more than 50 persons are owned by the municipalities. About 17 % of the households were served by mostly private systems smaller than 50 persons.

### **Challenges**

The water authorities agree that we have some challenges to deal with in our present status:

- In general our drinking water- and waste water pipes are too old, and they are causing leaking problems. Renewal is far too slow.
- Some of our smaller public water supply systems are not up to hygienic standards.
- About 10 - 12 % of the population get their water supply from smaller private water supply systems, of which we know practically nothing about the water quality.

Climate changes are likely to affect the quality of the surface water and the functioning of both the clean water and sanitation pipe systems. The discharges from combined overflow systems will increase. As more storm water will enter the sewerage systems, the discharge from treatment plants will increase. We need to be prepared for the serious effects this might cause.

### **Legislation**

Through the EEA agreement Norway adheres to the EU water legislation. The Norwegian legislation is therefore based on the water framework directive, the drinking water directive and the waste water directive.

### **Administrative responsibility**

The responsibility of the Protocol lies within the Ministry of Health and care services.



*The responsibility for issues covered by the Protocol on Water and Health is divided between several ministries. The three main ministries with responsibility for water quality, water quantity and sanitation are:*

*The Ministry of Health and Care Services is responsible for the drinking water quality and for the Norwegian drinking water regulation. The Ministry of Health and Care Services have two directorates with tasks important for drinking water. That is the Norwegian Food Safety Authority and the Norwegian directorate of Public Health. Of these two the Norwegian Food Safety Authority is the main directorate concerning regulation and inspections of the drinking water systems.*

*The Ministry of Climate and Environment is responsible for all kinds of outlet from the municipalities, for conservation policy and environmental management. The Directorate for Nature Management is an important directorate under this ministry.*

*The Ministry of Petroleum and Energy is responsible for the water as a natural resource, and also responsible for Hydro Power plans and regulation of lakes and rivers. They are also responsible for the Petroleum activities. Norwegian Water Resources and Energy Directorate is the main directorate.*

*The owners of the private drinking water systems and the municipalities when systems are owned by the municipalities, are responsible for handling of the regulations that are set by the Ministry of Health and care services. The municipalities are responsible for carrying out regulations regarding sanitation.*

*Based on principles in the EU Water Framework Directive Norway is divided into 11 river basin regions. Each river basin region has one river basin region authority and a network of other authorities joint into a river basin committee. Each of these river basin regions shall follow up the obligations that are set in the Water Framework Directive. That includes making plans for actions to obtain clean water in the region and to report back to EU (ESA).*

### ***Implementation of the protocol in Norway***

*Norway was one of the signatories to the Protocol in 1999 and ratified in 2004. In 2006 a Reference group for the PWH established with the purpose of securing the necessary coordination between the involved ministries. The members were the Ministry of Health, Ministry of Environment and the Ministry of Foreign Affairs.*

*In 2008 the Norwegian Food Safety Authority (NFSA) was requested by the Ministry of Health and Care Services to coordinate the drafting of targets in cooperation with relevant governmental bodies such as the Norwegian Institute of Public health and the Climate and Pollution Agency. The task was then considered difficult among other things because of the (at that time) lack of guidance on how to draft targets. A first draft was sent to the Ministry of Health in 2010.*

*By that time it was considered that the reference group was not suited to carry out the responsibility of coordination between ministries and that a stronger and enlarged group was established: It consists of the Ministry of Health, the Ministry of Environment (now Ministry of Climate and Environment), the Ministry of Local Government and Regional Development, the Ministry of Agriculture and the Ministry of Fisheries. From early 2011 – June 2012 the target proposals were refined in cooperation between the NFSA and the newly established ministerial group. In Dec 2011 – Feb 2012: Consultations with relevant NGO's were carried*

*out and in June 2012 – January 2013 the draft was considered by the Ministry of Health and its political leaders.*

*On March 22nd 2013, the World Water day, the draft targets were sent on a broad public hearing including both dissemination to all relevant stakeholders and placing on the internet for all interested persons or bodies to read and comment on.*

*The deadline of the hearing was in early June. The targets were set by the Government in 2014. Upon setting the targets, information about the final targets go out to waterworks, municipalities and other relevant parties. The drafting of an implementation plan dealing with how to reach the targets and how to monitor progress, has been made and effective since last October.*

*Since targets were set in 2014 it is of course a bit early to describe progress towards them. However several initiatives have been taken over the last decade with the aim to improve the water quality of the population. In 2004 the Norwegian Food Safety Authority was established. Earlier the food and water safety control was mainly in the hands of the municipalities. It was felt that it would be better if state authority took over the control of water facilities as most of them were owned and operated by the municipalities. After a few years of consolidating their role the NFSA has focused their activities on drinking water. Several inspection campaigns have been targeted towards drinking water supply providing us with a closer picture of the status of at least the systems serving more than 50 people. It has been confirmed that smaller facilities are struggling to comply with our water regulation (equivalent to the DVD) and that the water pipes have a large improvement potential.*

*The Ministry of Health has asked the NFSA to give facilities orders to close gaps when possible and enforce compliance in a more stringent manner. This will continue along the other measures advised by the targets.*

#### ***Article 9 on public awareness, education, training, research and development and information***

*The public awareness on especially drinking water has been rising in Norway due to several reports, both official and non official pointing to the water sector as a sector that is lagging behind in maintenance and in need of attention. (In third place after railroads and roads.)*

*There are education lines for technicians for the water sector at several of our technical high schools. However the recruitment to those educations has been low for many years resulting in a lack of skilled technicians in the industry. The trend might be shifting lately.*

*The association of water and sanitation systems, Norsk Vann (Norwegian Water) is very active in arranging training courses for their members and offers a variety of themes. A general problem is that the employers who would need such training the most often do not attend.*

*The NFSA also arrange education seminars for its inspectors.*

#### ***Article 10 on public information***

*Under target area 6.2.n several targets are set regarding improvement of the information on the quality of drinking water and other waters:*

- All drinking water systems and relevant authorities shall have information about drinking water quality, quality of bathing water, and the state regarding pollution available to the population.*
- All municipalities and the Food Safety Authority shall have internet sites with relevant information regarding d.w. including an assessment.*
- Private drinking water systems supplying more than 500 persons shall provide the same information as municipalities.*
- Smaller drinking water systems shall make information available in the manner most suited.*
- Information about state of pollution in rivers and lakes shall be placed on a web site (“vannportalen”).*

#### ***Article 12 on joint and coordinated international action***

*Norway has taken the initiative towards creating a Nordic – Baltic network on water and sanitation in order to discuss:*

- Challenges in the area of drinking water and sanitation in the Nordic and Baltic countries;*
- Role of UNECE/WHO-Europe Protocol on Water and Health in addressing these challenges;*
- Possibilities for closer cooperation between Nordic and Baltic countries in the area of drinking water and sanitation as well as in the area of water management, both at national and transboundary levels. Cooperation in formulating common projects regarding water and sanitation.*

#### ***Article 13 on cooperation in relation to transboundary waters***

*Norway have almost no challenges linked to transboundary waters and has not had any specific activity in this area. However there is contact between the Ministry of Health and Care Services and the Ministry of Climate and Environment which is responsible for the Water Convention, the mother convention of the Protocol.*

#### ***Article 14 on international support for national action***

*From 2007 to 2013 was active in running the so called ad hoc Project Facilitation Mechanism (AHPFM) to help mainstream international support for national action in accordance with Article 14 of the Protocol on Water and Health.*

*In 2010 Norway took initiative towards establishing a water fund within the European Bank for Reconstruction and Development (EBRD) aiming at securing loans and grants for projects developed under the umbrella of the national targets of the protocol. Such a water fund was established in 2010. This fund is open to applications from prioritized countries entitled to receive ODA support.*



## Part Five

### Information on the person submitting the report

The following report is submitted on behalf of Norway in accordance with article 7 of the Protocol on Water and Health.

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Telephone number: +47 22 24 87 66

Name and address of national authority: Norwegian Ministry of Health and Care Services

Signature:



Geir Stene-Larsen

Date: 18 April 2016

### Submission

Parties are required to submit their summary reports to the joint secretariat, using the present template and in accordance with the adopted guidelines on reporting, by **18 April 2016**. Submission of the reports ahead of this deadline is encouraged, as this will facilitate the preparation of analyses and syntheses to be made available to the third session of the Meeting of the Parties.

Parties are requested to submit, to the two addresses below, an original signed copy by post and an electronic copy either on a CD-ROM or by e-mail. Electronic copies should be available in word-processing software, and any graphic elements should be provided in separate files.

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and

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