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**COMMISSION STAFF WORKING DOCUMENT**

**Norway**

*Accompanying the document*

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**on the Implementation of the Water Framework Directive (2000/60/EC)**

**River Basin Management Plans**

**{COM(2012) 670 final}**

# 1. GENERAL INFORMATION



**Figure 1.1:** Map of River Basin District

- International River Basin Districts (within EU)
- International River Basin Districts (outside EU)
- National River Basin Districts (within EU)
- Countries (outside EU)
- Coastal Waters

**Source:** WISE, Eurostat (country borders)

Norway has a population of 5.0 million<sup>1</sup> and an area of 323,787 km<sup>2</sup> (mainland and islands).

Norway is divided into 11 River Basin Districts (RBDs), of which 5 are international RBDs (IRBDs) because they share a small area with neighbouring countries (Sweden, Finland and Russia). Norway shares minor parts of 6 IRBDs with neighbouring Finland and Sweden. Finland and Norway share the three large River Basins Tana (Teno), Neiden (Näätämöjoki) and Pasvik (Paatsjoki) in the northernmost region. Norway has a small part of the Torne river on its territory.

RBD	Name	Size (km <sup>2</sup> ) (Area including coastal waters)	Countries sharing RBD
NO1101	Møre and Romsdal	25441	-
NO1102	Trøndelag	47229	SE
NO1103	Nordland	68291	SE
NO1104	Troms	36549	FI, SE
NO1105	Finnmark (including Norwegian parts of Tana, Neiden and Pasvik).	64382	FI, RU
NO5101	Glomma	47683	SE
NO5102	Vest-Viken (West Bay)	39002	-
NO5103	Agder	21048	-
NO5104	Rogaland	12722	-
NO5105	Hordaland	18440	-
NO5106	Sogn and Fjordane	23771	-
NOFIVHA5	Kemijoki	28	FI
NOFIVHA6 NOSE1TO	Torne River/Tornionjoki	181 203	FI, SE
NOSE1	Bothnian Bay	975	SE
NOSE2	Bothnian Sea	4688	SE
NOSE5	Skagerrak and Kattegat	7436	SE

**Table 1.1:** Overview of Norway's River Basin Districts  
**Source:** Draft River Basin Management Plans<sup>2</sup>

<sup>1</sup> Statistics Norway, 2012

<sup>2</sup> Draft RBMPs available from <http://www.vannportalen.no/> and <http://vann-nett.nve.no/>

Name international river basin	National RBD	Countries sharing RBD	Co-ordination category	
			2	
			km <sup>2</sup>	%
Pasvik/Paatsjoki	NO1105	FI, RU	19	0.1
Naatamo	NO1105	FI	553	20.5
Teno/Tana	NO1105	FI	11314	31.0
Kemijoki	NOFIVHA5	FI, RU	27	0.1
Torneälven/Tornionjoki	NOFIVHA6 NOSE1TO	SE, FI	284	1.0
Signaldalselva	NO1104	SE	1471	97.0
Malselvvassdraget/ Malangen	NO1104	SE	6774	97.0
Skjomavassdraget	NO1103	SE	1436	90.0
Luleälven	NO1103 / NOSE1	SE	758	3.0
Umeälven	NO1103 / NOSE1	SE	268	1.0
Piteälven	NO1103 / NOSE1	SE	113	1.0
Angermanälven	NO1102 / NOSE2	SE	1597	5.0
Indalsälven	NO1102 / NOSE2	SE	2153	8.0
Dalälven	NO1102 / NOSE2	SE	1465	5.0
Hellemovassdraget	NO1103	SE	1543	99.0
Kobbelva	NO1103	SE	956	99.0
Fagerbakkvassdraget	NO1103	SE	1002	98.0
Saltelva	NO1103	SE	1861	94.0
Ranavassdraget	NO1103	SE	4227	94.0
Rossaga	NO1103	SE	2559	93.0
Vefsna	NO1103	SE	4021	88.0
Verdalsvassdraget	NO1102	SE	1595	94.0
Stjordalsvassdraget	NO1102	SE	2231	98.0
Nidelva	NO1102	SE	3368	92.0
Glomma	NO5101	SE	42591	99.0
Klarälven/Trysil - Göta alv/Vänern Göta/ (including the Sub--basins Norsälven/Byälven/ Upperudälven)	NO5101	SE	8187	16.0
Haldenvassdraget/Enningsdal	NO5101	SE	1935	77.0
Strömsan (Sub--basin of Haldenvassdraget)	NO5101	SE	5	2.0

**Table 1.2:** Transboundary river basins by category (see CSWD section 8.1) and % share in Norway<sup>3</sup>

Category 1: Co-operation agreement, co-operation body, RBMP in place.

Category 2: Co-operation agreement, co-operation body in place.

Category 3: Co-operation agreement in place.

Category 4: No co-operation formalised.

**Source:** EC Comparative study of pressures and measures in the major river basin management plans in the EU.

<sup>3</sup> Categorisation determined under the EC Comparative study of pressures and measures in the major river basin management plans in the EU (Task 1b: International co-ordination mechanisms).

## 2. STATUS OF RIVER BASIN MANAGEMENT PLAN REPORTING AND COMPLIANCE

Norway is connected to the European Union through the [Agreement on the European Economic Area \(EEA\)](#). Norway transposed the Water Framework Directive (WFD) into national legislation (the Water Regulation) in January 2007, and performed a voluntary implementation of the WFD in selected sub-districts across the country from 2007 until 2009, thus gaining experience of river basin management planning and enabling Norway to take part in the sharing of experiences in the Common Implementation Strategy. Pilot River Basin Management Plans (RBMPs) for the selected pilot sub-districts were adopted by the regional County Councils in 2009, and approved by the national Government in June 2010.

The WFD was formally taken into the EEA-agreement in 2009. EFTA-countries reporting obligations are to the [EFTA Surveillance Authority \(ESA\)](#). According to decision no 125/2007 of the EEA Joint Committee, the EEA/EFTA countries have extended deadlines for the implementation of the articles of the WFD. As a consequence, Norway intends to prepare and report 'official' RBMPs covering the entire country in 2015, synchronised with the time schedule of the second cycle of implementation in the European Union (EU).

Pilot RBMPs were reported to the EFTA surveillance authority 3<sup>rd</sup> September 2010: Møre and Romsdal, Trøndelag, Nordland, Troms, Finnmark, Glomma, Vest-Viken (West Bay), Sør-Vest (South-West) and Vestlandet (West Coast). Sør-Vest has since then been divided up into Agder and Rogaland. Vestlandet has been divided up into Hordaland and Sogn and Fjordane. Information has been reported by sub-district within the Pilot RBMPs and it should be noted that the sub-districts (and therefore the Pilot RBMPs) do not cover the whole of the geographic area of each RBD.

The Pilot RBMPs have been adopted by regional county councils and approved by the government, the latter through a Royal decree. The adopted Pilot RBMP and the Royal decree together make up the approved Pilot RBMP that forms the basis for the relevant planning and implementation activities by national, regional/county and local/municipal authorities. The responsibility for implementing the necessary legislation and measures lies with the authorities concerned, in line with their existing legal and administrative responsibilities, and final/detailed decisions on measures are mandated by the sectorial legislation.

The major strengths of the Norwegian Pilot RBMPs found in the assessment were:

- The national technical guidance documents on 'Classification of ecological status' and 'Characterisation of the RBD' are particularly useful and comprehensive. From these it is clear that there has been active participation of Norwegian experts in the CIS process on these topics. This should ensure that these aspects when fully implemented will be technically best practice and will produce comparable results with EU Member States.
- The Pilot RBMPs are well written and illustrated with the content closely following the required elements as given in Annex VII of the WFD.
- Work on national adaptation to climate change is in progress.

It should be noted that Norway's Pilot RBMPs are well written and structured. Norway is clearly following the approach of the Common Implementation Strategy (CIS) and processes are in place that should ensure that comprehensive RBMPs are reported in the future.

### **3. GOVERNANCE**

#### **3.1 Timeline of implementation**

According to the EEA agreement, Norway will fully implement the Directive with a different timetable. Norway intends to prepare and report 'official' RBMPs covering the entire country in 2015, synchronised with the time schedule of the second cycle of implementation in the European Union (EU). Norway has however chosen to develop 9 Pilot RBMPs in parts of each River Basin District in the first cycle. The timetable was as follows:

- 2007: Formation of cross sector RBD Water Boards and Consultation on Work Programme.
- 2008: Consultation of Significant Water Management Issues.
- 2009: Consultation on Draft River Basin Management Plan (end of June 2009), and adoption of Pilot RBMPs by County Councils (September/October 2009).
- 11 June 2010: Approval of Pilot RBMPs by national Government by Royal Decree.

#### **3.2 National administrative arrangements**

A national approach is followed for the implementation of the WFD. The Environment Agency (Miljøverndepartementet) is the responsible authority. The coordinating responsibility is delegated to the Agency/Directorate for Nature Management (Direktoratet for naturforvaltning). The work on national level is carried out on two levels:

1. The Committee of Ministries (8 ministries) covers the overall issues that include integration issues concerning several departments;
2. The Committee of Agencies (Directorates) (12 agencies) develop guidelines and coordinate the work on agency-level;
3. The National reference group is connected to the Agency group to secure information and participation of branch organisations, NGOs and the civil society at large.

#### **3.3 RBD competent authorities**

A number of relevant sector authorities have been involved at different levels: Fisheries, Coastal management, Food and Agriculture, Nature management, Pollution and Climate, Health, Energy and Hydropower, Transport, Reindeer management, Sami council, Cultural heritage Mapping Authority, Geological Survey, Mining, County and Municipal councils. Public participation has taken place by NGOs for farmers, forestry, industry, hydropower, fishery, tourism, environment, Sami people and the Norwegian Geological Survey. However, the participation differs between RDBs. The RBD Competent Authority is managed by the VRM (vannregionmyndighet), which has the overall responsibility and is led by the County Council.

The VRM should 1) co-ordinate the RBMP planning process, 2) set up and run the RBD Water Board (VRU - vannregionutvalg) including regional authorities and municipalities, as well as a Reference Group for public participation at RBD level, 3) follow up authorities with responsibilities, 4) divide the RBM in sub-districts, 5) have an up-to-date overview of the

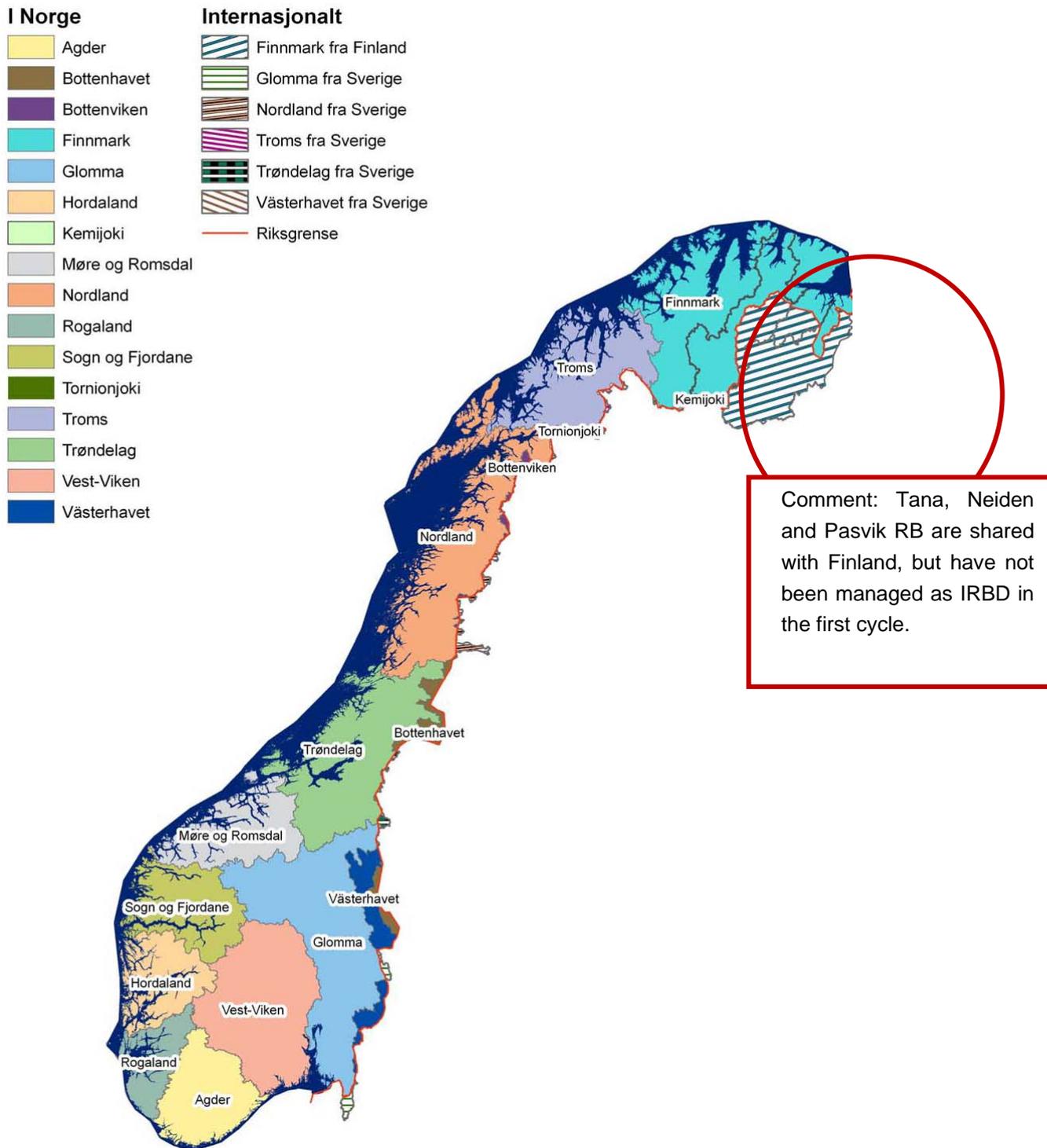
status of the water bodies, 6) develop environmental objectives for the water bodies, 7) develop the Programme of Measures (PoM), 8) develop a (Pilot) RBMP, 9) facilitate participation of all stakeholders, 10) be in charge of the consultation and 11) co-ordinate work with neighbouring countries.

The regions are further divided into sub-districts (vannområder) with local Water Boards (VOU - vannområdeutvalg). The VOU should carry out a significant part of the practical work on a local level through characterisation, developing environmental targets and measures, evaluating cost benefits, developing and carrying out monitoring, and developing the local plan as part of the regional plan. All interested parties are invited to take part in the local Water Board to take advantage of local knowledge, increase the motivation to carry out the work, identify undesired effects and to develop trust, ownership and support.

The detail on the sub-district plans appears to be comprehensive in terms of those addressing sectors and those addressing water management issues, although the Pilot RBMPs would benefit from clarity in terms of describing the authorities involved and the scope of their responsibilities (technical, administrative and geographical).

Information should be included on Strategic Environmental Assessment. This is missing from the Pilot RBMPs but is an important tool for 'advising' the PoM.

There would be advantages if the RBMPs included details of the consultation process and, in particular, the impacts of consultation on the measures or other elements of the plan. Some of the Pilot RBMPs include part of this information but further information could be included in annexes to the Pilot RBMPs.



**Figure 3.3.1:** Map of Norwegian RBMs  
*Source:* Map provided by the Norwegian Authorities

### 3.4 RBMPs - Structure, completeness, legal status

The RBMPs submitted are draft Pilot RBMPs that have been adopted by the appropriate County Councils, and then approved by Royal Decree by the Norwegian Government.

### **3.5 International co-operation and co-ordination**

Five of the eleven RBDs are to a small extent shared with Sweden, Finland or Russia (see Section 1). In addition to the eleven mainly Norwegian RBDs, there are six RBDs that are classified as international RBDs but no pilot international RBMP (IRBMP) has been submitted by Norway. Contacts have been established with neighbouring countries, and some co-ordination has been in place for the Pilot RBMPs, but it is unclear how much co-operation is taking place. The 3 large River Basins Tana, Neiden and Pasvik that are shared with Finland should be of special concern due to their significant size. Efforts should be put into ensuring the correct and mutual management of IRBDs for future RBMPs.

### **3.6 Consultation of the public, engagement of interested parties**

The methodology used for the consultation process was generally consistent across all RBDs in Norway, and follows the requirements of the Norwegian Planning and Building Act as well as the WFD. The consultation process on the draft Pilot RBMP was carried out through a number of different tools, including meetings, written consultation and web based comments. Information on the consultation process could be obtained through the internet, direct mail to local authorities and other stakeholders and advertised in the press. The stakeholders involved in the consultation included a wide range of sectors, such as agriculture, energy, fisheries, industry and NGOs. Involvement took place through both regular and ad-hoc meetings. It is not clear whether there is continuous involvement of these stakeholders or the general public. The comments provided led to adjustments of the Pilot RBMPs, but did not change the selection of measures used. The information provided varies in completeness between Pilot RBMPs.

### **3.7 Integration with other sectors**

The Pilot RBMP contains links to other sectors such as agriculture, the chemical industry and rural and urban planning but the links could be made clearer.

To ensure sufficient sector integration, a Committee of Ministries has been established, chaired by the Ministry of Environment. The Committee of Ministries settles political issues concerning cross sector integration in water management. It embraces a total of eight ministries: Environment; Petroleum and Energy; Fisheries and Coastal Affairs; Trade and Industry; Health and Care; Transport and Communication; Agriculture and Food; Local Government and Regional Development. To assist the ministries at national level, a Committee of Agencies (Directorates) has been established, chaired by the Directorate for Nature Management. This Committee of Directorates has been delegated the task of preparing national guidance for the River Basin Districts and ensuring administrative co-operation across sectors. It also organises the annual National Water Environment Conference and the national web-site Vannportalen. The Committee includes 12 central government agencies. The Committee of Directorates also has a National Reference Group allowing for the participation of national industry associations, NGOs and civil society representatives.

## 4. CHARACTERISATION OF RIVER BASIN DISTRICTS

### 4.1 Water categories in the RBD

Each of the eleven RBDs in Norway has rivers, lakes and coastal waters but no transitional waters have been defined. No reasons are given in the Pilot RBMPs or supplementary guidance for not delineating transitional water bodies. This should be justified and explained in future RBMPs.

### 4.2 Typology of surface waters

A report referred to in the characterisation guidelines states that “This report presents the revised typology for Norwegian lakes and rivers, after further statistical analysis of the type-specific flora and fauna in water bodies assumed to be in reference conditions”. This suggests that the typology for rivers and lakes has been **tested against biological data**. No other relevant information was found in the Pilot RBMPs. The classification guidance indicates that “type parameters and categories for each parameter are selected partly on the basis of Annex II of the Directive and partly from the multivariate analysis of biological data on the different natural environmental gradients”. On this basis it is assumed that coastal waters are also tested against biological data. **Reference conditions** were developed based on a spatially based method using existing data, and are described for all water types and quality elements apart from benthic invertebrates in rivers, and fish in rivers and lakes.

RBD	Rivers	Lakes	Transitional	Coastal
NO	27	21	-	23

*Table 4.2.1: Surface water body types*

*Source: Draft RBMPs*

For rivers and lakes, 27 and 21 types were defined<sup>4</sup> respectively, based on information such as geology and size. For Coastal waters, 23 types were defined<sup>5</sup> based on factors including salinity, mixing characteristics and ecological region. The reference conditions have been developed through a Nordic effort that has been adapted further for Norwegian conditions.

### 4.3 Delineation of surface water bodies

Small water bodies (smaller than the size criteria in Annex II) have been included in the Pilot RBMPs. A minimum size threshold has been set for each category of surface water: a catchment area of 10 km<sup>2</sup> for rivers (WFD criterion) and a surface area of 0.5 km<sup>2</sup> for lakes (WFD criterion) and coastal waters.

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<sup>4</sup> Revised typology for Norwegian rivers and lakes (in Norwegian). Report LNR 4888-2004. [http://www.klif.no/arbeidsomr/vann/vanndirektiv/publikasjoner/typologi\\_innsjoer\\_elver.pdf](http://www.klif.no/arbeidsomr/vann/vanndirektiv/publikasjoner/typologi_innsjoer_elver.pdf)

<sup>5</sup> Typology of Norwegian marine water bodies. System to describe natural ecological status. Proposed reference network (in Norwegian). Report LNR 4731-2003. <http://www.klif.no/arbeidsomr/vann/vanndirektiv/publikasjoner/marintypologiveileder.pdf>

RBD	Surface Area of Catchment (km <sup>2</sup> )	Rivers		Lakes		Transitional Water Bodies		Coastal Water Bodies		Groundwater Bodies	
		Number	Total Length (km)	Number	Total Area (km <sup>2</sup> )	Number	Total Area (km <sup>2</sup> )	Number	Total Area (km <sup>2</sup> )	Number	Total Area (km <sup>2</sup> )
NO1101	25,441	1120	23,598	394	396	N/A	N/A	235	6989	116	295
NO1102	47,229	2203	64,215	742	1340	N/A	N/A	351	16,241	182	705
NO1103	68,291	1422	58,542	661	1519	N/A	N/A	532	31,691	157	266
NO1104	36,549	763	34,020	269	525	N/A	N/A	160	11,565	67	328
NO1105	64,382	1312	56,773	789	1127	N/A	N/A	204	15,518	136	754
NO5101	47,683	1490	55,563	518	1614	N/A	N/A	38	1708	241	1526
NO5102	39,002	2287	54,230	747	1976	N/A	N/A	76	852	155	372
NO5103	21,048	1380	32,218	521	1101	N/A	N/A	160	1619	42	99
NO5104	12,722	670	59,631	324	413	N/A	N/A	124	3001	40	128
NO5105	18,440	1048	24,306	536	434	N/A	N/A	142	4226	42	77
NO5106	23,771	1359	25,537	461	669	N/A	N/A	129	4977	59	139
<i>Total</i>	<i>404,558</i>	<i>15,054</i>	<i>488,633</i>	<i>5962</i>	<i>11,114</i>	<i>N/A</i>	<i>N/A</i>	<i>2151</i>	<i>98,387</i>	<i>1237</i>	<i>4689</i>
NOFIHA5	28	0	0	2	0.8	N/A	N/A	0	0	0	0
NOFIHA6	181	4	1.1	1	0.9	N/A	N/A	0	0	0	0
NOSE1	975	87	1125	66	255	N/A	N/A	0	0	1	0.2
NOSE1TO	203	21	164	5	3.6	N/A	N/A	0	0	0	0
NOSE2	4688	247	8200	55	127	N/A	N/A	0	0	13	54
NOSE5	7436	317	8119	107	464	N/A	N/A	0	0	24	166

**Table 4.3.1:** Surface water bodies, groundwater bodies and their dimensions  
Source: Draft RBMPs

#### 4.4 Identification of significant pressures and impacts

All Norwegian Pilot RBMPs follow the same outline and national approach, see Guidelines for characterisation of water bodies<sup>6</sup>. This national guidance document outlines the method for analysing the pressures on water bodies. This analysis, with any information on the state of water bodies, is used in the risk assessment described in the national guidance. An overview of the main pressure types and activities potentially affecting water bodies is also provided in the national guidance document. No criteria are given that are used to identify significant pressures. However, criteria are provided for the identification of water bodies at risk of not achieving WFD objectives by 2015/2021. Many of these are qualitative, some are more quantitative, and others are based on degraded quality of the water body based on existing national classification systems.

The most significant pressures identified are summarised in each Pilot RBMP and include e.g. sewage treatment, landfills, agriculture, forestry, fish farms, hydropower, mines and atmospheric deposition of pollutants from other countries. Biological impact factors such as Gyrodactylus salaris infections, escaped farmed fish and alien species are also mentioned as important pressures in some Pilot RBMPs but the Royal Decree clearly states that biological impact factors should not be included for coastal waters in the Pilot RBMPs or PoM. The reason for this decision is unclear. Future RBMPs must encompass all significant pressures, including biological impact factors in coastal waters.

**Point source and diffuse source pressures** are assessed by a combination of spatially based methods and expert judgement, but no thresholds are given. Only **water abstraction** for public water supply is considered.

In terms of **hydromorphological pressures**, reference is made to the (numeric) criteria used for the identification of heavily modified water bodies. The revised national Guidelines on characterization<sup>7</sup> have a section on the impacts and effects on the aquatic environment and the steps of the impact analysis are listed. The first step is to identify potential impacts on ecological and chemical status in the water body. Each factor potentially affecting the water body is ranked as unknown, insignificant, small, medium, large or very large. The impact can be assessed on the basis of monitoring, research, predicted effect, professional judgment or on other grounds. Guiding criteria is tabulated for the assessment of risk in surface waters for use when there is a lack of biological data from the effected water bodies.

The sectors listed as contributing significantly to **chemical pollution** include: industrial emissions (directs and indirect discharges), households (including through sewage treatment plants), atmospheric deposition (long range transported pollutants), transport network, contaminated land and mines.

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<sup>6</sup> Method for characterisation of water bodies in Norway (in Norwegian). Version 1.0 (13.08.2007)  
[http://www.vannportalen.no/Karakteriseringsveileder\\_juni07\\_2\\_U1d02.pdf.file](http://www.vannportalen.no/Karakteriseringsveileder_juni07_2_U1d02.pdf.file)

<sup>7</sup> Characterisation and analysis. Method for characterisation and risk analysis of water bodies according to WFD §15 (in Norwegian). Guidance 01:2011a.  
[http://www.vannportalen.no/Veileder\\_01\\_2011a\\_Karakterisering\\_og\\_risikovurdering\\_9\\_mai\\_2011\\_Y6z4O.pdf.file](http://www.vannportalen.no/Veileder_01_2011a_Karakterisering_og_risikovurdering_9_mai_2011_Y6z4O.pdf.file)

## **4.5 Protected areas**

All RBDs have protected areas (e.g. for drinking water, national parks, recreation, fish and habitats) but these have only been specified for the sub-region described in the Pilot RBMPs. The level of details provided varies between Pilot RBMPs.

## **5. MONITORING**

### **5.1 Monitoring of surface waters**

The monitoring guidance recommends which quality elements (QEs) should be monitored for operational purposes in relation to pressures in rivers, lakes, and coastal waters. The monitoring guidance indicates that if surveillance monitoring were to be undertaken and reported in the Pilot RBMP all required QEs would have been monitored. But there is no information as to whether surveillance and operational monitoring programmes have yet been implemented systematically across Norway.

There is very little information on monitoring in the Pilot RBMPs but regional and national monitoring seems to be in place for some parameters. There is no information as to whether surveillance and operational monitoring programmes have yet been implemented systematically across Norway. In the areas within RBDs that have been monitored (as test cases) it appears that only operational monitoring of surface waters has been undertaken. This may be because surveillance monitoring is undertaken by national authorities. However, the operational monitoring that has been undertaken appears to be in relation to the identified significant pressures and includes pollutants in sediment, biota and water.

There was only very little biological monitoring data, and it was not clear how BQEs had been selected. It is not clear if all relevant quality elements have been monitored.

No information was found on grouping of water bodies for monitoring.

More detailed information on monitoring programmes should be provided in future RBMPs and it should be made clear what is monitored for surveillance, operational, and investigative purposes, and by whom.

It should be made clear whether all relevant quality elements are being monitored, if reference conditions have been established for all surface water types, and to what degree the assessment of ecological status is based on actual monitoring data.

The various sources of information indicate that delays in the implementation of monitoring plans have resulted in the first generation of management plans and action programmes being based on very little monitoring data, especially biological data. This implies that the status of and risks to water bodies may not have been fully established in relation to the significant pressures, and that not all relevant pressures have been identified. In turn this may mean that measures may not have been correctly and efficiently targeted.

### **5.2 Monitoring of groundwater**

The location of the few groundwater monitoring sites is indicated in the RBMPs but it is not specified whether they are used for surveillance or operational monitoring. It is generally stated that pressures putting GWBs at risk should be included in chemical operational monitoring.

It is not clear how parameters in the operational monitoring programme are chosen to detect the existing pressures.

Norway's groundwater monitoring programme is not implemented in a way to detect significant and sustained upward trends in pollutants in terms of chemical status.

There is very little information on groundwater quantitative monitoring. Water level is mentioned as a monitored parameter.

In the frame of a Nordic cooperation inter-calibration of groundwater monitoring systems and methods for the chemical monitoring of baseline conditions was carried out. There is a map included in the RBMP indicating the monitoring stations established for setting the reference conditions in transboundary groundwater bodies.

### 5.3 Monitoring of protected areas

There are no specific monitoring programmes for surface water drinking water protected areas other than what is usually monitored for drinking water quality. The number of monitoring sites located in protected areas is not reported.

## 6. OVERVIEW OF STATUS (ECOLOGICAL, CHEMICAL, GROUNDWATER)

RBD	High	Good	Moderate	Poor	Bad	Unknown
NO1101	57	1108	450	88	28	18
NO1102	327	1724	784	251	110	99
NO1103	44	688	261	171	45	1405
NO1104	90	212	81	44	14	751
NO1105	30	543	94	25	1	1621
NO5101	211	847	492	177	55	264
NO5102	402	1339	937	205	48	179
NO5103	58	454	966	419	75	89
NO5104	49	368	402	170	46	83
NO5105	32	656	565	315	25	133
NO5106	32	760	993	107	4	53
<i>Total</i>	<i>1459</i>	<i>9180</i>	<i>6000</i>	<i>2094</i>	<i>464</i>	<i>4854</i>

**Table 6.1:** Ecological status/potential of surface water bodies in 2012

*Source: Draft RBMPs*

RBD	Good	Failure to achieve good	Unknown
NO1101	11	25	1713
NO1102	25	16	3265
NO1103	4	6	2605
NO1104	8	9	1181
NO1105	65	16	2224
NO5101	38	11	1997
NO5102	57	18	3035
NO5103	70	35	1956
NO5104	14	18	1086
NO5105	22	5	1699
NO5106	71	5	1873
<i>Total</i>	<i>409</i>	<i>149</i>	<i>23495</i>

**Table 6.2:** Chemical status of surface water bodies in 2012  
**Source:** Draft RBMPs

RBD	Good quantitative	Poor quantitative	Unknown quantitative	Good chemical	Poor chemical	Unknown chemical
NO1101	7	0	0	0	0	116
NO1102	61	0	0	0	0	182
NO1103	69	0	0	0	0	157
NO1104	0	0	67	0	0	67
NO1105	0	0	136	0	0	136
NO5101	32	0	0	1	0	240
NO5102	2	0	0	0	0	155
NO5103	26	0	0	0	0	42
NO5104	0	0	40	0	0	40
NO5105	1	0	0	0	0	42
NO5106	42	0	0	0	0	59
<i>Total</i>	<i>264</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>1274</i>

**Table 6.3:** Quantitative and chemical status of groundwater bodies in 2012  
**Source:** Draft RBMPs

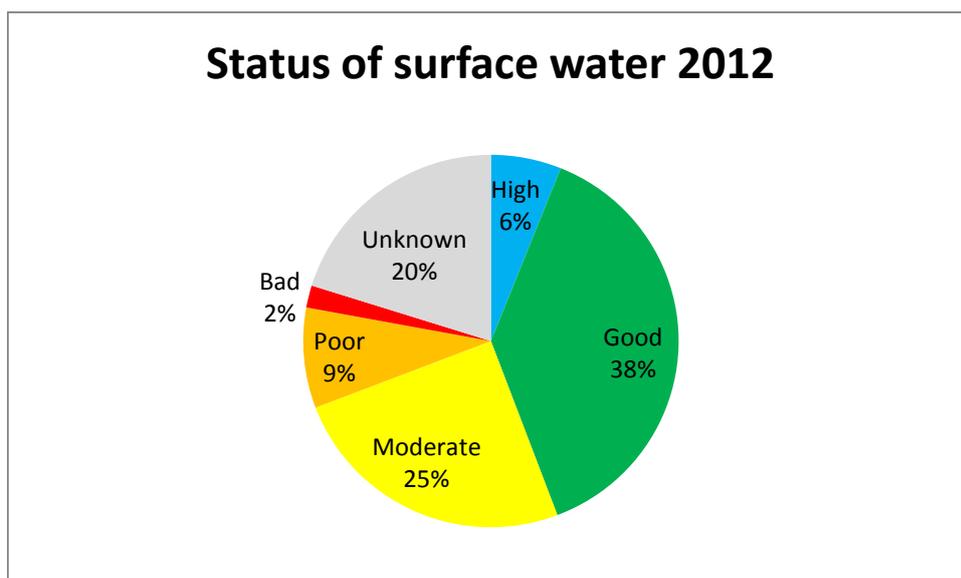
Total number of water bodies	Good or better in 2021	Possibly at risk of not achieving good or better in 2021	At risk of not achieving good or better in 2021	Unknown
24053	12867	2608	8293	285

*Table 6.4: Surface water bodies: overview of expected status in 2021*  
*Source: Draft RBMPs*

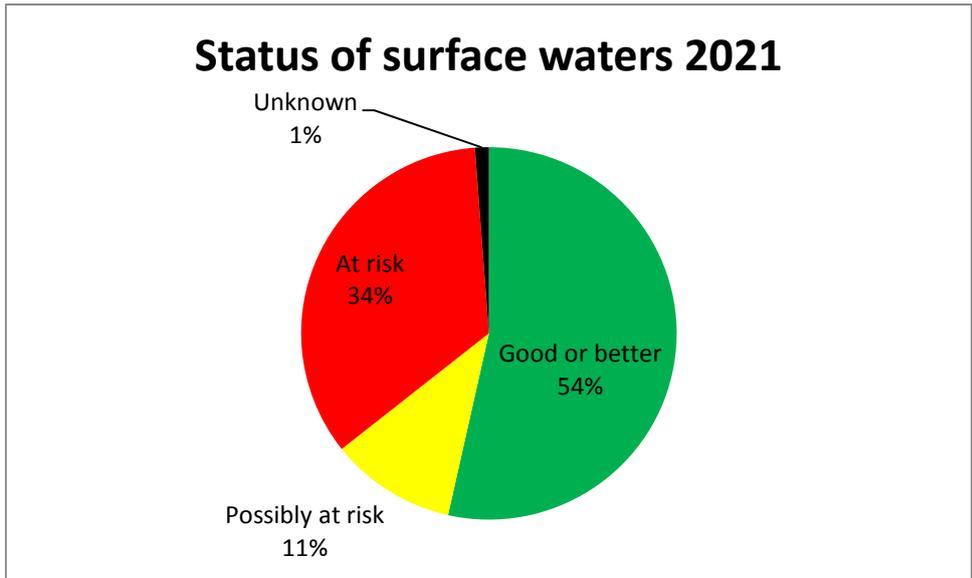
Total number of water bodies	Good or better in 2021	Possibly at risk of not achieving good or better in 2021	At risk of not achieving good or better in 2021	Unknown
1275	760	357	39	119

*Table 6.5: Groundwater bodies: overview of expected status in 2021*  
*Source: Draft RBMPs*

Some of the total values do not match the sum of the individual RBDs. The reason for this is unknown but all of the data in Section 6 has been extracted from vann-nett.no in July 2012 for the individual RBDs and for the whole of Norway.



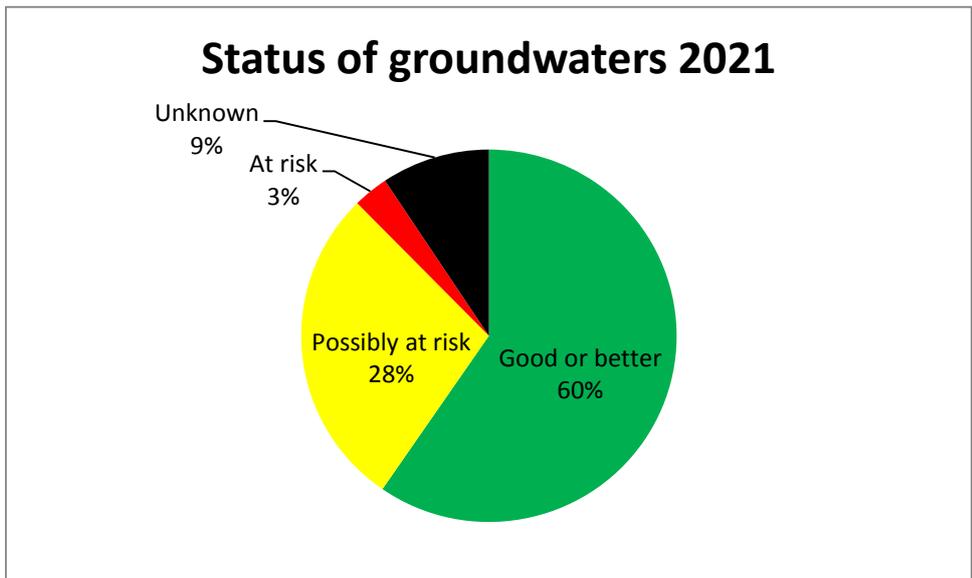
*Figure 6.1: Status of surface waters in 2012*  
*Source: Draft RBMPs*



**Figure 6.2:** Status of surface waters in 2021

Note that “status” of less than good status water bodies has been expressed in terms of risk of not achieving environmental objectives rather than in terms of expected moderate, poor or bad status. The comparison of less than good status in 2012 and 2021 should be treated with caution.

Source: Draft RBMPs



**Figure 6.3:** Status of groundwaters in 2021

Source: Draft RBMPs

## 7. ASSESSMENT OF ECOLOGICAL STATUS OF SURFACE WATERS

### 7.1 Ecological status assessment methods

The assessment of ecological status generally follows a national approach. The assessment methods for classification of ecological status are only partly developed for rivers, lakes and coastal waters for the biological quality elements and only partly developed for the supporting physico-chemical quality elements in rivers and lakes. Assessment methods for coastal waters are reported to require updating to meet WFD requirements. There are methods for supporting hydromorphological quality elements in rivers and coastal waters but none for lakes. At present, there are no complete classification systems for all national water body types in rivers, lakes and coastal waters. Therefore the ecological assessment methods and classification need to be further developed to fully meet the requirements of the WFD.

EU Member States are required to develop national environmental quality standards (EQSs) for significant non-priority specific pollutants. Norway has an 'old' assessment system with EQS values for some national specific pollutants but it was not possible to determine whether this is WFD-compliant. More information on how national EQSs have been derived and applied should be reported in future RBMPs.

No information was found as to whether, or how, water bodies have been grouped for the purposes of monitoring and classification of status. The methodology used to deal with **uncertainty** in classification results is also unclear. More details should be reported on these important aspects in future RBMPs.

The class boundaries for good ecological status (high/good and good/moderate) for the biological quality elements (or their sub-components) are consistent with intercalibrated boundaries given in the Intercalibration Decision. This reflects the active participation of Norway in the relevant CIS Working Groups.

NO	Rivers							Lakes					Transitional						Coastal									
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Physico-Chemical	Hydromorphological	
RBD																												

**Table 7.1.1:** Availability of biological assessment methods  
 Assessment methods fully developed for all BQEs  
 Assessment methods partially developed or under development for all or some BQEs  
 Assessment methods not developed for BQEs, no information provided on the assessment methods, unclear information provided  
 Water category not relevant  
 Source: RBMPs

## **7.2 Application of methods and ecological status results**

How the methods have been applied is unclear from the RBMPs. It is not clear if all relevant quality elements have been used for the ecological status assessment of surveillance monitoring sites, and if the most sensitive biological quality elements have been selected for ecological status assessment for operational monitoring sites.

Status results have been reported as High, Good, Moderate, Poor or Bad but no indications are given of what has caused a less than Good status. There are no indications that river basin specific pollutants are responsible for a less than Good status.

## **8. DESIGNATION OF HEAVILY MODIFIED WATER BODIES (HMWB) AND ASSESSMENT OF GOOD ECOLOGICAL POTENTIAL**

All Norwegian Pilot RBMPs have water bodies that could be identified as Heavily Modified or Artificial but some have only been assigned as candidates and are awaiting final decision.

### **8.1 Designation of HMWBs**

The number of designated or candidate HMWBs has been reported in some Pilot RBMPs but are missing in others. The data available on the national WFD website (vann-nett.no) suggests that information is generally lacking.

The Pilot RBMP states that HMWBs can be designated where the water use is listed as navigation, storage for drinking water supply, storage for power generation, flood protection or impounded by railway. The physical modifications leading to designation may include locks, weirs, dams, reservoirs, channelization, dredging, bank reinforcement, land reclamation, abstraction or intensive land use.

A whole section is available in the national document on "Method for characterisation of water bodies in Norway", but unclear if this is the same method as the Commission's HMWB Guidance N° 4. There is a 4 step process as detailed in the national Guidelines for characterisation. The steps are: Step 1 - A preliminary identification of a HMWB is made based on the criteria set out in the national guidance document and is reported as part of the characterisation. Step 2- The ecological status of the water bodies identified in step 1 is assessed. Water bodies that have an ecological status far from good might be set as candidates for HMWB. This will also form the basis for the analysis of measures. Step 3- The final designation of HMWB is made on further evaluation of the value the modification has to the society and any mitigation measures available. This evaluation should be carried out together with the Pilot RBMP. The designation of HMWB and associated environmental targets should work as guidelines for the authorities. Step 4 - Evaluation by authorities. Increased knowledge and information during the period will clarify if the water body is a HMWB, what the environmental targets should be (to achieve Good Ecological Potential or GEP) and establish suitable measures. Changes will be included in the revised RBMP. Uncertainty in relation to the designation of HWMBs is not discussed in the Pilot RBMP.

The Pilot RBMP does not include details on the test used to identify 'significant adverse effect on use' or the criteria used to define significance. There are also no details on the analysis of alternative options for WFD article 4(3)b.

## **8.2 Methodology for setting good ecological potential**

No information was found on the two key designation tests for HMWB ('significant adverse effects of restoration measures for Good Ecological Status' and 'better environmental options'). Future RBMPs should provide information on the approach used to designate HMWBs on the basis of these tests which are explicit Articles of the WFD.

No information was reported or found in supporting documents on the definition of GEP. Future RBMPs should explain the methodology used to define GEP for those water bodies identified as heavily modified (and artificial).

The EFTA Surveillance Authority has asked Norway to clarify how the pre-existing legal framework will be used or adapted to secure compliance with the environmental ambitions and periodical review foreseen by the WFD for existing hydropower, as regards revision clauses and revision of terms, revision of licensing terms, as well as certain provisions under existing legal instruments.

## **8.3 Results of ecological potential assessment in HMWB and AWB**

This has not been reported.

# **9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS**

## **9.1 Methodological approach to the assessment**

There is no clear evidence whether the EQSs from the Environmental Quality Standards Directive (2008/105/EC) are practically applied in Norway.

## **9.2 Substances causing exceedances**

An overview of information on chemical status and data on priority substances causing failure to achieve good chemical status was not available.

## **9.3 Other issues**

No information was found on the use of mixing zones.

# **10. ASSESSMENT OF GROUNDWATER STATUS**

The assessment of groundwater status is generally lacking, only 1 out of 1275 groundwater bodies (GWBs) has been assigned a chemical status and 264 have been assigned a quantitative status. Groundwater is not used in a large extent in Norway.

## **10.1 Groundwater quantitative status**

There are 4 criteria for quantitative status detailed in the national Guidelines on classification. Good quantitative status is achieved if: 1) the abstraction is not decreasing the water level permanently, 2) the abstraction will not affect the water balance of surface waters associated to groundwater in a negative way, 3) abstraction will not result in saltwater intrusion, and 4) abstraction will not affect groundwater dependent terrestrial ecosystems in a negative way. It is not clear if this has been implemented in the Pilot RBMPs. The definition of 'available

groundwater resource' and the assessment of the balance between abstraction and recharge were not stated. No other information was provided.

## 10.2 Groundwater chemical status

The number of groundwater bodies at risk is reported in the Pilot RBMPs but there was no information reported on the pollutants and indicators of pollution which contribute to this classification (as required in the Groundwater Directive (2006/118/EC) Annex II Part C).

The criteria used in the assessment of chemical status is not clearly explained in the RBMPs.

Needs of surface waters associated to groundwater and groundwater dependent terrestrial ecosystems were not assessed.

The threshold values are based on drinking water standards. Natural background levels of pollution were provided.

There was no information on TV exceedances and on any methodology established concerning acceptable exceedances in the RBMPs.

There was no information provided on transboundary coordination of the threshold values established.

Trend assessments and reversals were not carried out, methodologies were not established.

## 11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

Some Pilot RBMPs have included the areas that would need exemptions, others have not. The water bodies have been divided into "at risk" or "not at risk" of failing good ecological status/potential for rivers, lakes, coastal waters and good water status for groundwater. The status is divided into 5 classes (high, good, moderate, poor and bad) but the assessment has divided the water bodies into "at risk", "possibly at risk" or "not at risk" of failing GES/GEP by 2021. Data from vann-nett.no, July 2012.

Total number of water bodies	Good or better in 2021	Possibly at risk of not achieving good or better in 2021	At risk of not achieving good or better in 2021	Unknown
4053	12867	2608	8293	285

*Table 11.1: Status of surface waters in 2021*

*Source: www.Vann-nett.no*

Total number of water bodies	Good or better in 2021	Possibly at risk of not achieving good or better in 2021	At risk of not achieving good or better in 2021	Unknown
1275	760	357	39	119

*Table 11.2: Status of surface waters in 2021*

*Source: www.Vann-nett.no*

### **11.1 Additional objectives in protected areas**

The protected areas found in Norway include e.g. drinking water protected areas, recreation areas, national parks and habitats. No clearly defined additional objectives have been set for any of these.

### **11.2 Exemptions according to Article 4(4), 4(5), 4(6), 4(7) and Article 6 Groundwater Directive**

No exemptions are applied under any of these Articles or Directive.

## **12. PROGRAMMES OF MEASURES**

According to Annex VII of the WFD, the RBMPs should contain a summary of the programmes of measures (PoM), including the ways in which Member States expect to achieve the objectives of WFD Article 4. The programmes should have been established by 2009, but are required to become operational only by December 2012 (this date is different for Norway). The assessment in this section is based on the PoM as summarised by the Member State in its RBMP, and the compliance of this with the requirements of Article 11 and Annex VII of the WFD.

It therefore does not include a comprehensive assessment of compliance with the requirements of Article 11(3)<sup>8</sup> on basic measures. It focuses in particular on key sets of measures. Member States will report to the Commission by December 2012 on the full implementation of their PoMs, including on the progress on the implementation of basic measures as required by Article 11(3). The Commission will assess what Member States report and will publish its assessment in accordance with Article 18 WFD. The Commission may together with the EFTA Surveillance Authority consider also assessing Norway accordingly.

### **12.1 Programme of measures – general**

The international co-ordination aspects regarding the development of the Programme of Measures should be included in future RBMPs. If no measures are needed then this should also be reported.

The costs for implementing the Programme of Measures should be included and, if possible, allocated between basic and supplementary measures (a good indication of the costs for the implementation of other directives and the WFD), sectors, water categories etc. The financial commitment or lack of commitment should be made explicit in future RBMPs. The Royal Decree states that the approval of (Pilot) RBMPs cannot set guidelines for the Government and Parliament's priorities in future state budgets.

In addition, the link between status assessment, objective setting and the need for improvement (i.e. 'amount' and type of measure) should be clarified.

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<sup>8</sup> These are the minimum requirements to be complied with and include the measures required under other Community legislation as well as measures to achieve the requirements of other WFD Articles and to ensure appropriate controls on different activities affecting water management.

A clear timetable for the implementation of the measures should be included as well as a clear legal statement on how measures are implemented and whether they are voluntary or mandatory.

## **12.2 Measures related to agriculture**

A number of general measures are listed e.g. general reduction in the use of N and P fertilisers, using optimum amount of fertiliser, use of better fertiliser spreading techniques, limitation and optimisation of manure use, optimisation of time and method for spreading manure, limitation in the use of bone meal, working the soil during spring only or sowing during autumn to reduce run-off, sowing of grass to prevent erosion, introduction of buffer zones, reducing inflow to reduce erosion, improved drainage, construction of dams/wet lands to enhance sedimentation, improved watering, and expansion of manure storage. Non-technical measures include guidance to tailor environmental plans for individual farmers and improving the storage and spreading of manure.

Farmers' groups were included in the general consultation process, but the Pilot RBMPs do not mention any further consultation with farmers on these measures.

Information should be provided in future RBMPs on how measures in relation to agricultural pressures are implemented, by when and who is paying for them. Similarly for other pressure related measures, in the case of international RBDs, information on the transboundary co-operation for the establishment of measures should be stated in future RBMPs.

Measures	NO1101	NO1102	NO1103	NO1104	NO1105	NO5101	NO5102	NO5103	NO5104	NO5105	NO5106
<b>Technical Measures</b>											
Reduction/modification of fertiliser application	✓	✓	✓			✓	✓	✓	✓	✓	✓
Reduction/modification of pesticide application						✓					
Change to low-input farming (e.g. organic farming practices)											
Hydromorphological measures leading to changes in farming practices	✓										
Measures against soil erosion		✓									
Multi-objective measures (e.g. crop rotation, creation of enhanced buffer zones/wetlands or floodplain management)											
Technical measures for water saving											
<b>Economic Instruments</b>											
Compensation for land cover											
Co-operative agreements											
Water pricing specifications for irrigators											
Nutrient trading											
Fertiliser taxation											
<b>Non-technical Measures</b>											
Additions regarding the implementation and enforcement of existing EU legislation											
Institutional changes											
Codes of agricultural practice											
Farm advice and training						✓					
Raising awareness of farmers											
Measures to increase knowledge for improved decision-making											
Certification schemes											
Zoning (e.g. designating land use based on GIS maps)											
Specific action plans/programmes						✓					
Land use planning											
Technical standards		✓	✓			✓				✓	✓
Specific projects related to agriculture											
Environmental permitting and licensing											

**Table 12.2.1:** Types of WFD measures addressing agricultural pressures, as described in the PoM  
Source: RBMPs

### 12.3 Measures related to hydromorphology

Norway is heavily dependent on hydropower for the generation of electricity and the nationwide hydropower plan is currently being reviewed. No major gaps were identified in the Pilot RBMP on hydromorphological measures. However, it would be useful to provide information on the linkages between all planned hydromorphological measures and their

expected effects on quality elements, particularly on biological quality elements (if information is available), and on the hydromorphological parameters.

Measures	NO1101	NO1102	NO1103	NO1104	NO1105	NO5101	NO5102	NO5103	NO5104	NO5105	NO5106
Fish Ladders			✓			✓					
Bypass Channels						✓					
Habitat Restoration, building spawning and breeding areas			✓		✓	✓	✓			✓	✓
Sediment/debris management											
Removal of structures: weirs, barriers, bank reinforcement						✓					
Reconnection of meander bends or side arms			✓		✓	✓	✓	✓	✓	✓	✓
Lowering of river banks											
Restoration of bank structure			✓			✓					
Setting minimum ecological flow requirements						✓	✓	✓	✓		
Operational modifications for hydropeaking											
Inundation of flood plains											
Construction of retention basins								✓	✓		
Reduction or modification of dredging											
Restoration of degraded bed structure											
Remeandering of formerly straightened watercourses					✓	✓				✓	✓
Other											

**Table 12.3.1:** Types of WFD measures addressing hydromorphological pressures, as described in the PoM  
**Source:** RBMPs

#### 12.4 Measures related to groundwater

Groundwater is not used to a large extent in Norway and there is currently a lack of information on groundwater status.

Groundwater quantitative status is not considered an issue therefore no measures have been established.

Measures have been established to prevent and limit groundwater pollution, like assessing underground oil storage, installing oil removal systems, measures in adjacent water bodies, control of contaminated land, handling of hazardous waste.

In case of international RBDs information on the transboundary co-operation for the establishment of measures was not provided in the RBMPs.

#### 12.5 Measures related to chemical pollution

It should be made clear in future RBMPs if there are specific priority substances or RBD-specific non-priority pollutants (including physico-chemical determinands) causing failure to achieve good chemical status and good ecological status, respectively. These should be clearly named with information provided on the number of water bodies affected.

The measures being implemented should be provided with details of whether they are targeted to specific substances in order to reduce and/or phase out their emissions, use or production.

## **12.6 Measures related to Article 9 (water pricing policies)**

The Royal Decree acknowledges that the economic analysis is weak and states that this is partly due to the lack of national guidelines and tools. The Government will develop national tools. The reporting of the economic requirements of the WFD in future RBMPs could be significantly improved in a number of ways.

A full economic analysis should be conducted according to Article 5 and Annex III of the WFD (CIS Guidance Document 1 (WATECO)) provides more information on how to undertake the economic analysis. Full consideration should also be given to the requirements of Article 9 of the WFD.

Water uses and water services should be clearly and practically defined according to Articles 2 (38) and 2 (39) of the WFD, making it clear whether additional activities beyond water supply and wastewater collection and treatment qualify as water services.

Cost recovery rates should be calculated for all water services identified. Financial as well as environmental and resource costs should be included in this calculation. The financial costs considered should be clearly stated. The issues of cross-subsidies and subsidies need to be taken into account.

The extent to which different water users contribute to covering the costs of a specific water service should be described.

The future RBMPs should explain or analyse how far and how the overall objectives of Article 9 are reached ('adequate contributions of different water users to recovery of costs of water services'; water pricing policies that provide 'adequate incentives' for efficient water use; taking into account the 'polluter-pays principle' in the recovery of costs of water services). If the objectives are not reached, then the activities or measures that need to be taken in order to reach these objectives should be defined.

The flexibility of using Article 9.4 should be established and/or whether 'the social and/or environmental and/or economic effects of the recovery as well as the geographic and/or climatic conditions of the region or regions affected' (Article 9 (1)) have been taken into account.

In the case of international RBDs, and with regard to the above issues, information should be provided in future RBMPs on co-operation with neighbouring countries in order to reach a coherent implementation of Article 9.

## **12.7 Additional measures in protected areas**

Very little (if any) information is provided in the Pilot RBMPs on the use of additional measures if necessary in Protected Areas (Annex VII (7.1)), particularly in terms of Drinking Water Protected Areas. It should be possible to identify whether measures taken for the general improvement of water bodies are sufficient for obtaining the more stringent objectives in Protected Areas, or whether additional measures are needed. This should be addressed in future RBMPs with links made to the water bodies needing improvement. It is likely that local councils already have plans and measures in place but these should be clearly referred to.

## **13. WATER SCARCITY AND DROUGHTS, FLOOD RISK MANAGEMENT AND CLIMATE CHANGE ADAPTATION**

### **13.1 Water Scarcity and Droughts**

In the case of Norway, it seems that water scarcity and droughts are not relevant at the present time or, perhaps, in the future for some RBDs. Nonetheless, the future RBMPs should be transparent and include reliable data on water quantity, including availability, usage and consumption.

In the southern parts of Sweden and Finland, summer droughts are reported as an increasingly relevant issue in order to satisfy water demands, and a similar situation might be the case in southern areas of Norway. If this is the case, an analysis of water quantity should be carried out and reported in future RBMPs, considering current data and forecasts (such as, climate change effects on rainfall). This aspect might be more or less relevant, depending on geographical location, water availability and storage capacity (natural and artificial).

### **13.2 Flood Risk Management**

Floods are mentioned in a number of places in the Pilot RBMPs in connection to climate change and changing weather patterns with wetter conditions and more intense rainfall. Flooding is also listed as a pressure related to hydromorphological measures.

### **13.3 Adaptation to Climate Change**

Climate change is briefly included in the Pilot RBMPs and the on-going work on adaptation to climate change in national level is referred to in some Pilot RBMPs.

The RBMP lists the parameters that could possibly be affected by climate change. The likely effects of climate change in the next 5-12 years are considered minor.

Climate check of the PoMs was not carried out. No specific measures to tackle the impact of climate change were included in the RBMPs.

## **14. RECOMMENDATIONS**

Following the steps of river basin planning as set out in the WFD should ensure that water management is based on a better understanding of the main risks and pressures in a river basin and as a result, interventions are cost effective and ensure the long term sustainable supply of water for people, business and nature.

To deliver successful water management requires linking these different steps. Information on **pressures** and risks should feed into the development of **monitoring programmes**, information from the monitoring programmes and the **economic analysis** should lead to the identification of **cost effective programmes of measures** and justifications for exemptions. **Transparency** on this whole process within a clear governance structure will encourage **public participation** in both the development and delivery of necessary measures to deliver sustainable water management.

As such it is recommended that :

- There is very little information on monitoring in the Pilot RBMPs. In the areas within RBDs that have been monitored (as test cases) it appears that only operational

monitoring of surface waters has been undertaken. Steps should be taken to ensure that both surveillance and operational monitoring of all required quality elements, as well as establishment of all necessary reference conditions are in place for the 2015 RBMPs.

- At present, there are no complete classification systems for all national water body types in rivers, lakes and coastal waters. Therefore the ecological assessment methods and classification need to be further developed to fully meet the requirements of the WFD by 2015. More details on grouping of water bodies for monitoring and classification, as well as the methodology applied to deal with uncertainty in the classification should be reported in future RBMPs.
- The identification of river basin specific pollutants needs to be more transparent, with clear information on how pollutants were selected, how and where they were monitored, the derivation of the national EQS, the location of exceedances and how such exceedances have been taken into account in the assessment of ecological status. It is important that there is an ambitious approach to combatting chemical pollution and that adequate measures are put in place.
- There is no clear evidence regarding whether the EQSs from the Environmental Quality Standards Directive (2008/105/EC) have been applied in Norway. An overview of information on chemical status and data on priority substances causing failure to achieve good chemical status was not available in the Pilot RBMPs. Norway should ensure that the future RBMPs contain the required information on chemical status of water bodies, as well as information on the use of mixing zones. In addition to applying the biota EQS in the EQSD for mercury, hexachlorobenzene and hexachlorobutadiene, Norway should ensure that its monitoring in biota and sediment covers the priority substances for which trend monitoring is required according to EQSD Article 3(3).
- Appropriate groundwater monitoring should be established in accordance with WFD requirements to assess groundwater status and to detect pollution trends. WFD compliant methods to assess groundwater quantitative and chemical status and pollution trends should be established. Established measures should be based on those assessments.
- Norway is a major hydropower producer, but no clear information is provided in the Pilot RBMPs on the water bodies which are classified as Heavily Modified Water Bodies (HMWB). For the future RBMPs, it will be necessary to include a comprehensive explanation of the approach used for HMWB designation, as well as the methodology used for definition of GEP.
- Even though several new modifications are planned in Norwegian Water Bodies, the Pilot RBMPs do not apply the use of the WFD Article 4.7. For future RBMPs the use of Article 4.7 in case of new modifications or activities must be demonstrated in compliance with the WFD requirements.
- Biological impact factors such as *Gyrodactylus salaris* infections, escaped farmed fish and alien species are mentioned as important pressures in some Pilot RBMPs, but the Royal Decree clearly states that biological impact factors should not be included for coastal waters in the Pilot RBMPs or PoM. The reason for this decision is unclear. Future RBMPs must encompass all significant pressures, including biological impact factors in coastal waters.

- The costs for implementing the Programme of Measures should be included and, if possible, allocated between basic and supplementary measures (a good indication of the costs for the implementation of other directives and the WFD), sectors, water categories etc. The financial commitment or lack of commitment should be made explicit in future RBMPs.
- Norway shares several River Basins with neighbouring Finland and Sweden. Some co-ordination has been in place for the Pilot RBMPs, but full compliance with the WFD requirements concerning IRBDs was not achieved. The 3 large River Basins Tana, Neiden and Pasvik that are shared with Finland should be of special concern due to their significant size. Efforts should be put into ensuring the correct and mutual management of IRBDs for future RBMPs.
- Norway should demonstrate how climate change projections have informed assessments of WFD pressures and impacts; how monitoring programmes are configured to detect climate change impacts; and how selected measures are robust to cope with projected climate conditions.

Other issues for improvement in future RBMPs:

- The economic analysis in the Pilot RBMPs is weak, partly due to the lack of national guidelines and tools. The reporting of the economic requirements of the WFD in future RBMPs could be significantly improved in a number of ways, including a full economic analysis according to Article 5 and Annex III, as well as of the WFD (CIS giving full consideration to the requirements of Article 9 of the WFD).
- Each of the eleven RBDs in Norway has rivers, lakes and coastal waters but no transitional waters have been defined. No reasons are given in the Pilot RBMPs or supplementary guidance for not delineating transitional water bodies. This should be justified and explained in future RBMPs.
- Information should be included on Strategic Environmental Assessment. This is missing from the Pilot RBMPs but is an important tool for 'advising' the PoMs.
- There would be advantages if the RBMPs included details of the consultation process and, in particular, the impacts of consultation on the measures or other elements of the plan. Some of the Pilot RBMPs include part of this information but further information could be included in annexes to the Pilot RBMPs.