

The Environmental Management System of Norway

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1 Introduction

The aim of this article is to introduce the environmental management system of Norway. Various aspects of the system are presented: The governmental and the local management, non-governmental organizations, legislation with focus on the Pollution Control Act [3], and the implementation of this Act.

Norway is located in the northern part of Europe, see Figure 1. The country is rich of natural resources, especially electrical hydropower from tamed waterfalls, oil and gas from the North Sea, and fish along the coastline and in the North Sea and the Barents Sea.



Figure 1: Norway is located in the northern part of Europe. (Permitted modification of the World map by United Nations Geospatial Information Section.)

Table 1 shows various data comparing Norway with a few other countries and parts of the world.

Table 1: Some demographic data [5, 6].

Notes: a: [8]. b: [9]. c: [7].

	Norway	China	EU	USA	World
Population [1000]	5 108	1 364 270	507 417	309 326	7 265 800
Land area [km ²]	323 787	9 596 961	4 324 782	9 833 517	136 162 000
Population density [per km ²]	16	142	116	31	53
GHG per capita [tonnes CO ₂ eq.]	11	3	9 ^a	22	7 ^b

Energy consumption per capita [kg oil eq.]	5 685	1 431	2174 ^a	6 486	1 898 ^c
Electricity production from renewable energy sources [%]	96	18	28 ^a	9	22 ^a

Comments to Table 1:

- Norway has a relatively high GHG per capita, on the level of EU (Norway is not a member of the EU).
- Norway has a relatively high energy consumption per capita, which probably is due to the relatively high standard of living (data of which is not shown here).
- The very high percentage of electricity production from renewable energy sources in Norway is due to using hydropower for electricity production.

The last decades, in Norway, there has been an ever increasing focus on environmental and pollution issues. The Pollution Control Act made effective in 1983 [3] is an important tool for reduction and control of pollution from industry etc. Figure 2 illustrates the improvements obtained. The figure shows emissions at the Yara (previously Norsk Hydro) industrial plant on the Herøya island, Porsgrunn, Norway over the years. The plant comprises several factories, the largest being the chemical fertilizer factory. According to Mr. Knut Rutlin, director of Health, Environment and Safety (HSE) at Yara, “the environmental improvements shown are achieved through a combination of process improvement, awareness and environmental policy from plant owners and the authorities”.



Herøya year 1929



Herøya year 1977



Herøya today

Figure 2: Emissions at the Yara (previously Norsk Hydro) industrial plant on the Herøya island, Porsgrunn, Norway over the years

2 Organization of the environmental management system of Norway

2.1 Overview

Figure 3 depicts the overall organization of the environmental management system in Norway. The individual subsystems are described briefly in the following. (The descriptions are based on information provided by the pertinent institutions or organizations.)

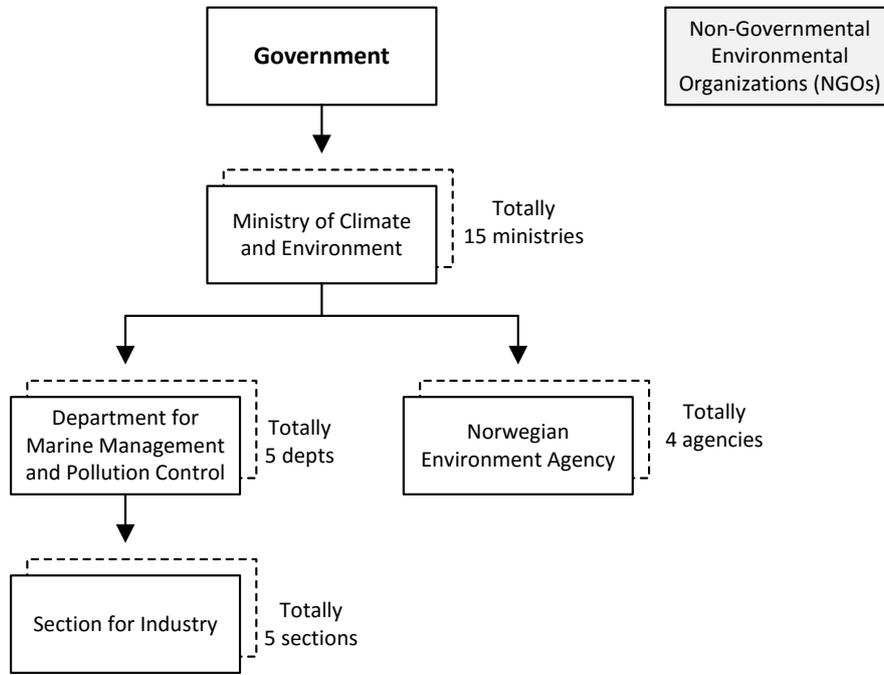


Figure 3: The overall organization of the environmental management system in Norway

2.2 Ministry of Climate and Environment

The Ministry of Climate and Environment has the main responsibility for ensuring integrated governmental climate and environmental policies in Norway.

As environmental challenges are complex and affect all actors in society, developments in the various sectors are largely determined by sectoral policies. In efforts to create sustainable development, environmental considerations need to be integrated into policy making in all areas of society.

In addition to initiating, developing and implementing its own measures and actions, the Ministry also acts as promoter and coordinator to ensure that the authorities in the various sectors implement the environmental policies in their particular areas.

The Ministry has a staff of about 260.

Environmental targets focused by the Ministry are:

- Biodiversity
- Cultural heritage and cultural environment
- Outdoor recreation
- Pollution
- Climate
- Polar areas

In the following overview, the organizational units shown explicitly in Figure 3 are highlighted (in boldface).

The Ministry of Climate and Environment comprises the following *departments*.

- Department for Marine Management and Pollution Control
 - Section for Marine Environment
 - Section for EEA and Trade
 - Section for Polar Affairs and the High North
 - *Section for Industry* (information is provided below)
- Department for Climate Change
- Department for Cultural Heritage Management
- Department for Nature Management
- Department for Organizational Affairs

Section for Industry

Fields of responsibilities of the Section are:

- International cooperation, including EU/EEA.
- Development of national policy, legal and economic policy instruments in the areas of chemicals, waste and long-range air pollution.
- The Norwegian Pollution Control Act and the Norwegian Product Control Act.
- Regulation of emissions and discharges from industry, aquaculture and waste, as well as the environmental impact of radioactive radiation in Norway.
- Environmental technology.
- Follow-up of international fora and international environmental agreements in these fields.

The Ministry of Climate and Environment comprises the following *agencies*:

- *Norwegian Environment Agency* (information provided below)
- The Svalbard Environmental Protection Fund
- The Directorate for Cultural Heritage
- The Norwegian Polar Institute

The Norwegian Environment Agency

The Agency has offices in the cities of Trondheim and Oslo, and more than sixty local offices under the *Norwegian Nature Inspectorate* (more information about the Inspectorate is given below). The Agency has about 700 employees.

The Agency is working for a clean and diverse environment. Its primary tasks are reduction of greenhouse gas emissions, management of Norwegian nature, and prevention of pollution.

The Agency implements and gives advice on the development of climate and environmental policy. We are professionally independent. This means that we act independently in the individual cases that we decide and when we communicate knowledge and information or give advice.

Our principal functions include collating and communicating environmental information, exercising regulatory authority, supervising and guiding regional and local government level, giving professional and technical advice, and participating in international environmental activities.

The Norwegian Nature Inspectorate works to preserve national environmental values and preventing environmental crime by means of inspections, monitoring, information, guidance, and operative management in important natural and cultural heritage areas.

2.3 Environmental Non-Governmental Organizations

Non-Governmental Organizations (NGOs) play an important role in the Norwegian society as independent watchdogs, knowledge centers, and “homes” for committed individuals having common interests. Typically, the financial support of NGOs comprise

- Membership fees
- Gifts and donations
- Governmental funding

There are several environmental NGOs in Norway. The prominent ones are presented briefly in the following.

Bellona

The Bellona Foundation (Bellona) is an independent non-profit organization that says to aim to find sustainable solutions to environmental challenges both nationally and internationally. Bellona was founded in 1986. The number of employees is about 65. Bellona staff serves as experts on climate change issues both in national and international press. Bellona cooperates with a number of companies in different industries and businesses to identify and develop financially profitable, viable solutions to environmental problems.

Bellona lists their focused areas as:

- Nuclear Issues
- Fossil fuels
- Russian human rights issues¹
- Arctic
- Climate change
- Carbon capture
- Renewable energy
- Energy efficiency

Bellona has offices in

- Norway/Oslo (main office)
- Russia/Murmansk
- Russia/St. Petersburg
- EU/Brussels
- USA/Washington D.C.

As one example of how Bellona acts as a watchdog, the NGO recently reported one of the operators on the Norwegian oil and gas field to the police for breaking Section 7 named *Duty to avoid pollution* and Section 78 named *Criminal liability for pollution* of the Norwegian Polluting Control Act, as a consequence of repeated discharge of toxic anti-fire foam from the operator’s platform into the sea. As required by Section 49 named *Duty to provide information* of the Act, the company had already reported the discharges to the the Norwegian Environment Agency (the Agency is presented in Ch. 2.2). The case was still under consideration by the Agency when Bellona, nonetheless, reported it to the police.²

¹ Related to Bellona being an NGO.

² The outcome of the case is not clear as the case is in progress at the moment of writing this article.

Zero

The Zero Emission Resource Organisation (Zero) is an independent, non-profit organization that says it works to limiting man-made climate change and meeting the world's growing energy demand without damaging the environment. Zero claims there is a zero emission solution for all energy demands. Zero was founded in 2002, and has around 30 employees. The backbone of its work is expertise and experience in terms of both the technological and the political aspects of climate change.

The Future in our Hands

The Future in our hands (FIOH) claims it is Norway's largest environmental organization with 24.500 members and 20 local groups. 20 employees are working at the head office in Oslo.

FIOH says it works for a fair distribution of the World's resources, and assumes that the sustainability of nature and the climate is more important than growth of consumption and economy of rich countries. It supports a global redistribution of resources, where the poor improve their living conditions, and the rich reduce their consumption of natural resources. FIOH works to make government and business facilitate environmental-friendly and ethical choices, and to monitor ethical standards on Norwegian foreign investments and Norwegian businesses in developing countries.

Green Warriors of Norway

The Green Warriors of Norway (GW) is an idealistic environmental organization, founded in 1993, with headquarter in Bergen and regional offices in Tromsø and Oslo. The number of members is about 1,500. GW operates mainly on the local level, focusing on environmental issues, and protection of buildings and indigenous peoples.

Friends of the Earth Norway

Founded in 1914, Friends of the Earth Norway (FEN) is the country's oldest environmental and nature protection organization. FEN is based on individual memberships. It has about 20,000 members with about 100 local groups.

FEN says its main goal is to protect nature and the environment so that human activity does not exceed the tolerance limits of the planet. It is concerned with a wide range of issues in environmental and nature conservation, but works specifically with conservation, climate change, energy and transportation.

FEN is a member of Friends of the Earth International which is the world's largest grassroots environmental network with more than 2 million members worldwide.

Nature and Youth

Nature and Youth is the youth organisation of Friends of the Earth Norway consisting of about 90 local groups with a total of about 7700 members up to 25 years of age.

Eco-Agents

Eco-agents is Friends of the Earth Norway's organization for children. The organization says it will create a commitment in children of nature conservation and environmental protection. To these ends, the organization strives to give children, building upon children's general optimism and solution-orientation, a faith in the future and a faith that a changes are possible to obtain.

3 Norway's Pollution Control Act

The Pollution Control Act [3] is a law on protection against pollution and concerning waste, put into force in 1983.

The Act imposes a general ban on polluting emissions, but allows businesses to apply environmental authorities for exemptions. When such licenses are granted, it is common that they are subject to certain conditions. Large parts of the transport sector is exempt from the law.

The Act is implemented by the Ministry of Climate and Environment. Application for discharge permits for businesses must be submitted to the Norwegian Environment Agency, or to the environmental department of the pertinent county (Norway has 20 counties).

In the following, some central sections, *possibly extracted*, of the Act are quoted.

§1 The purpose of the law

The purpose of this Act is to protect the outdoor environment against pollution and to reduce existing pollution, to reduce the quantity of waste and to promote better waste management.

The Act shall ensure that the quality of the environment is satisfactory, so that pollution and waste do not result in damage to human health or adversely affect welfare, or damage the productivity of the natural environment and its capacity for self-renewal.

§6 What is pollution

For the purpose of this Act, pollution means:

- the introduction of solids, liquids or gases to air, water or ground,
- noise and vibrations,
- light and other radiation to the extent decided by the pollution control authority,
- effects on temperature
- which cause or may cause damage or nuisance to the environment.

The term pollution also means anything that may aggravate the damage or nuisance caused by earlier pollution, or that together with environmental impacts such as are mentioned in items 1 to 4 causes or may cause damage or nuisance to the environment.

§7 Duty to avoid pollution

No person may possess, do, or initiate anything that may entail a risk of pollution unless this is lawful pursuant to Sections 8 or 9 or permitted by a decision made pursuant to Section 11.

If there is a danger of pollution contrary to this Act or decisions made pursuant thereto, the person responsible for the pollution shall ensure that measures are taken to prevent such pollution from occurring. If pollution has already occurred, the said person shall ensure that measures are taken to stop or remove the pollution or limit its effects. The person responsible also has a duty to take steps to mitigate any damage or nuisance resulting from the pollution or from measures to counteract it. The duty laid down in this paragraph applies to measures that are in reasonable proportion to the damage and nuisance to be avoided.

§8 Limitations on the duty to avoid pollution

Ordinary pollution from fisheries, agriculture and forestry, etc., housing, holiday homes, offices, business premises or assembly rooms, schools, hotels and warehouses, and the like, temporary construction activity is permitted pursuant to this Act insofar as no special regulations have been

issued pursuant to Section 9. Applications must nevertheless be submitted for permits for discharges of sanitary waste water unless otherwise provided by regulations.

§9 Regulations relating to pollution

The pollution control authority may issue regulations laying down:

1. emission limit values for types of pollution that shall be permitted or laying down that pollution shall be prohibited completely or at certain times,
2. threshold limit values for the occurrence of certain substances, noise, vibrations, light and other radiation in the environment, and the measures that shall be taken if these values are exceeded,
3. how permanent and temporary installations shall be set up and how an enterprise shall be managed to prevent pollution,
4. quality requirements for pollution control equipment and a requirement that such equipment must not be sold without being approved by the pollution control authority,
5. that personnel operating an enterprise that may involve pollution shall have specific qualifications.

The scope of regulations issued pursuant to this Section may be restricted to specific geographical areas.

§11 Special permit for any activity that may cause pollution

The pollution control authority may on application issue a permit for any activity that may lead to pollution.

§13 Duty to send notification and carry out environmental impact assessment for any activity that may involve major pollution problems

Any person that is planning any activity which may involve serious pollution at a new site or significant developments of a new character at a site where there is existing activity shall at an early stage of the planning process send notification to the pollution control authority. The pollution control authority will issue further regulations relating to the duty to send notification.

§14 The environmental impact statement is public

When an environmental impact statement pursuant to Section 13 is available, any person is entitled to examine it at the premises of the person who has a duty to provide notification or the competent pollution control authority. The pollution control authority may decide that parts of the statement shall be made public before the whole statement is available.

§15 Public hearing on an activity that may result in major pollution problems

When an environmental impact statement pursuant to Section 13 is available, the pollution control authority, in cooperation with the applicant, shall hold a public hearing to discuss the possible impact of the activity as regards pollution. The hearing shall be held well before a decision is made regarding the application, and shall be announced locally. At the hearing, the applicant and the pollution control authority shall give an account of the project and its possible impact as regards pollution.

§28 Prohibition against littering

No person may empty, leave, store or transport waste in such a way that it is unsightly or may cause damage or nuisance to the environment. The provision of the first sentence also applies to wrecked ships and aircraft and other similar large objects.

Any person that has contravened the prohibition of the first paragraph shall arrange for the necessary clean-up measures.

§48 The responsibilities of the pollution control authority

The pollution control authority shall be responsible for monitoring the general pollution situation and pollution from individual sources. The pollution control authority shall also be responsible for monitoring waste management.

The pollution control authority shall by means of advice, guidance and information seek to counteract pollution and waste problems and shall ensure compliance with the provisions of this Act and of decisions made pursuant thereto.

§49 Duty to provide information

On orders from the pollution control authority, any person that possesses, does, or initiates anything that may generate pollution or result in waste problems has a duty, notwithstanding any duty of secrecy, to provide the pollution control authority or other public bodies with any information necessary to enable them to carry out their tasks pursuant to this Act.

§50 Right of inspection

The pollution control authority shall be given unimpeded access to property where pollution may occur or has occurred, or which is or may be exposed to pollution, if this is necessary for the exercise of its duties pursuant to this Act. The same applies to any enterprise that has resulted or may result in waste problems.

The pollution control authority may require documents and other material that may be of importance for the exercise of its duties pursuant to the Act to be submitted for its inspection.

Before inspection of an enterprise, the pollution control authority shall contact representatives of the management.

§51 Orders to carry out investigations

The pollution control authority may order any person that possesses, does, or initiates anything that results in or that there is reason to believe may result in pollution to arrange or pay for any investigations or similar measures that may reasonably be required in order to:

- a. determine whether and to what extent the activity results in or may result in pollution,
- b. ascertain the cause of or impact of pollution that has occurred,
- c. ascertain how the pollution is to be combated.

§52 Approval of laboratories and analytical methods

The pollution control authority may by regulations or individual decision lay down that investigations and analyses carried out in accordance with decisions made pursuant to this Act shall be carried out in the way decided by the pollution control authority or must be carried out by a person approved by the pollution control authority.

§52b Internal control

The pollution control authority may issue regulations relating to internal control and internal control systems to ensure compliance with requirements laid down in or pursuant to this Act.

§55 Person liable and basis of liability to pay compensation

The owner of real property, an object, an installation or an enterprise that causes pollution damage is liable to pay compensation pursuant to this chapter regardless of any fault on his part if the owner also operates, uses or occupies the property, etc. Otherwise, such liability rests solely with the person that actually operates, uses or occupies the property, etc, insofar as the damage is not due to matters for which the owner is also liable pursuant to compensation rules otherwise applicable.

§73 Pollution fine in the case of contravention of the Act

To ensure compliance with the provisions of this Act or decisions made pursuant thereto, the pollution control authority may impose a pollution fine payable to the state.

§76 Payment of the costs of measures to deal with pollution and waste problems

The costs, damage or losses incurred by the public authorities may be claimed from the person responsible for the pollution or waste problems.

§78 Criminal liability for pollution

Fines or imprisonment for a term not exceeding three months or both will be imposed on any person that wilfully or through negligence

- a. possesses, does, or initiates anything that may cause pollution contrary to this Act or regulations issued pursuant thereto,
- b. fails to take measures he has a duty to take,
- c. fails to provide notification or to submit a contingency plan pursuant to Section 41,
- d. fails to comply with orders issued by the pollution control authority.

If the contravention has resulted in a risk of great damage or serious nuisance, or there are otherwise especially aggravating circumstances, imprisonment for a term not exceeding two years may be imposed, but for a term not exceeding five years if the contravention resulted in a risk to human life or health.

§79 Criminal liability for unlawful waste management

Fines or imprisonment for a term not exceeding three months or both will be imposed on any person that wilfully or through negligence

- a. discards or empties waste that has been collected, large discarded objects or special waste in such a way that that it may be unsightly or cause damage or nuisance to the environment,
- b. fails to comply with orders to implement measures against waste.

§81 The pollution control authorities

The pollution control authorities are as follows:

- a. at national level: the King, the Ministry and the Norwegian Pollution Control Authority,
- b. at county level: the county municipality and the county governor or the person thereby authorized by the Ministry,
- c. at municipal level: the municipality.

The King will determine which pollution control authority may make decisions pursuant to the Act.

§84 Request to implement measures against significant environmental damage or imminent threat of such

Any person may request the competent authority to take action under Section 7.

The pollution authority is obliged to consider a request put forward by a natural or legal person affected or is expected to be affected by the substantial environmental damage or who have sufficient interest in the matter. The request must be supported by information that substantiates the existence of significant environmental damage in the water or on land or imminent threat of such damage.

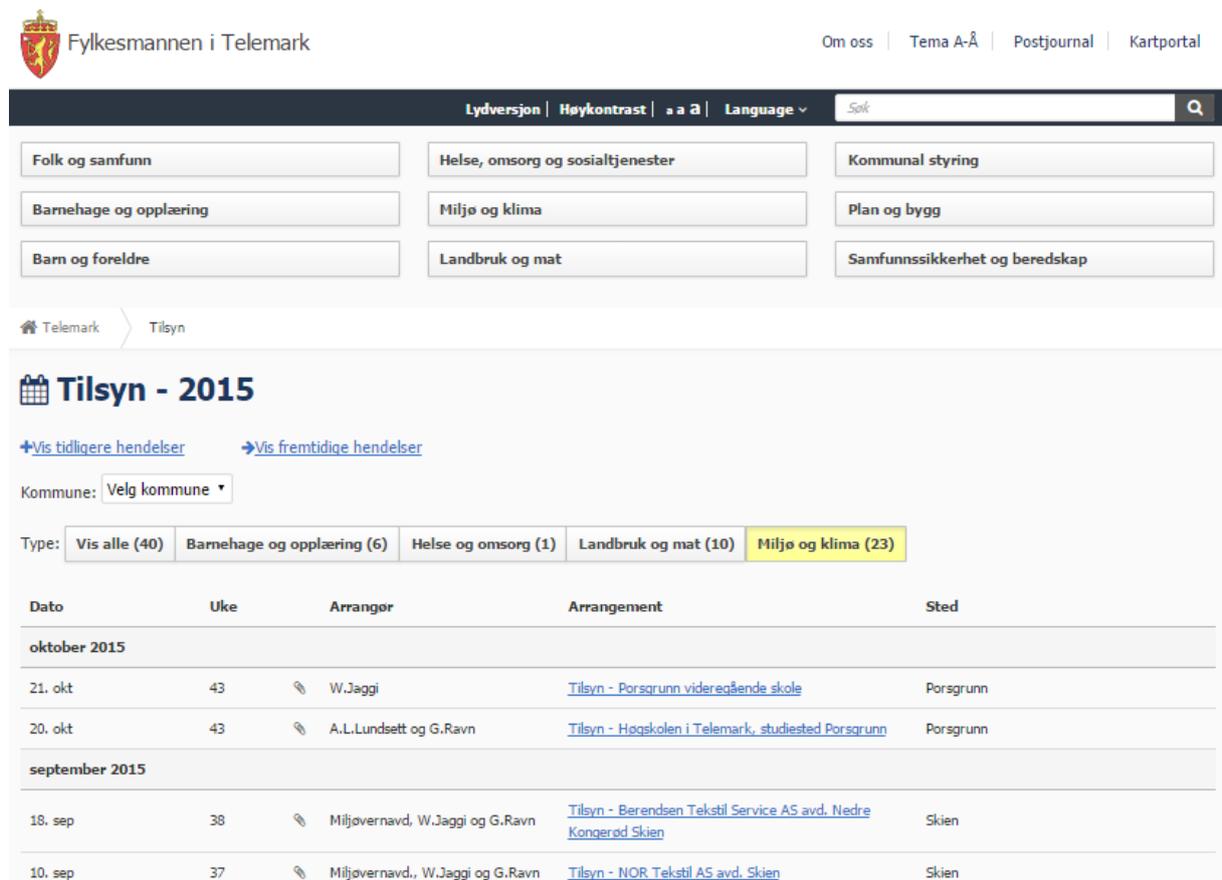
4 Implementations of the Pollution Control Act

The following subsections shows with examples how some important aspects of the Pollution Control Act, cf. Ch. 3, are implemented.

4.1 Inspections

Section 50 in the Act states the pollution control authorities' right of inspection. Below is an example that illustrates how inspections are accomplished by the County Governor which is a pollution control authority at the county level, cf. Section 81 of the Act.

Figure 4 depicts the home page of the Governor of the Telemark County. Note that this home page is fully accessible to the public. Under the menu named "Miljø og klima" (English: Environment and Climate) the page named "Tilsyn" (English: Inspections) appears. Under the latter page, the inspections made by the Environmental Department of the Governor of Telemark County are displayed. In the list, the inspection at the company NOR Tekstil AS is here randomly selected. By clicking the link "Tilsyn - NOR Tekstil AS avd. Skien" the inspection report opens, see Figure 5. The details are not presented here, but the inspection revealed two deviations and two warnings were issued. A deadline was given to the company for reporting the corrections of the deviations and the warnings.



Fylkesmannen i Telemark

Om oss | Tema A-Å | Postjournal | Kartportal

Lydversjon | Høykontrast | a a a | Language

Folk og samfunn | Helse, omsorg og sosialtjenester | Kommunal styring

Barnhage og opplæring | Miljø og klima | Plan og bygg

Barn og foreldre | Landbruk og mat | Samfunnsikkerhet og beredskap

Telemark > Tilsyn

Tilsyn - 2015

[+Vis tidligere hendelser](#) [→Vis fremtidige hendelser](#)

Kommune:

Type:

Dato	Uke	Arrangør	Arrangement	Sted
oktober 2015				
21. okt	43	W.Jaggi	Tilsyn - Porsgrunn videregående skole	Porsgrunn
20. okt	43	A.L.Lundsett og G.Ravn	Tilsyn - Høgskolen i Telemark, studiested Porsgrunn	Porsgrunn
september 2015				
18. sep	38	Miljøvernadv. W.Jaggi og G.Ravn	Tilsyn - Berendsen Tekstil Service AS avd. Nedre Kongerød Skien	Skien
10. sep	37	Miljøvernadv., W.Jaggi og G.Ravn	Tilsyn - NOR Tekstil AS avd. Skien	Skien

Figure 4: A list of inspections made by the Environmental Department of Telemark County "Tilsyn" (Norwegian) means "Inspection" (English).



Fylkesmannen i Telemark

Miljøvernavdelingen
Saksbehandler, innvalgstelefon
Walter Jaggi, 35 58 61 68 / 917 04 250

Kontrollrapport

Kontrollrapport nummer:	2015.012.I.FMTE
Saksnummer:	2015/3477
Dato for kontroll:	10.09.15

Informasjon om kontrollert virksomhet:

Navn:	NOR Tekstil AS avd. Skien	Bedriftsnr.:	971 771 936
		Foretaksnr. (morselskap):	988 023 868
Postadresse:		Telefon / e-post:	970 54 848 / 970 54 849 post@nortekstil.no / tor.lauritzen@nortekstil.no
Besøksadresse:	Nedre Kongerød 29, 3737 Skien	Kommunenr / kommune.:	0806 / Skien
Bransjenr. (NACE-kode):	96.010 Vaskeri- og renserivirksomhet	Anleggsnr.:	0806.0271.01

Tilstede under kontrollen:

Fra virksomheten:	Vidar Grønnevik og Christian Polsrød	Fra Fylkesmannen:	Walter Jaggi og Guri Ravn
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Figure 5: The head of the inspection report by the Environmental Department of the Governor of Telemark County of the company NOR Tekstil. "Kontrollrapport" (Norwegian) means "Inspection Report" (English). "Tilsyn" (Norwegian) means "Inspection" (English).

4.2 Reporting of emission data

Section 49 in the Pollution Control Act states that any person that possesses, does, or initiates anything that may generate pollution or result in waste problems has a duty to provide the pollution control authority or other public bodies with any information necessary to enable them to carry out their tasks pursuant to this Act.

The Norwegian Environment Agency, cf. Figure 2, is a pollution control authority at the national level. The Agency requires that emission data from all Norwegian enterprises having a pollution permit in accordance with the Pollution Control Act reports emission data annually. The Agency has made a written guidance that governs the annual reporting [2]. The reporting shall take place once a year and no later than March 1st via the Altinn web portal at www.altinn.no.

Self-inspection reporting arrangement was established in 1992 for the authorities to keep track of pollution from industry with pollution permit under the Pollution Control Act.

Each company is responsible for any discharge of environmental impacts are reported to authorities. Reporting includes the substances which are specifically regulated in the permit, and emissions of other relevant substances arising from the corporate sector. It is the company's responsibility to keep track of all emissions from the activities and to establish a system to assess what is relevant emissions for reporting to the authorities.

The reporting is structured as follows. Each company must fill in the parts of the report that are relevant to their activities in relation to the requirements set out in the permit.

- Part 1: Preliminary questions
- Part 2: Reporting in relation to specific requirements of the individual discharge permit
- Part 3: Reporting illegal pollution and other discrepancies, ie description of the conditions that differ from requirements of the individual emissions permit, or applicable laws and regulations.

- Part 4: Reporting of total annual emissions and waste volumes throughout the enterprise, ie emissions figures per year of selected individual substances and wastes.
- Part 5: Reporting in relation to requirements for preparedness.

If the discharge last year significantly increased or decreased relative to normal, due to new raw materials, changes in production or like, the undertaking should provide information in the pertinent comment field even if emissions are within allowable emission limits.

Undertakings shall keep the results of all measurements taken at least 3 years (continuous measurement/sampling), so that these are available at any checks from competent authority. For continuous measurements, average values per hour are sufficient.

4.3 Monitoring pollutants and environment

Section 48 of the Pollution Control Act states that the pollution control authority is responsible for monitoring the general pollution situation and pollution from individual sources. The pollution control authority is also responsible for monitoring waste management.

The Norwegian Environment Agency, which is a pollution control authority at the national level, provides various monitoring facilities, including a Pollutant Release and Transfer Register (PRTR) [4]. Figure 5 shows the front page of the PRTR web site.

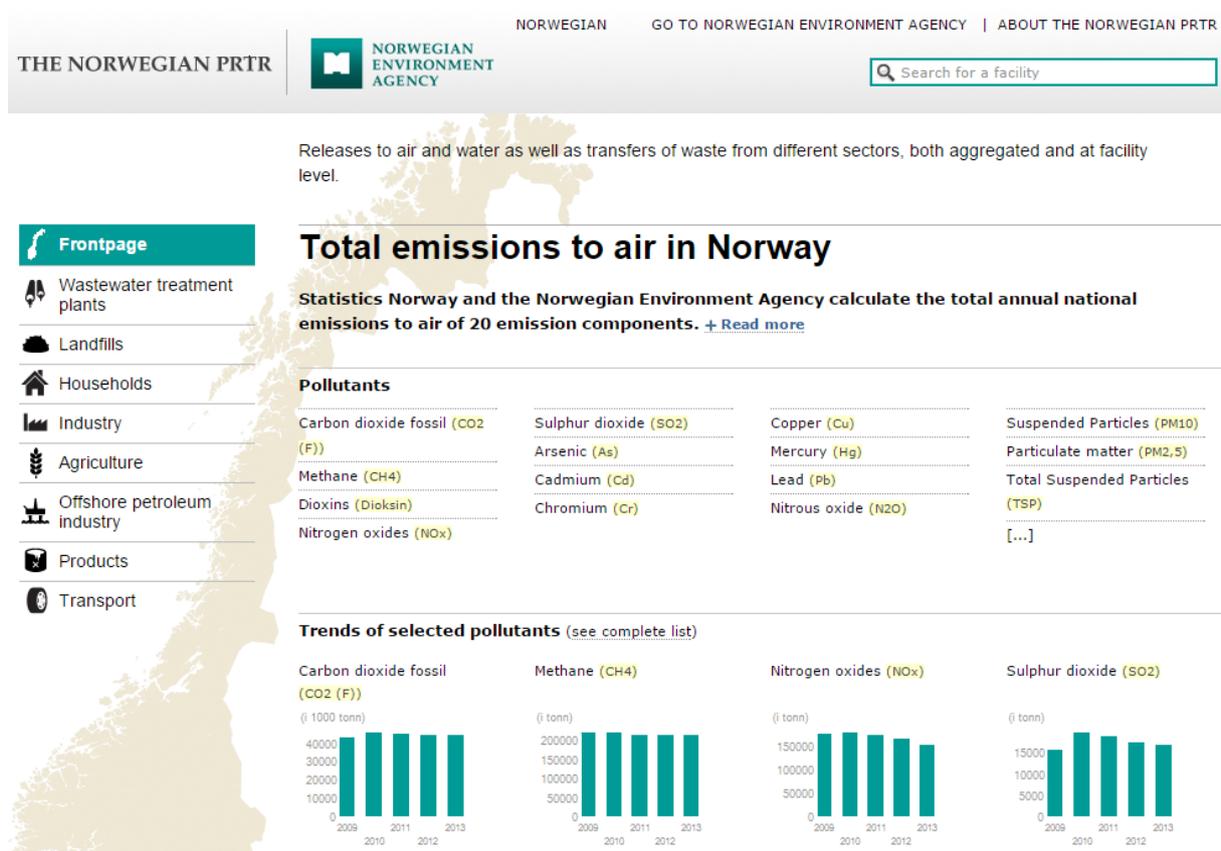


Figure 5: The front page of the web site of the Pollutant Release and Transfer Register (PRTR) provided by the Norwegian Environment Agency [4]

The Agency provides broad information on the environment in Norway via the web site environment.no, see Figure 6 [1].

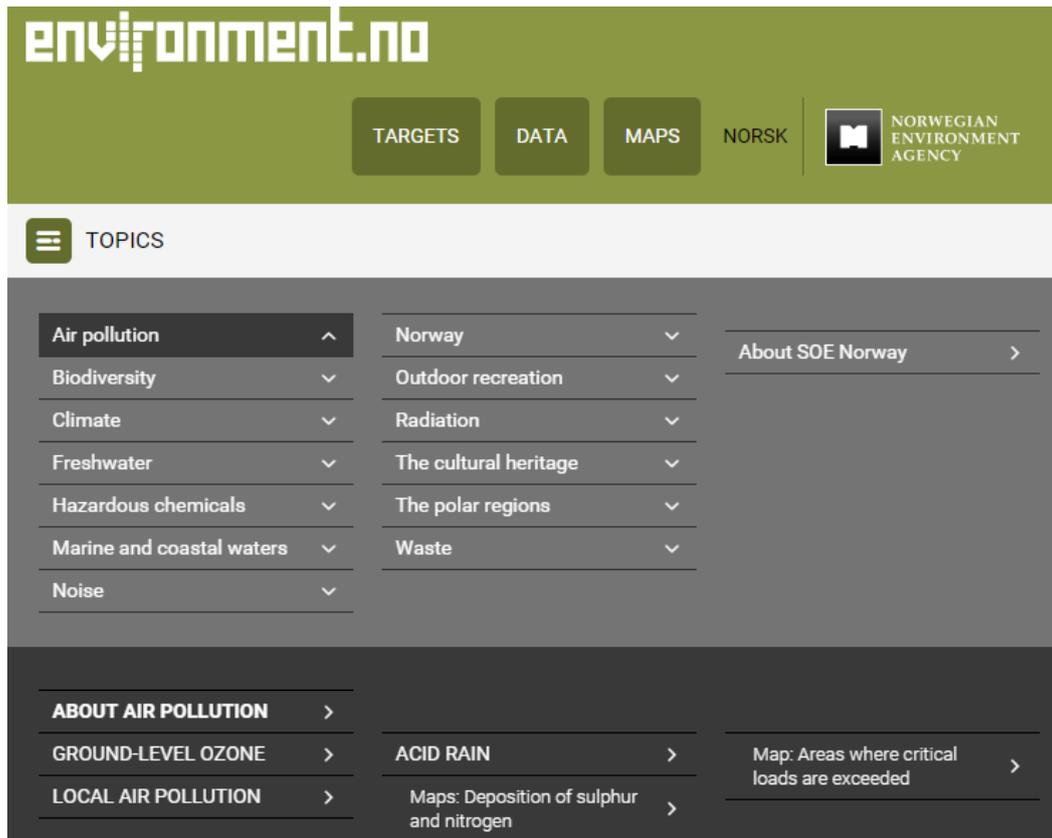


Figure 6: Broad information on the environment in Norway is available at the web site environment.no provided by the Norwegian Environment Agency [1]

5 Conclusion

In Norway, environmental protection and pollution control benefit from:

- *Legislation* that clearly state duties and responsibilities to prevent pollution and protect the environment.
- *Publicity and transparency* of pollution and environmental status based on self-reporting by industry and inspections by authorities.
- *Non-governmental organizations* serving as watchdogs of the industry and state authorities, expertise centers, and homes for committed individuals.

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