

# **NILU's Environmental Management Report**

2018

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<b>NILU report 9/2019</b>	ISBN: 978-82-425-2973-2 ISSN: 2464-3327	CLASSIFICATION * A - Åpen
DATE 14.05.2019	SIGNATURE OF RESPONSIBLE PERSON Ole-Anders Braathen, Deputy Director (sign.)	NUMBER OF PAGES 11
TITLE NILU's Environmental Management Report - 2018	PROJECT LEADER Ole-Anders Braathen	NILU PROJECT NO A-415
	QUALITY CONTROLLER	
AUTHOR(S) Ole-Anders Braathen, Leif Marsteen, Trine Langholen, Eva Beate Andresen and Heidi Fjeldstad	CONTRACT REF.	
REPORT PREPARED FOR NILU	ABSTRACT One of NILU's main goals is to study the impact of pollution and supply decision-makers with a sound scientific platform for choosing measures to reduce the negative impacts. Furthermore, it is very important for the institute to have control of the impact the institute's own activities may have on the environment and to reduce negative impacts as far as possible.  NILU has for many years been working to improve the status of the environment and to reduce negative impacts. In order to take this one step further, it was decided that the institute should restructure the work according to a relevant environmental standard and to seek certification according to the same standard.  The chosen standard is ISO 14001 (Environmental management systems—Requirements with guidance for use) and NILU achieved certification according to this standard in October 2010. This report summarizes the results of the system in 2018.	
NORWEGIAN TITLE NILU's Environmental Management Report – 2017		
KEYWORDS ISO 14001:2004	Environment	NILU
ABSTRACT IN NORWEGIAN Et av NILUs hovedmål er å studere forurensning og konsekvenser av forurensning og gi beslutningstakere en solid plattform for valg av tiltak for å redusere negative effekter. Det er også viktig for instituttet å ha kontroll på miljøkonsekvenser av instituttets aktiviteter og redusere negative effekter så langt som mulig.  NILU har i mange år arbeidet for å forbedre miljøtilstanden og redusere negative miljøeffekter. Det ble derfor bestemt å sertifisere dette arbeidet i henhold til standarden ISO 14001:2004 – Sertifisering av miljøstyringssystem.  NILU ble sertifisert i henhold til ISO 14001 i oktober 2010. Denne rapporten oppsummerer resultatene av miljøstyringssystemet i 2018.		
PUBLICATION TYPE: Digital document (pdf)	COVER PICTURE: Source: NILU	

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NILU's ISO Certifications: NS-EN ISO 9001/ISO 14001. NILU's Accreditation: ISO/IEC 17025.

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# NILU's Environmental Management Report

## 2018

### 1 NILU's Environmental Policy

NILU's Articles of Association states that part of the object of the foundation is:

- *NILU shall through research enhance the understanding of processes and effects relating to the composition of the atmosphere, climatic changes, air quality, and environmental toxicants*
- *NILU shall deliver research-based services and products nationally and internationally in the fields of analysis, monitoring and counselling to authorities, private enterprises and others*
- *NILU shall work to spread national and international research-based knowledge about the institute's core areas so that it becomes useful to society*

The environmental policy of NILU is thus both to reduce, as far as possible, the negative environmental impact of the institute's activities and to contribute to better management of the environment by providing fundamental knowledge to authorities and other decision-makers.

Integral parts of NILU's environmental management system are assessment of the institute's environmental impacts and an implementation plan with actions to reduce the most important negative impacts as far as possible.

NILU will always comply with relevant laws and regulations.

NILU will continuously maintain and further develop the environmental management system and work to prevent pollution and to improve the institute's environmental impact.

### 2 Background

One of NILU's main goals is to study environmental consequences of emissions of pollutants and to create a knowledge base for decision makers. NILU's impact can thus be both positive and negative.

It is of high importance to the institute to maintain control of its environmental impact and to reduce the negative impacts as far as possible.

In order to take this one step further, it was decided that the institute should restructure the work according to a relevant environmental standard and to seek certification according to the same standard.

NILU was certified according to ISO 14001:2004 (Environmental management systems- Requirements with guidance for use) in October 2010 and has since maintained its certification.

### **3 Good examples of NILU's contribution to improve the environment**

#### Long-range transport of air pollution

The European Monitoring and Evaluation Programme (EMEP) is a scientifically based and policy driven programme under the Convention on Long-range Transboundary Air Pollution (CLRTAP) for international co-operation to solve transboundary air pollution problems. In the EMEP programme NILU acts as the Chemical Coordinating Centre (EMEP-CCC). In this capacity, NILU has the tasks of developing monitoring strategies, recommending methodologies, offering training and audits and compiling and providing quality assurance for observation data received from the Parties to the EMEP protocol.

#### Air pollution in the Arctic and Antarctica

NILU is carrying out extensive measurement programs at the Zeppelin Observatory in the Arctic and the Troll Observatory in Antarctica. The two observatories give a very good overview of the state of the globe regarding levels of air pollution in pristine areas.

#### New Environmental Contaminants

NILU undertakes research and screening studies within the field of environmental chemistry. This includes conventional monitoring activities, but special focus is put on new environmental contaminants and how they spread in and affect the environment.

#### Microplastics

Plastic is the most prevalent type of marine debris found in the oceans. Plastic particles that are less than five millimetres in length are called "microplastics." NILU has and will continue to carry out research projects in order to improve the understanding of the extent of this problem. NILU took initiative for the national "Forskningskampanjen 2017" where school children were engaged to be part of a research project where they played football and counted the rubber granules at home from football shoes and clothes. The students also filled in results and published on the web-site Miljolare.no.

#### Air quality assessment and control strategies

NILU carries out air quality assessments for cities in Norway and contributes to the development of abatement strategies for individual cities such as Bergen, Drammen, Oslo and Stavanger. The work includes identifying and quantifying main sources of urban air pollution, as well as advanced air quality calculations to study the effect of control measures to reduce air pollution in urban areas. In this way, NILU helps assessing the effectiveness of measures such as low emission zones and diesel-traffic bans.

#### Dissemination of air quality information – measurements and forecasts

NILU has a key role in the dissemination of air quality information to the public. Forecasts for the largest cities in Norway and on-line data from all the monitoring stations in Norway are shown on the web-portal ([www.luftkvalitet.info](http://www.luftkvalitet.info)). The web-portal is hosted and maintained by NILU on behalf of the Norwegian Public Roads Administration and the Norwegian Environment Agency. NILU is together with the Norwegian Meteorological Institute, responsible for the development and operation of a modelling system for air quality forecasts to inform the public and support local authorities concerning the need for implementing short-term actions in alert situations.


### Complementing environmental observing systems

Recognizing the role of citizens and civil society in environmental management, NILU is building environmental monitoring infrastructure that allows the public to take active part in collecting relevant environmental data, through the deployment and testing of novel micro-sensor networks . These data are used to improve the current environmental management tools, including air quality maps. Awareness raising in the society and direct contribution to environmental management systems are some of the aspects of such activities.

### Quality Control and Traceability

NILU works continuously to ensure the quality of measurement data. NILU was appointed National Reference Laboratory for Air Quality (NRL) by the Norwegian Environment Agency in 2001. NRL is responsible for coordinating the community-wide quality assurance programme for air quality assessment in Norway. Important NRL tasks are yearly audits at local measurement network operators, final validation of measurement data, provide traceability in calibrations, and preparing Standard Operating Procedures (SOPs) and other quality system documentation. All local monitoring networks in Norway that report data to the European Commission are obliged to follow the procedures laid down in the quality system. The system ensures comparability of collected data and gives the decision makers a basis for implementing measures to reduce emission of pollutants.

#### 4 Status of NILU's environmental indicators

Indicator	Parameter	2016	2017	2018	Evaluation
NILU's research	Good examples	Yes	Yes	Yes	
NILU's research based services and products	Good examples	Yes	Yes	Yes	
Assessment of environmental impacts	Action plan	Yes	Yes	Yes	
Heating and cooling systems	District heating and cooling	Yes	Yes	Yes	
Travels and meetings	CO <sub>2</sub> -emissions due to air travel (kg)	157 715	104 830	155 088	
	Distance travelled by car (km)	104 900	87 504	85 833	
Chemical waste	Chemical waste handled by certified receiver	Yes	Yes	Yes	
Water consumption	Consumption of water (m <sup>3</sup> )	5 076	4 000	3 804	
Consumption of paper and other cellulose based products	Printers with registration of users	Yes	Yes	Yes	
	Pages of colour print-outs pr. employee	830	693	728	
	Pages of black-and white print-outs pr. employee	1 602	1 303	1326	
Energy classification of the building at Kjeller	Energy Certificate	Yes	Yes	Yes	
Handling of dangerous materials	Compliance	Yes	Yes	Yes	

(Each indicator is described in detail in chapter 5).

## **5 NILU's Environmental Indicators**

### **5.1 Assessment of NILU's environmental impacts**

#### ***5.1.1 Assessment of environmental impacts***

Target location: Kjeller and Tromsø

Every three years, starting in 2010, NILU carries out an assessment of the main environmental impacts of the institute's activities. An action plan (called "Miljøprogram") for NILU's environmental work in coming years is established based on the current assessment. The action plan is revised every year.

### **5.2 Energy consumption**

#### ***5.2.1 Heating and cooling systems***

Target location: Kjeller

NILU's main building is located at Kjeller and was, since it was built in 1993/1994, heated and cooled by electric power. In 2010, it was decided to substitute electric power with a centralized heating and cooling operation for the local district. This required major changes in the technical installations serving the building.

Both district heating and cooling has been in use in NILU's building at Kjeller since October 2011.

#### ***5.2.2 Energy efficiency***

Target location: Kjeller

Electric power consumption was substantially reduced when NILU's building at Kjeller fully switched to district heating and cooling. We originally planned to assess the remaining use of electric power in order to evaluate the potential for further reduction in the energy consumption. However, the costs involved for such an evaluation are prohibitively high, and it was decided not to go through with this activity.



### **5.2.3 Travels and meetings**

Target location: Kjeller and Tromsø

NILU has installed equipment for video conferences both at Kjeller and Tromsø. The equipment for video conferences has significantly reduced the need for travel and has improved communication between the two locations.

When ordering a travel, the employee must explain why it is not possible to use the video conference equipment.

NILU has established two parameters to monitor its environmental impact:

- CO<sub>2</sub>-emissions due to air travel (kg)
- Distance travelled by car (km)

The emission of CO<sub>2</sub> due to air travel seems to be 48 % higher in 2018 compared to 2017 and 2 % lower compared to 2016. There is a strong reason to believe that the reported emission in 2017 was too low and that the CO<sub>2</sub>-emission has been stable in the 3-years period.

The registered distance travelled by car was 2 % lower in 2018 compared to 2017.

### **5.2.4 Travels to and from the place of work**

This was not addressed in 2018.

## **5.3 Waste**

### **5.3.1 General waste**

Target location: Kjeller

NILU has for several years separated the waste into the following categories:

- Paper and other cellulose-based products
- Glass
- Plastics
- Food waste
- Chemical waste
- Electronic equipment
- Batteries
- General waste

NILU has worked to find a company that can receive all our waste, in order to establish an overview of the total amount of each waste category. However, we have not been able to find an acceptable solution and has decided to continue our current waste handling routines.

The receiver of the general waste, Norsk Gjenvinning AS, has informed us that the types of plastic waste that NILU produces is not recirculated. Consequently, our plastic waste will in the future be part of the general waste.

Target location: Tromsø

At NILU's offices in The Fram Centre, Tromsø, waste generated in offices and kitchens are separated into respective coloured bags for optical separation: food, plastic, paper, other cellulose-based products and general waste. The waste is collected by a certified company on behalf of the Fram Centre A.S. Other wastes such as electronic equipment, batteries, cardboard boxes and glass, are handled by NILU and delivered to the recycling centre in the Fram Centre. Statsbygg Drift, The Fram Centre is responsible for the handling the waste collected at the recycling centre.

### **5.3.2 Chemical and biological waste**

Target location: Kjeller and Tromsø

NILU has, for many years, delivered chemical and biological waste to certified receivers and will continue to do so. The receivers are Renor AS for waste generated at Kjeller and Perpetuum AS for waste generated in Tromsø. Both receivers are certified according to ISO9001 and ISO14001.

## **5.4 Raw materials and resources**

### **5.4.1 Water consumption**

Target location: Kjeller

NILU has established the following parameter to monitor its environmental impact:

- Consumption of water (m<sup>3</sup>)

NILU's consumption of water was 5 % lower in 2018 compared to 2017.

### **5.4.2 Consumption of paper and other cellulose-based products**

Target location: Kjeller and Tromsø

NILU uses combined printer/scanner/copy machines. The user must log in, using his/her ID-card, to initiate printing or scanning. The system allows monitoring of the number of print-outs, both aggregated to a specified group or on an individual basis.

NILU has established the following parameters to monitor its environmental impact:

- Number (pages) of black-and white print-outs per full time equivalent (FTE)
- Number (pages) of colour print-outs per full time equivalent (FTE)

In 2018, the printing pr. FTE at Kjeller and Tromsø was 13263 pages in black-and-white and 7283 pages in colour. The total printing per FTE was thus 3 % higher in 2018 compared to 2017.

## **5.5 Emissions**

### ***5.5.1 Emissions to air***

This was not addressed in 2018.

### ***5.5.2 Emissions to water***

This was not addressed in 2018.

## **5.6 Procurements**

### ***5.6.1 Requirements for suppliers***

This was not addressed in 2018.

## **5.7 Products**

### ***5.7.1 Environmentally friendly products***

This was not addressed in 2018.

## **5.8 Environmental impacts of NILU's activities**

### ***5.8.1 NILU's research***

Target location: Kjeller and Tromsø

The positive environmental impacts of NILU's research are illustrated by examples (Chapter 3).

### ***5.8.2 NILU's research-based services and products***

Target location: Kjeller and Tromsø

The positive environmental impacts of NILU's research-based services and products are illustrated by examples (Chapter 3).

## **5.9 Energy classification**

### ***5.9.1 Energy classification of the building at Kjeller***

Target location: Kjeller

It is required that all corporate buildings in Norway, with an area of more than 1000 m<sup>2</sup>, shall be classified according to their energy consumption. The classification of NILU's building at Kjeller was carried out in 2013.

## **5.10 Dangerous materials**

### ***5.10.1 Handling of dangerous materials***

Target location: Kjeller and Tromsø

NILU assessed its compliance with the regulation on handling of dangerous materials (FOR-2009-06-08-602) in 2018 and concluded that we are in compliance (see Chapter 6).

## 6 Laws and regulations

NILU's policy is to be in compliance with all relevant laws and regulations. Every three years we carry out a thorough evaluation of the laws and regulations relevant for NILU and our activities. The conclusion of the evaluation carried out in 2018 was that we are in compliance with all laws and regulations.

A new evaluation of all laws and regulations relevant for NILU and our activities will be repeated in 2021.

## 7 Results of NILU's actions in 2018

- Maintaining and improving the Environmental Management System (EMS)  
*This is a continuous effort.*
- Further development of indicators and parameters  
*The worked continued without any major revisions in 2018.*

## 8 NILU's planned actions in 2019

- Continue to produce a combined annual report covering NILU's activities relating to the ISO9001 quality management system and ISO14001 environmental management system
- Continue planning the porting of NILU's management systems to an electronic platform
- Evaluate the possibility of reducing use of plastics in the cantina (ISS)

## **NILU – Norwegian Institute for Air Research**

NILU – Norwegian Institute for Air Research is an independent, nonprofit institution established in 1969. Through its research NILU increases the understanding of climate change, of the composition of the atmosphere, of air quality and of hazardous substances. Based on its research, NILU markets integrated services and products within analyzing, monitoring and consulting. NILU is concerned with increasing public awareness about climate change and environmental pollution.

*NILU's values: Integrity - Competence - Benefit to society*

*NILU's vision: Research for a clean atmosphere*

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ISBN: 978-82-425-2973-2

ISSN: 2464-3327

