

# NILU's Environmental Management Report

2015

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**NILU report 9/2016**

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| <b>NILU report 9/2016</b>   | ISBN: 978-82-425-2828-5<br>ISSN: 0807-7207                    | CLASSIFICATION *<br>A - Åpen |
| DATE<br>"[Dato godkjent av NILU DD.MM.YYYY]"  | SIGNATURE OF RESPONSIBLE PERSON<br>"[Navn og tittel]" (sign.) | NUMBER OF PAGES<br>10        |
| TITLE<br>NILU's Environmental Management Report   | PROJECT LEADER<br>OAB   | NILU PROJECT NO<br>A-415     |
|   | QUALITY CONTROLLER  |                              |
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| REPORT PREPARED FOR<br>NILU   |   |                              |
| <p><b>ABSTRACT</b></p> <p>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.</p> <p>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.</p> <p>The chosen standard is ISO 14001:2004 (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 2015.</p> |   |                              |
| <p><b>NORWEGIAN TITLE</b></p> <p>NILU's Environmental Management Report – 2015</p>  |   |                              |
| KEYWORDS<br>ISO 14001:2004  | Environment   | NILU                         |
| <p><b>ABSTRACT IN NORWEGIAN</b></p> <p>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.</p> <p>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.</p> <p>NILU ble sertifisert i henhold til ISO 14001:2004 i oktober 2010. Denne rapporten oppsummerer resultatene av miljøstyringssystemet i 2015.</p>  |   |                              |
| 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

## 2015

### 1 NILU's Environmental Policy

The NILU Objectives state 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"* and *"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 for authorities and other decision-makers.

Integral parts of NILU's environmental management system are an assessment of the environmental impacts and an implementation plan with actions to reduce the prioritized impacts as best as possible.

It is NILU's clear intention to always comply with relevant laws and regulations.

NILU will continuously 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. The impacts of this can thus be both positive and negative.

It is very important for the institute to have control of the impact the institute's activities may have on the environment 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.

The chosen standard is ISO 14001:2004 (Environmental management systems-Requirements with guidance for use). NILU achieved certification according to this standard in October 2010 and has been certified since.

### **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. These two observatories give a very good overview of the state of the globe when it comes to 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. Of special interests are the recent discoveries of high values of bisphenols (e.g. BPA) in the Oslo Fjord and high values of perfluorated compounds (especially PFOS) in "Golden Eagle".

#### Air quality assessment and abatement strategies

NILU is carrying out air quality assessments for cities in Norway and contributes to the development of abatement strategies for individual cities such as 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 new measures to reduce air pollution in urban areas.

#### 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 prognosis. The prognosis are used for air quality forecasts in Norway, to inform the public and support the 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. 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.

### Reduction of climate gas emissions

NILU is involved in projects aiming at the development and implementation of technologies leading to reduction of greenhouse gases, particularly Carbon Capture and Storage (CCS) installations. Technological, environmental, economic and social challenges is assessed and measures to overcome various technological and non-technological barriers proposed. The results will result in lowering the CO<sub>2</sub> emissions and thus reduction of climate change impacts on the environment and human health.

### Quality Control and Traceability

NILU is working to ensure the quality of the measuring data from various measuring networks by using a comprehensive quality control system. The system states procedures for the operators of the instruments in their daily work. The system ensures the comparability of the collected data by using measuring instruments calibrated with reference standards that are traceable to common national reference standards. Based on such measurements with traceability and adequate quality, the decision makers can implement measures that will reduce emission of pollutants.

#### 4 Overview of the status NILU's environmental indicators

| Indicator   | Parameter   | 2013    | 2014    | 2015    | 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) | 223 670 | 164 583 | 130 248 |    |
|   | Distance travelled by car (km)                    | 120 790 | 106 434 | 136 202 |  |
| Chemical waste  | Chemical waste handled by certified receiver      | Yes     | Yes     | Yes     |  |
| Water consumption                                       | Consumption of water (m <sup>3</sup> )            | 4 860   | 5153    | ?       | -   |
| Consumption of paper and other cellulose based products | Printers with registration of users               | Yes     | Yes     | Yes     |  |
|   | Pages of colour print-outs pr. employee           | 1 505   | 1323    | 1247    |  |
|   | Pages of black-and white print-outs pr. employee  | 2 735   | 2153    | 2084    |  |
| 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 for NILU's environmental work in coming years ("Miljøprogram") 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

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

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

In order to monitor the environmental impact, NILU has established two parameters:

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

The emissions of CO<sub>2</sub> due to air travel in 2015 was 21% lower than in 2014.

In 2015, the registered distance travelled by car was 28% higher than in 2014.

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

This was not addressed in 2015.

### **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 carried out a process for finding one company that is able to receive all our waste, in order to establish an overview of the total amount of each category. However, we have not been able to find an acceptable solution and has decided to continue the current routines for handling of our waste.

#### **5.3.2 Chemical waste**

Target location: Kjeller and Tromsø

NILU has, for many years, delivered chemical waste to a certified receiver and will continue to do so.

### **5.4 Raw materials and resources**

#### **5.4.1 Water consumption**

Target location: Kjeller

In order to monitor the environmental impact, NILU has established the following parameter:

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

The consumption of water in 2015 was not available when this report was written.

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

Target location: Kjeller and Tromsø

In 2011, NILU installed five new and identical printers/scanners/copy machines. The user must log in, using his/her ID-card, before printing starts. The system allows monitoring of the number of print-outs, both aggregated to a specified group or on an individual basis.

In order to monitor the environmental impact, NILU has established the following parameters:

- Number (pages) of colour print-outs pr. employee
- Number (pages) of black-and white print-outs pr. employee

In 2015, the employees at Kjeller and Tromsø on average printed 2 084 pages in black-and-white and 1 247 pages in colour. The total printing per employee in 2015 was thus 4% lower than in 2014.

## **5.5 Emissions**

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

This was not addressed in 2015.

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

This was not addressed in 2015.

## **5.6 Procurements**

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

This was not addressed in 2015.

## **5.7 Products**

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

This was not addressed in 2015.

## **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 describing good 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 describing good examples (Chapter 3).

## **5.9 Energy classification**

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

Target location: Kjeller

It is a requirement that all corporate buildings in Norway, with an area of more than 1000 m<sup>2</sup>, shall be classified according to the 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

In 2013, NILU went carefully through the regulation on handling of dangerous materials (FOR-2009-06-08-602) and concluded that we are in compliance (see Chapter 6).

## 6 Laws and regulations

NILU's clear policy is to be in compliance with all relevant laws and regulations. Every third year 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 2013 is that we are in compliance with all laws and regulations.

A new thorough evaluation of all laws and regulations relevant for NILU and our activities will be repeated in 2016.

## 7 Results of NILU's actions in 2015

- Maintaining and improving the Environmental Management System (EMS)  
*NILU's ISO-group is responsible for maintaining and improving the Environmental Management system. In 2015, the system for reporting deviations from the system was updated.*
- Evaluate and implement the routine for acceptance and ordering of travels  
*In 2015, NILU moved to a new supplier for travel planning and bookings, with better possibilities for environmental evaluations and travel overviews. We continued the never-ending process to ensure that the employees follow our routines for travels.*
- Further development of indicators and parameters  
*NILU updates the environmental workplan at least once every year.*
- Establish a system that will give total overview of the amounts of waste in the various fractions  
*NILU evaluated the potential benefits of this action and concluded that the costs involved are too high compared to the benefits. It was thus decided not to carry out this action.*

## 8 NILU's planned actions in 2016

- Maintaining and improving the Environmental Management System (EMS)
- Further development of indicators and parameters
- Ensure that relevant parts of the system is functioning in Tromsø
- Carry out new evaluation of the laws and regulations relevant for NILU



## **NILU – Norsk institutt for luftforskning**

NILU – Norsk institutt for luftforskning er en uavhengig stiftelse etablert i 1969. NILUs forskning har som formål å øke forståelsen for prosesser og effekter knyttet til klimaendringer, atmosfærens sammensetning, luftkvalitet og miljøgifter. På bakgrunn av forskningen leverer NILU integrerte tjenester og produkter innenfor analyse, overvåkning og rådgivning. NILU er opptatt av å opplyse og gi råd til samfunnet om klimaendringer og forurensning og konsekvensene av dette.

*NILUs verdier: Integritet – Kompetanse – Samfunnsnytte*

*NILUs visjon: Forskning for en ren atmosfære*

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ISBN: 978-82-425-2828-5

ISSN: 0807-7207