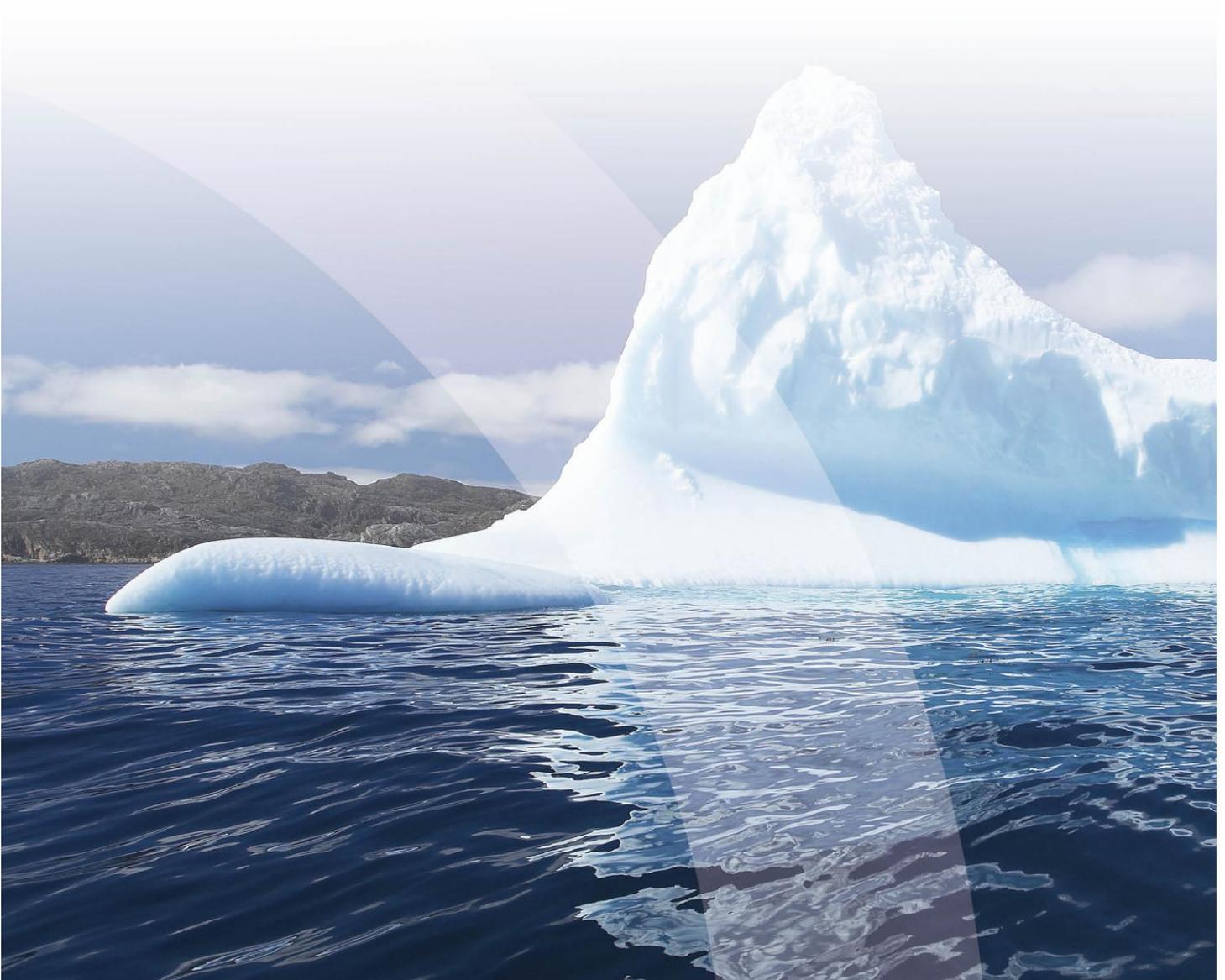

Environmental Management Report

2011



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Environmental Management Report

1 NILU's Environmental Policy

A portion of the NILU Objectives states that: "NILU shall investigate and assess technical, economic, hygienic and other environmental questions related to air pollution and the cleaning of polluted air."

The environmental policy of NILU is thus both to reduce, as far as possible, the direct 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 the impact of pollution. It is thus very important for the institute to have control of the impact the institute's own activities may have on the environment and to reduce the impact as far as possible.

NILU has for many years been working to reduce the impact. 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) and NILU achieved certification according to this standard in October 2010.

3 Overview of the status of the indicators

Each indicator is described in detail in chapter 4

Indicator	Parameter	2011	2010	2009	Evaluation/ Comments
Assessment of environmental impacts	Action plan	Yes	Yes	-	
Heating and cooling systems	-		-	-	Switched to district heating and cooling at Kjeller in 2011 
Energy efficiency	-		-	-	To be addressed in 2013
Travels and meetings	CO ₂ -emissions due to air travel (kg)	234 000	263 000	-	
	Distance travelled by car (km)	123 962	96 131	100 633	
Travels to and from the place of work	-		-	-	Not addressed in 2011
General waste	-		-	-	The process of finding one company that can handle all waste generated at Kjeller was started in 2011
Chemical waste	-	-	-	-	All chemical waste is handled by a certified receiver 
Water consumption	Consumption of water (m ³)	6 689	7 229	7 832	
Consumption of paper and other cellulose based products	Printers		-	-	New printers/scanners/photo copiers, with registration of users, were installed in 2011 
	Pages of colour print-outs pr. employee	810	-	-	-
	Pages of black-and white print-outs pr. employee	2466	-	-	-
Emissions to air	-		-	-	Not addressed in 2011

Emissions to water	-		-	-	Not addressed in 2011
Requirements for suppliers	-		-	-	Not addressed in 2011
Environmentally friendly products	-		-	-	Not addressed in 2011
NILU's research	Good examples	Yes	Yes	-	
NILU's research based services and products	Good examples	Yes	Yes	-	
Energy classification of the building at Kjeller	Energy Certificate		-	-	To be addressed in 2012
Handling of dangerous materials	Compliance		Yes	-	Next evaluation in 2013

4 NILU's Environmental Indicators

4.1 Assessment of NILU's environmental impacts

4.1.1 Assessment of environmental impacts

In 2010, NILU carried out an assessment of the main environmental impacts of the institute's activities and established an action plan for the coming years ("Miljøprogram"). This program is revised every year.

4.2 Energy consumption

4.2.1 Heating and cooling systems

NILU's main building is located at Kjeller and has, since it was built in 1993/1994, been 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 will require major changes in the technical installations serving the building and will have to be carried out in such a way that it does not interfere with NILU's daily routines.

The first step was removal of the existing cooling compressors and installation of the necessary heat exchangers. This was started at the end of 2010 and finished before cooling was necessary in March 2011. During the summer and fall of 2011, the new heating equipment was installed.

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

4.2.2 Energy efficiency

After NILU's building at Kjeller has fully switched to district heating and cooling, energy consumption will be substantially reduced. We will, in 2012 and 2013, carefully go through the remaining use of electric power in order to reduce consumption.

4.2.3 Travels and meetings

In 2010, NILU installed equipment for video conferences both at Kjeller and Tromsø. In January 2012, such equipment was also installed in Abu Dhabi. This 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 equipment for video conference.

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

- CO₂-emissions due to air travel
- Distance travelled by car (km)

In 2011, the registered distance travelled by car was somewhat higher than in 2010.

The CO₂ emissions due to air travel reported originally in 2010 was much too low and has been corrected in this report. The emissions of CO₂ due to air travel in 2011 was somewhat lower than in 2010.

4.2.4 Travels to and from the place of work

This has not been addressed in 2011.

4.3 Waste

4.3.1 General waste

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

In 2010 we started to evaluate the waste handling and the process of finding one company that could receive all our waste in order to establish an overview of the total amount of each category. The set main goal is to reduce the amount of “General waste”. The process will be finalized in 2012.

4.3.2 Chemical waste

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

4.4 Raw materials and resources

4.4.1 Water consumption

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

- Consumption of water (m³)

The consumption of water in 2011, 6 689 m³, was lower than in 2010.

4.4.2 Consumption of paper and other cellulose-based products

In 2011, NILU installed five new and identical printers/scanners/copy machines in Norway. 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 parameter:

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

In 2011, the employees at Kjeller on average printed 2 466 pages in black-and-white and 810 pages in colour. In 2012, we will register print-outs both at Kjeller and Tromsø and compare the results with 2011.

4.5 Emissions

4.5.1 Emissions to air

This has not been addressed in 2011.

4.5.2 Emissions to water

This has not been addressed in 2011.

4.6 Procurements

4.6.1 Requirements for suppliers

This has not been addressed in 2011.

4.7 Products

4.7.1 Environmentally friendly products

This has not been addressed in 2011.

4.8 Environmental impacts of NILU's activities

4.8.1 NILU's research

The positive environmental impacts of NILU's research are illustrated by describing a few good examples (Chapter 5).

4.8.2 NILU's research-based services and products

The positive environmental impacts of NILU's research-based services and products are illustrated by describing a few good examples (Chapter 5).

4.9 Energy classification

4.9.1 Energy classification of the building at Kjeller

It is a requirement that all corporate buildings in Norway, with an area of more than 1000 m², shall be classified according to the energy consumption. Since NILU in 2011 is changing to district heating and cooling, it has been decided that the energy classification will be carried out in 2012.

4.10 Dangerous materials

4.10.1 Handling of dangerous materials

In 2009, a new regulation on handling of dangerous materials was published in Norway (FOR-2009-06-08-602). NILU has gone carefully through this regulation and concluded that we are in compliance (see Chapter 6).

5 Good Examples

European super-site

The upgrading of Birkenes observatory has turned it into one of the main observatories in Europe when it comes to understanding trends in emissions of greenhouse gases and pollution. This will strengthen the field of particle research. A better understanding of the composition and mechanisms associated with particles is essential in order to make climate modelling more accurate.

European Environmental Agency (EEA)

NILU contributes to the work of the European Environmental Agency (EEA) within the areas of Air Quality monitoring, modelling, assessments and indicators and capacity building. The concrete tasks are defined each year and described in the ETC/ACM Implementation Plan.

Mercury in the Environment

Mercury (Hg) poses a serious threat to our global ecosystem. According to the United Nations Environment Programme (UNEP), coal-fired power plants and garbage incinerators emit thousands of tons of mercury into the atmosphere every year. Supported by research from NILU, UNEP is now working on a global, legally binding treaty to control mercury pollution. According to plan the treaty will be implemented by 2013.

Environmental Toxins

NILU's research is of high quality, and its work in the field of environmental chemistry is widely recognized. Samples are carefully prepared before being analysed, using advanced instruments. Scientists identify environmental toxins, both known and unknown, in the so-called chromatograms.

Bangladesh

NILU contributes to the build up cross-institutional capability for development of an effective and sustainable air quality management program in Bangladesh, run by its national institutions, in order that the negative effects of air pollution may be addressed. Included in this is establishing the technical, institutional and environmental research expertise necessary for effective and sustainable air pollution management in Bangladesh.

CO₂ Capture and Amine Emissions

Amines are chemical components derived from ammonia, where the hydrogen atoms are replaced by organic groups. While the amine-technology is among the most efficient and effective technologies currently available to capture CO₂, the effects of amine emissions to the environment are relatively unknown. NILU has performed ground-breaking research to analyze these compounds and their associated effects, and strongly encouraging industry to take these issues into consideration.

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. As of 2009, this system is in active use with 14 different network owner/operators in the city surveillance networks in Norway. 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.

Health Effect Laboratory

With the new health effect laboratory, NILU is investigating the direct health impact of pollution, climate change and new materials on humans and animals. Its establishment completes the “circle” of monitoring, modelling, analysing, evaluation and effects implemented at NILU. In 2012, the laboratory will be GLP-registered.

6 Laws and regulations

NILU’s clear policy is to be in compliance with all relevant laws and regulations. We have done a thorough evaluation and concluded that we are in compliance with the following:

LOV-1976-06-11-79: *Lov om kontroll med produkter og forbrukertjenester (Produktkontrollloven)*

LOV-1981-03-13-6: *Lov om vern mot forurensninger og om avfall (Forurensningsloven)*

FOR-2001-06-08-602: *Forskrift om håndtering av brannfarlig, reaksjonsfarlig og trykksatt stoff samt utstyr og anlegg som benyttes ved håndteringen*

FOR-2004-06-01-930: *Forskrift om gjenvinning og behandling av avfall (Avfallsforskriften)*

7 Actions in 2012

In 2012, NILU's environmental management system will mainly focus on the following tasks:

- Maintaining and improving the Environmental Management System (EMS)
- Analysing the remaining use of electric energy
- Further development of indicators and parameters
- Establish a total overview of the amounts of waste in the various fractions



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NILU 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.