



CICERO

Center for  
International  
Climate and  
Environmental  
Research - Oslo

# *Annual Report*

## *1997*



UNIVERSITY  
OF OSLO



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# 1 CICERO

CICERO - Center for International Climate and Environmental Research - Oslo, is a private non-profit foundation with the University of Oslo as founder. The Center was established by Royal decree 27 April 1990 as a follow-up to the World Commission on Environment and Development.

The purpose of the foundation is to research, report, advise, and inform on climate-related global environmental matters and relevant policies; all this with a view to acquiring knowledge that can remedy man-made climate problems and strengthen international collaboration on climate issues.

The leader of CICERO's first Board of Directors was Gro Harlem Brundtland, then Member of Parliament and later Prime Minister of Norway. The Center's first director was Ted Hanisch (1990-93), followed by Helga Hernes (1993-96) and Knut H. Alfsen (1997-).

Initially, the acronym CICERO referred to "Center for International Climate and Energy Research - Oslo". To better reflect its broader scope of research activity, the name was officially changed to Center for International Climate and Environmental Research - Oslo, in 1995 (in Norwegian: Senter for internasjonal klima- og miljøforskning).

The Center was established as a multidisciplinary research center and two main goals were identified for CICERO:

- To develop the research basis for initiatives in national and international climate policy.
- To keep decision makers and the public informed about the development of international climate policy.

CICERO's foremost strength is perhaps its multidisciplinary approach. The Center includes personnel with competencies in the natural sciences, economics, political science and sociology. This is seen as a central premise for conducting good and relevant research on a complex issue such as climate change.

The research activity is funded jointly by grants from the Norwegian Government, and national and international funding partners such as the Research Council of Norway, the World Bank, The United Nations Environment Program (UNEP), and the European Union among others.

In addition to research activities, CICERO pursues activities in the areas of policy advice for public and private organizations, and information on the science and national and international policy on climate change and related environmental topics. All of the activities are carried out with support from an extensive set of national and international collaborators and networks. This is essential in order to give policy-makers the best possible information on which to base decisions affecting the Earth's climate.

## 2 The CICERO year 1997

CICERO's vision is to develop into an institution carrying out highly professional and genuine interdisciplinary international research into climate and environmental problems. Furthermore, CICERO wish to improve the dissemination of information so that inter-disciplinary knowledge of problem areas quickly reaches politicians, administration, industry and the general public in the most appropriate form and at the most opportune moment to ensure optimal exploitation of this information.

CICERO has a particular duty to inform about uncertainties associated with climate and environmental matters, and also to demonstrate potential policy consequences of such uncertainties.

### 1997 in Brief

1997 was characterized by great activity, and the number of incoming assignments was especially good.

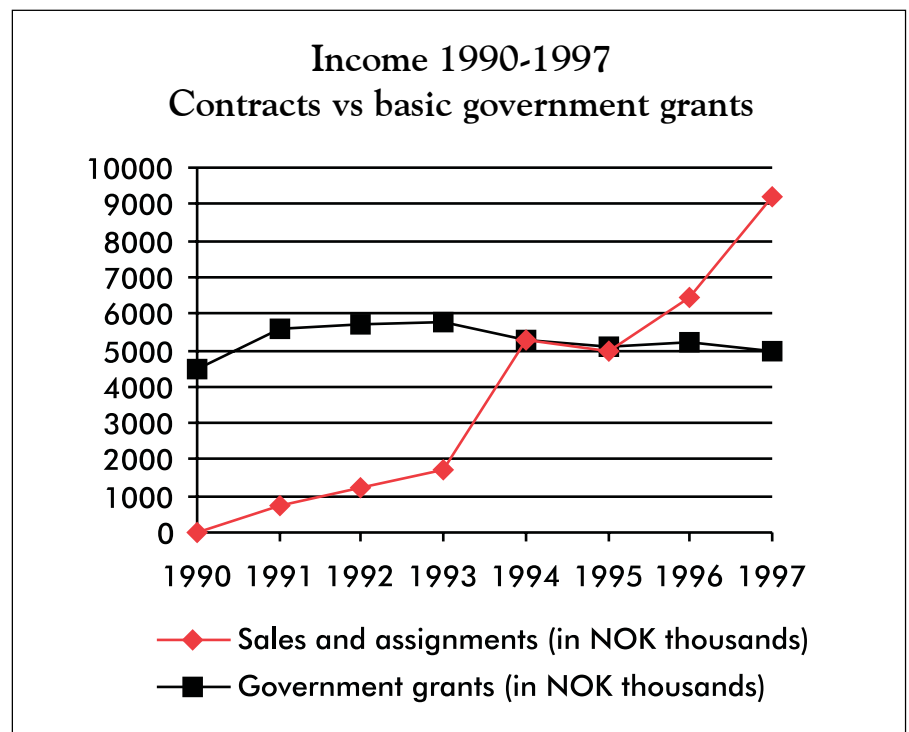
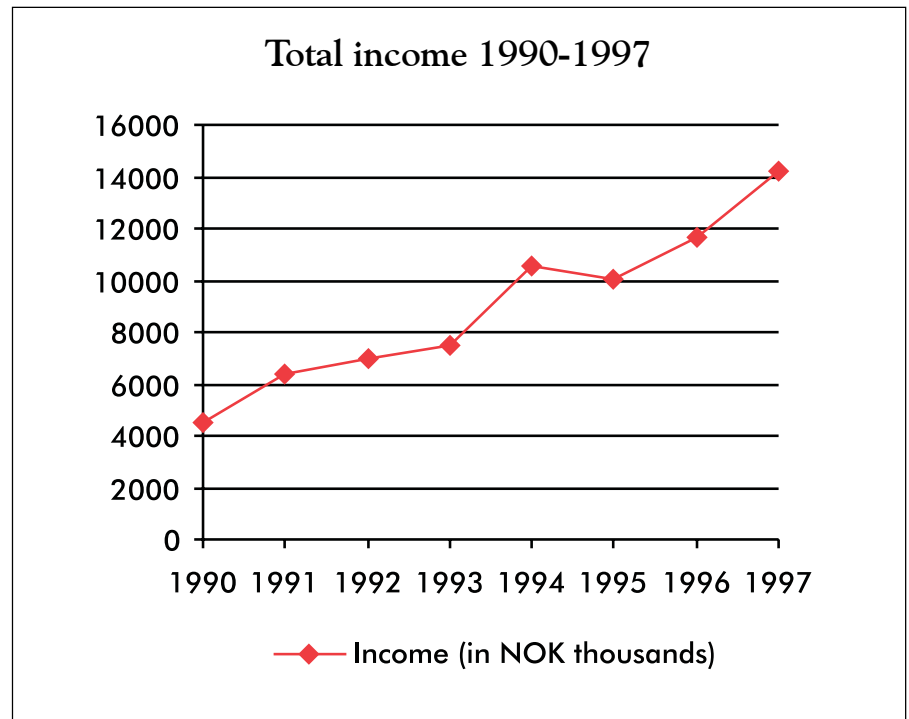
Knut H. Alfsen, from the Division for Resource and Environmental Economics of the Statistics Norway's research department, took up his duties as Director 01.01.97.

In the autumn, information operations targeted particularly the climate negotiations which took place in Kyoto in December. Last year also saw the start of the work to strengthen the focus of CICERO's research profile.

### The Workforce

The number of individuals associated with the Center in 1997 totalled 33 (31 in 1996). Of these, 29 were employees (24 in 1996) representing an equivalent of 20.9 man-years (18.8 in 1996). The number of research man-years was 17 (15 in 1996).

At the end of 1997, the Center had 26 employees (26 in 1996).



CICERO had two conscientious-objector positions (alternative to national military service) in 1997, and also two student scholarship-holders

working at the Center.

In 1997, five people took paternal and maternal leave amounting to 1.7 man-years.

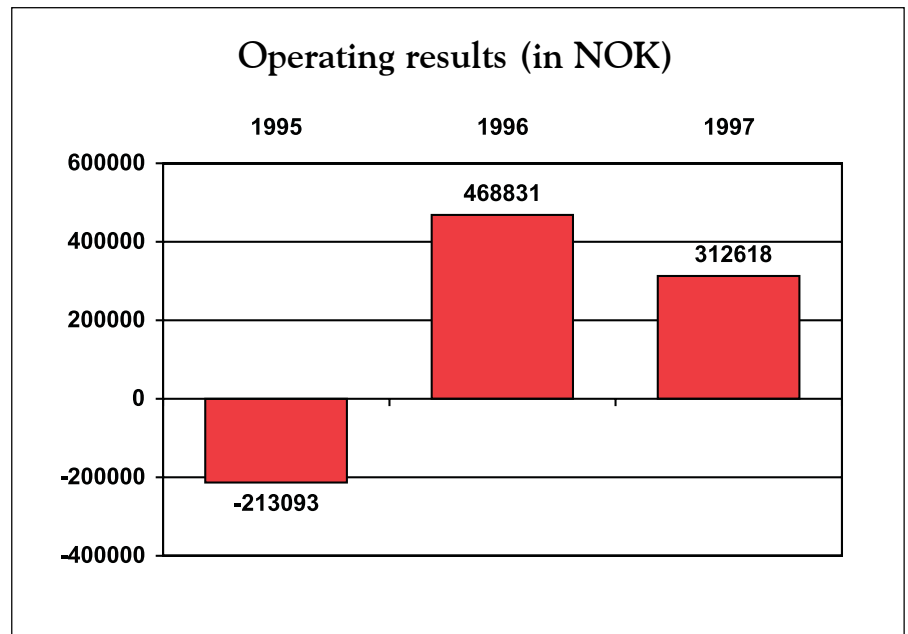
### Key Economic Figures

Accounts for 1997 show a profit of NOK 763,261. At the end of 1997, equity stood at NOK 6,707,833. Profits from 1997 will be transferred to the operating fund, which will then total NOK 6,657,833.

Basic government allocation channeled through the Research Council of Norway accounted for 35% of total income in 1997. Equivalent figures for 1993, 1994, 1995 and 1996 were 73%, 49%, 49% and 45% respectively.

In 1997, operating profits were NOK 312,618 (equivalent to 2% of turnover), in comparison with NOK 468,831 in 1996. The decrease in operating profits is compensated for by an increase in financial income, so that the annual results for 1997 are somewhat better than in 1996.

The Board is satisfied with CICERO's ability to attract assignments, but is worried that the basic government allocation is continuously being reduced in real terms, and that this is happening without any professional justification from the Research Council of Norway.

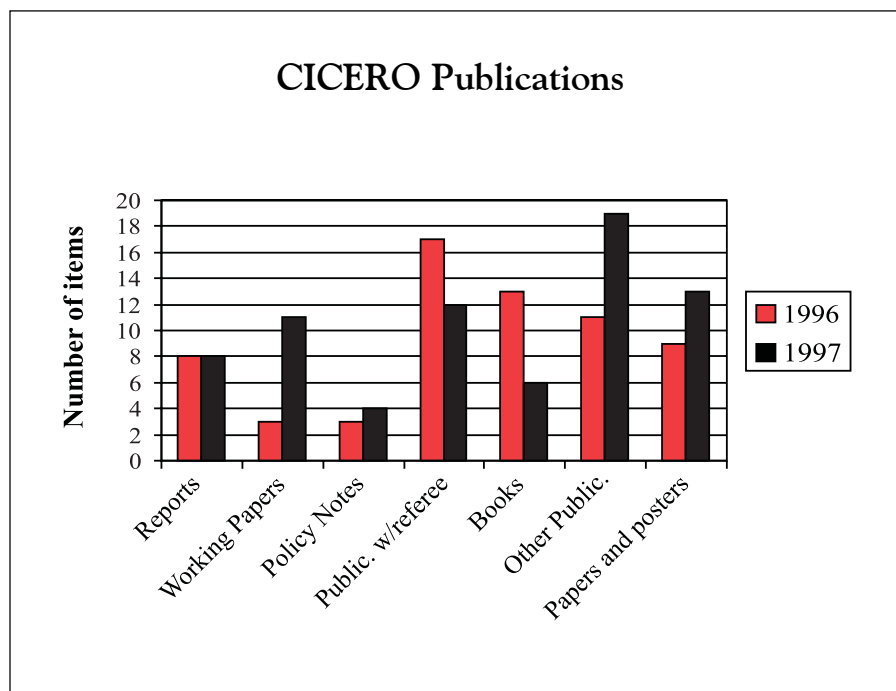


In 1997, revenues from international assignments accounted for 26% of the total earnings (21% in 1996) - 22% from UNEP, 2% from the World Bank and 2% from the Nordic Council of Ministers. Nationally, assignment earnings from various ministries accounted for 6% (15% in 1996) and from the Norwegian Research Council 25% (9% in 1996).

Although CICERO's increased share of financing from the Norwe-

gian Research Council is positive, the Center should from now on try to diversify financial sources in order to avoid becoming overdependent on a few research programs in the Research Council.

The key figures show that CICERO has made satisfactory economic progress in 1997 with good liquidity and equity. The current liquidity ratio is 2.1 (4.1 in 1996), while equity at the beginning of 1998 accounted for 68% of liability and equity (76.8% in 1996).

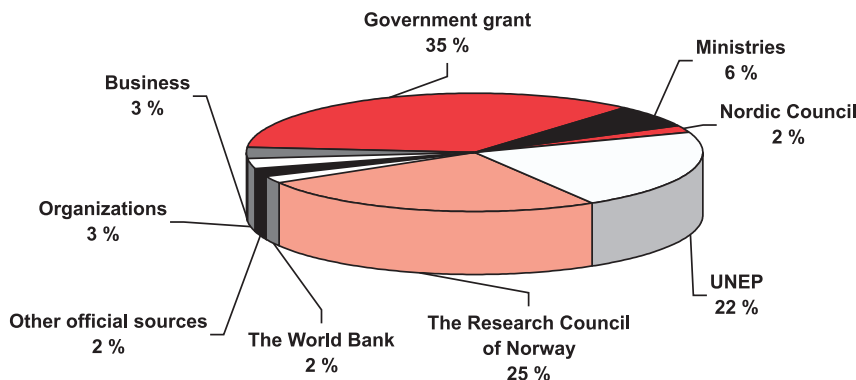


### Research and Publications

The Center's scientific personnel are divided into three groups: economics, political science/sociology and natural science. Responsibility for finance and personnel is delegated to the groups. At the same time CICERO is an interdisciplinary organisation where the main activities (projects) are spread across the groups.

This model has been chosen to promote CICERO as an academically-based institution where researchers work in all disciplines while at the same time maintaining a solid base in their own disciplines. Researchers at the Center are expected to combine basic scientific work with applied

### Funding partners



research, in-depth reports and advice to Norwegian and international organisations.

In 1997, CICERO prepared a strategic plan for the coming years and applied for funds for a strategic institute program to the committee in the Research Council of Norway responsible for the government grant. The strategy and the institute program consolidate the groundwork by establishing formalized model elements with particular emphasis on studying the effects of greenhouse gases other than CO<sub>2</sub>.

The model framework will function as a common reference system for the activity at CICERO and ensure sufficient focus on professional activity, so that the Center's limited resources are exploited to the fullest extent possible in its research and information operations. This will help to ensure the Center's long-term development.

During 1997, CICERO participated in a number of national and international central processes linked to the climate issue, and the Board is satisfied with the increasing use of CICERO as a center of expertise within climate research.

In addition to IPCC, the Research Council and ministries, it is especially pleasing to note an increasing demand from industry for the Center's

services.

In comparison with 1996, the number of internal publications increased in 1997. The number of external publications also rose, as did popular scientific articles.

### Information Services

In 1997, CICERO's information activities increased considerably in comparison with 1996. At the beginning of 1996 the Center had one person working part-time with information, but this increased to full-time from October 1997.

In addition to the the newsletter *Cicerone* and *Klimaforum* (Climate Forum), the Center's personnel regularly participated in the public debate on climate problems, and acted

as speakers in various forums.

In 1996, CICERO produced a home-page on Internet (<http://www.cicero.uio.no>). The quality of this page has continuously improved and the number of "visitors" to the page rose from 36,609 in 1996 to 57,121 in 1997.

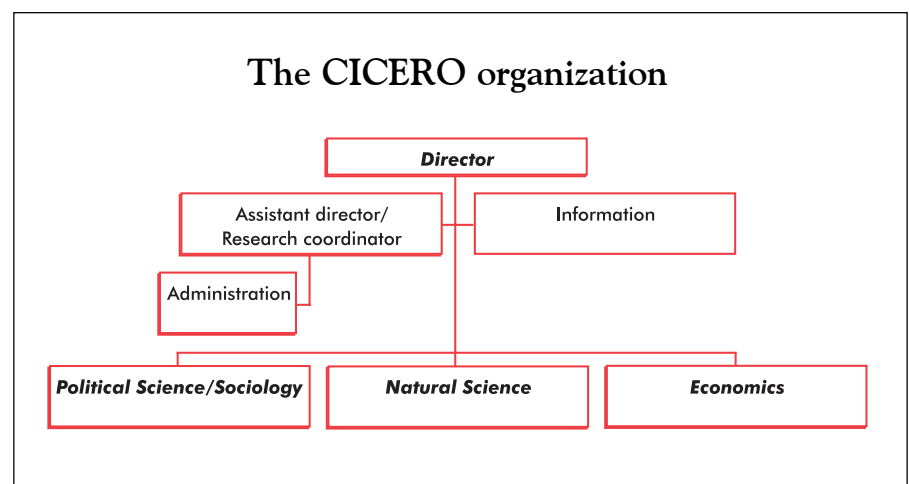
The Board is delighted that CICERO is increasingly being used by the Norwegian media as a center of expertise. Interest was particularly marked just before, during and after the climate negotiations in Kyoto.

There were four issues of *Cicerone* in 1997, its sixth year in existence. It is distributed free to about 1,300 subscribers, most of whom belong to ministries, directorates, industry, research institutions and universities.

*Klimaforum* met four times in 1997 assembles participants from industry, the authorities and research. Its objective is to disseminate knowledge about developments in climate issues and to create a dialogue between all parties on matters pertaining to central climate issues. Forum members include 15 companies and state institutions.

Through its mandate, CICERO has been given a major assignment associated with dissemination of information on international climate policies and research. There is still room for improvement here, but the Center will not be able to sustain its efforts if

### The CICERO organization



basic government grants continue to be reduced in future years.

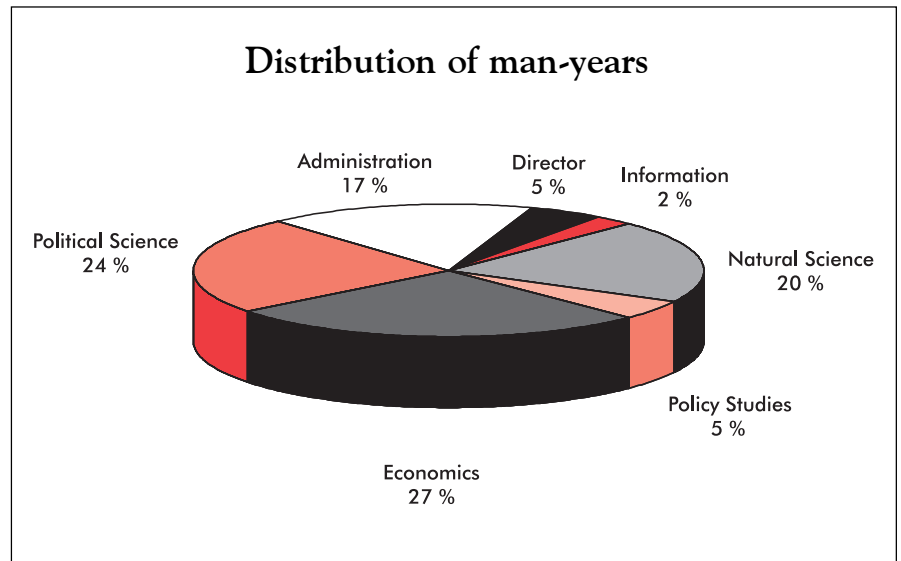
**Research Cooperation**

CICERO's location at the University of Oslo, and the Center's close cooperation with relevant institutions, is important in a field where basic and applied research are closely connected. The Center's association with the University is strategically important and of mutual benefit. Cooperation with the University is formalized through various agreements.

At the University, in cooperation with the relevant institutes, and as far as capacity permits, CICERO undertakes assignments in connection with tutoring students. CICERO's three senior researchers, together with one other researcher, have positions at the University, and the Center's four research fellows all participate in the University's doctor-degree education. One of the research fellows submitted her final thesis in 1997.

In 1997, thanks to special allocations made by the Norwegian Research Council for developing collaboration between foreign policy institutes in the Oslo region, CICERO has continued its collaboration with the Fridtjof Nansen Institute.

Together with four other institutions, CICERO has established the Norwegian Consortium for Energy and Environment (NORCE). In



addition to CICERO, the consortium's members comprise the Center for Economic Analysis (ECON), the Fridtjof Nansen Institute (FNI), the Institute for Energy Technology (IFE), and the Norwegian Institute for Air Research (NILU). The consortium's activities have been minimal in 1997.

**The Council and Board**

From its establishment in 1990 and up to 1997, CICERO had an Advisory Council. Although the council played an important role during the establishment phase, once the start-up phase was over there was no longer the same need for it.

Therefore, in agreement with Sven Ullring, the leader of CICERO's

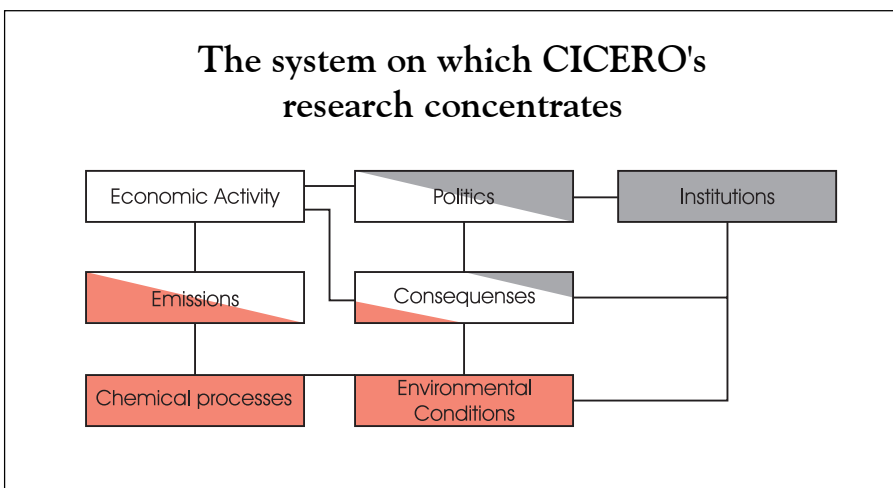
Advisory Council, the Board proposed its disbandment. The Council agreed unanimously, and the necessary resolution changes were approved by the Senate of the University of Oslo, the Ministry of the Environment and the Ministry of Church and Education. The resolution changes involve transfer of the council's authority to the Board.

The Board wishes to express their gratitude for the work of and active role played by Sven Ullring in CICERO's relatively short history, both as chairman of the interim Board, and as assistant director and later director of the Center's Advisory Council.

In February 1997 the Ministry of the Environment appointed a new Board for CICERO to function from 21.02.97 to 20.02.99 with Director Knut N. Kjær, Norges Bank, as Chairman.

Director of Kværner ASA, Terje Osmundsen, chaired the Board from autumn 1994 until the beginning of 1997. The University Director of the University, Tor Saglie, has been the Board's vice-chairman since 1991.

In 1997 the Board had four meetings one of which was combined with a specialist seminar attended by some members of CICERO management.



# 3 Projects

## Completed projects

### **China Council for International Cooperation on Environment and Development: The Working Group on Resource Accounting and Pricing Policy**

The project is a feasibility study for a pollution abatement analysis of the Chongqing area. It reviews existing literature concerning environmental quality and damage effects associated with the current levels of pollution in Chongqing.

The project focuses on problems related to air, water, waste, and aims to identify lack of knowledge in these fields, in order to develop a proposal for a major integrated environmental management project for the Chongqing region.

**Documentation:** Econ Report 49/96

**Researchers:** Kristin Aunan, Hans Martin Seip and Asbjørn Aaheim.

**In collaboration with:** Kjell Roland - ECON (Project leader)

**Funding:** China Council for International Cooperation on Environment and Development

**Keywords:** Pollution abatement, China, Chongqing

### **Climate Research and Climate Policy Negotiations - Status and Outlook**

This project discusses the climate policy process from the negotiations leading up to the Climate Convention in 1992, through the Berlin mandate negotiations on legally binding commitments for industrialized countries to reduce their emissions of greenhouse gases. Negotiation sessions until March 1997 are covered, but the time perspective includes the third Conference of the Parties to the Climate Convention in Kyoto, Japan, in December 1997, where the negotiations were finalized.

In addition, an overview of climate research and possible human-induced

climate change is given, based on the three reports from the Intergovernmental Panel on Climate Change (IPCC).

An additional Policy Note covers the last two negotiation sessions in August and October before the Kyoto meeting.

**Documentation:** CICERO Report 1997:5 and Policy Note 1997:3

**Project leader:** Asbjørn Torvanger

**Funding:** Norsk Hydro ASA

**Keywords:** Climate research, IPCC, climate policy negotiations, Kyoto Protocol

### **Comprehensive Approach to the Analysis of Climate Policy**

The project studies optimal policy using a comprehensive approach, which means that all relevant sources, sinks and reservoirs of several climate gases are subject to policy evaluation.

Two issues become central for such an analysis: one is how to aggregate emissions of different climate gases, and the other is how to represent all relevant measures. The question of aggregation suggests an intertemporal analysis, and the question of measures suggests that both economic and so-called "direct" regulations are specified. A numeric analysis based on an optimal control model indicates that direct measures may play an important role in the design of climate policy, particularly if the target is moderate.

Moreover, in order to achieve targets for the concentrations of greenhouse gases, most of the efforts should be made at the end of the period in question. This applies, in particular, if gases with short life-times in the atmosphere, such as methane, are subject to control.

**Documentation:** CICERO Report 1997:4

**Project leader:** Asbjørn Aaheim

**Funding:** Norwegian Ministry of Finance and Customs

**Keywords:** Global warming, policy measures, optimal control

### **Cost-effective Strategies for Reduction of Emissions: Eastern and Central European Case-studies**

The study develops methods that can be used to rank measures against harmful emissions considering local, regional, and global effects. The project extends and completes a case-study for Hungary initiated in 1994.

The extent of damage regarding important health and environmental effects in parts of Hungary and the change to be expected from various emission reduction policies was estimated. The case-study is based on a report on Hungarian measures by György Pátzay (a previous visiting scientist at CICERO).

The cost and benefit of implementing energy saving measures were assessed using a bottom-up methodology.

**Documentation:** CICERO Report 1997:1 and Working Paper 1997:6

**Researchers:** Kristin Aunan, Hans Martin Seip and Asbjørn Aaheim

**In collaboration with:** Norwegian School of Management

**Funding:** Norwegian Pollution Control Authority

**Keywords:** Hungary, damage assessment, cost-benefit, health effects, measures

### **Energy Development and Environmental Constraints in China**

This project analyzes the inter-relationship of energy development and the environment in China. It examines the effects of economic development, investment, energy trade and environmental limitations in shaping energy-sector development.

This project highlights the tensions between institutions involved in energy development, energy conservation and environmental protection. It argues that institutional bottlenecks and political preference for solving local environmental problems, will affect actions to eliminate global environmental risks.

There exist huge investment potentials



for energy development both from international and domestic private investment funds. Energy efficiency will continue to improve, associated with a gradual decline in non-commercial energy use and an increasing share of commercial energy in final consumption. Energy conservation holds the key to sustainable energy development, complemented by the rise in new and renewable energy technology development.

**Documentation:** CICERO Working Paper, 1997:4, Energy Policy, Vol.26, No.2, 1998

**Project leader:** Lin Gan

**Funding:** The Swedish Council for Planning and Coordination of Research (FRN)

**Keywords:** Energy, environment, China, energy trade, energy conservation

### **Environmental and Climate Policy in the European Union: Actors, Interests and Conflicts**

The project examined two research questions: (1) The legal basis for a common environmental policy established by the Single European Act and the Treaty on Political Union provides the European Commission with strong policy instruments, and one should therefore expect a development towards a common environmental policy at the EU-level. (2) The role of the EU member states in environmental policy remains strong, and they will use the principle of subsidiarity to curtail the Commission's attempts to develop a common environmental policy.

This study investigated the process of EU environmental policy-making in selected cases in order to determine whether the Commission has used windows of opportunity to build a common environmental policy and with it, an increased role for itself.

The project focused on how differentiated national targets for greenhouse gases are developed, how alternatives to lowest common denominators and influential focal points are constructed, how model-based indicators can establish the premises for negotiations, and how differentiated targets can create a bargaining space. The project shows that three factors strongly influence climate policy targets, namely

ambitiousness of environmental policy, wealth, and costs of environmental protection - in this case greenhouse gases abatement costs.

**Documentation:** CICERO Report 1997:8, Working Paper 1995:5, 1995:4

**Project leader:** Janne Haaland Matlary and Lasse Ringius

**Funding:** The Research Council of Norway

**Keywords:** EU, environmental policy, conflicts

### **Environmental Problems, Techno-Economic Paradigms and the International Division of Labor**

The history of environmental problems is studied by combining approaches drawn from technology history, development theory and environmental history. The environmental history component provides a historical description of the evolution of environmental problems.

While the main environmental problems of the period before the industrial revolution were linked to agricultural expansion (land degradation) and introductions of new species (in particular the introduction of Eurasian flora and fauna to the Americas, Australia and New Zealand), the period following the industrial revolution has been characterised by changing pollution problems which geographical scope has been steadily increasing. Although local pollution problems have been addressed, increasingly complex and difficult regional and global environmental problems have emerged.

The evolution of environmental problems is explained by studying the five primary techno-economic paradigms since the industrial revolution (textile industries, railways, chemical and electrical industries, "fordist" mass-consumption industries and micro-electronics), the systems of energy production (fossil fuels in particular), political mobilisation on environmental problems as well as the expansion and transformation of the international division of labour.

Main findings are that each techno-economic paradigm since the industrial revolution have led to new environmental

problems, even though some of the technologies also have contributed to alleviate previous problems. However, the increasing scale of energy-consuming economic activity, particularly associated with the diffusion of fordism in developed and developing countries, has led to the evolution of global environmental problems, particularly climate change.

Although less energy-consuming production based on technological innovations connected to the fifth techno-economic paradigms (micro-electronics) paired with better management of less energy-intensive transportation and communication may lead to lower consumption of energy, as exemplified by Japan during the 1970s and early 1980s, such reforms seem to be unlikely at a global level. This is due to strong resistance from the US, the most powerful state of the post-cold war world, to abandon the fordist model and take a leading role in the development of more environmentally friendly patterns of production and consumption.

**Documentation:** Three articles (one in English, two in Norwegian, one book manuscript). End report sent to the Research Council of Norway

**Researcher:** Sjur Kasa

**In collaboration with:** Lars Mjøset (Project leader) - Institute for Social Research (ISF)

**Funding:** Research Council of Norway  
**Keywords:** Environmental history, technology history, long waves, business cycles, neo-schumpeterianism

### **Implementing China's Agenda 21: From National Strategy to Local Actions**

This project investigates the process of adaptation of the Chinese governmental policy in response to sustainable development. It reviews the historical roots, from which political response to sustainable development arises.

By analyzing the policy-making and implementation processes in China's Agenda 21, the study gains a better understanding of:

1) the dynamic forces that contribute to the establishment of the national and regional Agenda 21, and the relationships

between different institutional preferences, arrangements and their obstacles; 2) the driving forces projected by pro-active responses to implement Agenda 21, and the role of local governments in the process; 3) the relationship between international environmental aid and national capacity building for the environment; and 4) the obstacles and conflicting interests that limit the implementation of Agenda 21, and sustainable development in China.

**Documentation:** An article is finished and sent to the international journal of Environmental Politics

**Project leader:** Lin Gan

**Funding:** CICERO

**Keywords:** China, Agenda 21, Environmental Institutions, Environmental Policy

### Reforestation and Climate Change Mitigation: A Background Study for Joint Implementation in China and Indonesia

This project analyzes the institutional barriers to promoting reforestation projects in China and Indonesia. It argues that cost-effective implementation of carbon sequestration depends on proper institutional settings in the host countries.

This is a background study to review the roles of property rights regimes in reforestation with a particular reference to foster cost-effective implementation of Joint Implementation (JI) projects. The relationship of various stakeholders: governments, NGOs, the private sector, and international aid agencies is analyzed.

Four aspects are emphasized: conflicts among stakeholders; long-term security or stability of property rights regimes; distribution of property rights; and information exchange. The study outlines a number of conflicts in the property rights regime, which should be better understood through future research. Aiming to initiate a major research project on institutional dynamics for sustainable forest management, three aspects are considered important in research:

1) In what ways cost-effective mechanisms for property rights can be established and modified in host countries, which can generate pro-active responses

on reforestation from local communities and stakeholders; 2) What kind of policy instruments can be utilized to improve the cost-effectiveness of property rights regimes; 3) The roles and relationships of various stakeholders in JI/AIJ activities. In addition, the forest situation in China and Indonesia is reviewed.

**Documentation:** CICERO Report 1998:3

**Project leader:** Lin Gan

**Researchers:** Lars Otto Næss, Sjur Kasa and Karen O'Brien

**Funding:** CICERO basic funding. Additional funding is to be sought in order to initiate a major research project

**Keywords:** Reforestation, Asia, China, Indonesia, Joint Implementation, property rights

### Quantification of the Impacts of NO<sub>x</sub> Emissions on Climate Through Changes in Tropospheric O<sub>3</sub> and CH<sub>4</sub>

Studies show that emissions of nitrogen oxides (NO<sub>x</sub>) have a dual role with respect to climate change. Through production of tropospheric ozone (O<sub>3</sub>), NO<sub>x</sub> contributes to warming. But NO<sub>x</sub> also reduces the levels of methane (CH<sub>4</sub>), thereby giving a cooling effect.

For NO<sub>x</sub> from surface sources, previous studies indicate that these opposing effects may be of similar magnitude. However, due to methodological limitations and insufficient knowledge it has not been possible to say whether emissions of NO<sub>x</sub> from surface sources have a positive or a negative effect on climate through changes in O<sub>3</sub> and CH<sub>4</sub>.

The overall objective of this project was to obtain more reliable estimates of the impacts of emissions of NO<sub>x</sub> from surface sources on climate through the responses in tropospheric O<sub>3</sub> and CH<sub>4</sub>. The climate impacts, quantified in terms of radiative forcing, vary in time and space and also with localization of the emissions. This was closely examined.

The lifetime of NO<sub>x</sub> varies from hours to days, giving large spatial variations in the levels of NO<sub>x</sub>. Due to non-linearities in the O<sub>3</sub> and OH chemistry there are also large differences in the effect of NO<sub>x</sub> on O<sub>3</sub> and CH<sub>4</sub>. This requires the use of

three-dimensional chemistry and transport models in studies of climate effects from NO<sub>x</sub> emissions. Radiative forcing due to ozone and methane changes was calculated by professor Wei-Chyung Wang and his group in Albany, USA.

The project selected six geographical regions representing different chemical and physical conditions, and the emissions of NO<sub>x</sub> in these regions have been reduced by 20%. The results indicate that the sensitivity in the chemical responses and the radiative forcing due to changes in O<sub>3</sub> and CH<sub>4</sub> show large variations between the regions. The ozone and methane forcing are of opposite sign and generally of similar magnitude.

**Documentation:** CICERO Report 1997:2, 1997:3, Working Paper 1997:1

**Project leader:** Jan S. Fuglestedt

**In collaboration with:** Ivar Isaksen, Terje Berntsen, Wei-Chyung Wang

**Funding:** The Research Council of Norway, The Norwegian State Pollution Control Authority

**Keywords:** NO<sub>x</sub>, ozone, methane, radiative forcing of climate

### Towards Sustainable Development and Consumption in East Asia?

The project documents the development of environmental problems created by patterns of production and consumption in East Asian, with the main focus on trends in South Korea. Former attempts to classify countries in East Asia along environmental dimensions of production and consumption have concluded that they follow a lean Japanese development pattern in terms of energy consumption and private consumption of cars and beef.

In this project we analyse this hypothesis further, and find that while production patterns have moved towards less polluting high-tech areas, the effects of changes towards consumption patterns closely resembling US lifestyles may create huge environmental problems in the long run.

This is explained through hypotheses focusing on the effects of US trade policies. It is suggested that the current opening of the trade and investment regimes in East Asian countries may accelerate the trends

towards less sustainable consumption in the long run.

**Documentation:** One article completed. One article under preparation.

**Researcher:** Sjur Kasa

**In collaboration with:** Lars Mjøset (Project leader) - University of Oslo

**Funding:** The Research Council of Norway

**Keywords:** South Korea, sustainable consumption, trade and the environment

### Towards a Sustainable Energy System - A Long Term Transition Strategy

There is a growing recognition that a sustainable energy system is a prerequisite for sustainable development and, furthermore, that today's energy use is not sustainable. The supply side of a sustainable energy system must be dominated by renewable alternatives, but even with a renewable supply side, the demand side must be developed in the direction of maximum efficiency.

The main objective of this project was to analyze the macro perspectives of the transition challenge and assess the decarbonization and the efficiency improvements in an overall, long-term strategic framework.

The project describes the state-of-the-art technology and competitiveness for new renewable energy resources, and the necessary means to accelerate the introduction of tomorrow's energy systems. Methods to achieve reduction of energy demand are discussed.

The project pays particular attention to the energy consequences of high-growth introduction of a renewable system. Due to the energy requirements associated with developing a new energy system, fossil fuels may be needed under certain growth assumptions exceeding the renewable systems contribution.

A conclusion is that there is no time to waste and efficiency improvements and the introduction of renewable sources deserves maximum attention and priority.

Current energy trends are not sustainable. Higher prices will be desirable and even necessary to encourage and accelerate higher energy productivity and development of renewable alternatives.

The project suggest a Norwegian energy strategy.

**Documentation:** CICERO Report 1997:6

**Project leader:** Øystein Dahle

**Funding:** The Ministry of Petroleum and Energy

**Keywords:** Energy, renewable energy sources, sustainability

### Voluntary Agreements as a Policy Tool to Solve International Environmental Problems

In this project the findings from the first phase of the project "Institutional Requirements for Voluntary Agreements" are presented. The report examines the potential of voluntary agreements for solving international environmental problems.

One option is to solve regional environmental problems through an agreement between a regulator in one country and polluting companies in one or more neighboring countries. Another option is to introduce a voluntary agreement in a regional group of countries, such as the EU. In this case a joint regulator establishes voluntary agreements with industries in the member states.

**Documentation:** CICERO Report 1997:7

**Project leader:** Asbjørn Torvanger

**Funding:** The Research Council of Norway

**Keywords:** Voluntary agreements, efficient policy tools, climate policy, international environmental agreements

## *On-going projects*

### AEROCHEM

The overall objective of the AEROCHEM project is to study how past, present and future aircraft emissions affect ozone in the upper troposphere and lower stratosphere. These studies can act as a basis for decisions on emission standards for future aircraft operations.

Subsonic aircraft flying in the upper troposphere and frequently in the lowest few kilometers above the tropopause emit compounds like nitrogen oxides (NO<sub>x</sub>),

water vapour (H<sub>2</sub>O) and sulphur dioxide (SO<sub>2</sub>) which could significantly affect the chemical composition of these two regions. For the upper troposphere, observations have shown an ozone increase for the last two decades. Aircraft emissions will enhance ozone production in the upper troposphere through the NO<sub>x</sub> chemistry. The main project tool will be global three dimensional (3-D) chemical tracer models (CTMs) where large-scale ozone distribution and changes due to aircraft are calculated.

CICERO will use the 3-D CTM developed at the Institute of Geophysics (University of Oslo) to study the impact of future aircraft emissions and, in particular, how this is influenced by deep convection. The results will serve as input to radiative forcing and climate models to estimate climatic effects.

**To be completed:** Spring 1998

**Researchers:** Ivar Isaksen / Terje Berntsen

**Funding:** EU

**Keywords:** Aircraft, tropospheric chemistry, global modeling

### Air Pollution, Climate Change and Energy Production: Decision Analysis Tools

The project aims to contribute to the development of methodology for analyses of cost-efficient abatement of air pollution. Among other things, it examines methods for estimating risks (dose-response approach) for short- and long-term health effects, evaluation of environmental damage, and ranking of abatement measures. The methodology is tested by carrying out a case-study in Hungary.

The project is part of a larger interdisciplinary project to develop a decision support tool for ranking pollution abatement measures. The starting point is that different environmental problems should be considered in an integrated way because abatement measures usually contribute to reduce several environmental problems simultaneously (for example green house gas emissions, acidification of soil and water, and air pollution induced effects on health, vegetation and materials). Hence, an integrated approach is likely to

increase the efficiency, in terms of the benefit/cost ratio, of abatement strategies.

The project will mainly concentrate on the relationship between exposure and damage, damage cost-assessment, and how to treat the uncertainties arising in all steps in the analyses. The approach is applied to a case-study of air pollution problems from energy use in Hungary.

**To be completed:** Spring 1998

**Doctoral thesis:** Kristin Aunan

**Funding:** Research Council of Norway

**Keywords:** Integrated assessment, air pollution, health effects, dose-response functions

### Air Quality Management and Planning System for Guangzhou, China

This is a NORCE project led by the Norwegian Institute for Air Research (NILU) to help Chinese authorities plan actions against air pollution in Guangzhou, to disseminate knowledge useful for estimation of pollution-related effects, and to facilitate decisions on policy measures. CICERO's contribution includes studies of effects on health and vegetation from local air pollution.

Estimates of the frequency of health effects of air pollutants in different parts of the city will be carried out using dose-response functions from the literature. The transferability of the functions will be studied by comparison with epidemiological studies carried out within the framework of the project. Estimates of damage to crops (particularly by ozone) will also be based on established dose-response functions.

**To be completed:** Autumn 1999

**Researcher:** Kristin Aunan, Hans M. Seip  
**In collaboration with:** NILU (Steinar Larssen)

**Funding:** The Norwegian Agency for Development Cooperation (NORAD)

**Keywords:** China, damage assessment, cost-benefit, vegetation, health, effects, measures

### Climate Change in Africa: Issues and Regional Strategy

The objective of this project is to assist the World Bank in developing guidelines and methods for assessing climate change

vulnerability and the corresponding adaptation options in Africa.

The project will evaluate the extent to which the World Bank is paying attention to possible climate change issues, and the ways in which it can improve upon this situation.

Areas vulnerable to climate change in Africa will be identified and draft guidelines will be developed for World Bank activities in these areas. The guidelines will be tested in a small number of countries. Institutional strengthening and capacity building will be part of the program, as well as assistance to African countries in networking climate change information.

**To be completed:** The first phase of the project was completed with CICERO Report 1996:8. A second phase is under preparation.

**Project leader:** Karen O'Brien

**In collaboration with:** University of Oxford, University of East Anglia.

**Funding:** The World Bank (trust fund from Norway)

**Keywords:** Climate change, vulnerability, World Bank guidelines

### Effectiveness of International Environmental Agreements

This EU concerted action will create a European network of researchers addressing issues of effectiveness of international environmental agreements and will create a forum for the development of a broader based consensus on the most important factors that influence effectiveness. The ultimate aim is to contribute to generating ideas and suggesting directions for future research, and to stimulate larger collaborative projects or even research programmes. This concerted action also aims to provide important insights for those responsible for the design and administration of international environmental agreements.

The concerted action will have a duration of 36 months, involving three major phases, distributed among the three categories of agreements.

The research activities of this network will be based on a classification of international environmental agreements, an inclusive definition of effectiveness and a preliminary list of factors to be consid-

ered. Multilateral environmental agreements will be classified in three categories:

(1) global environmental agreements, (2) regional environmental agreements (i.e. involving significantly fewer than all countries), (3) and the environmental legislation of the European Community (i.e. involving a specific institutional structure to generate and implement the agreements).

The concerted action will organize six workshops staggered over a period of 24 months (two for each category of agreement, global, regional and EC). These workshops will be designed to present the current state of research and to develop broadly based documents outlining strong hypotheses arising from this research concerning the effectiveness of international environmental agreements. The second workshops in each category will be designed to build upon and develop the results of the first workshop.

Following the workshops, a conference on the effectiveness of international environmental agreements will be organized, based on the workshops and designed to provide an overview of current research and the articulation of developed hypotheses capable of attracting broad support from the research community. The conference will bring together all participants of the concerted action. The conference will be an opportunity to compare results from EU, regional and global studies in effectiveness of environmental agreements. It will assess the state-of-the-art of European research and identify promising empirical and theoretical research strategies. The conference will also present policy findings of high relevance to policy-makers and practitioners.

**To be completed:** 01.02.2001

**Project leader:** Lasse Ringius

**In collaboration with:** IEEP Institute for European Environmental Policy, London, IVM-VU Institute for Environmental Studies, Amsterdam, FNI, Norway, IPAE-MADRID, Spain, Ecologic, Germany, VERTIC, London, Free University of Berlin, Roskilde University, Denmark, FIELD, London, Cardiff Law School, Wales, United Kingdom

**Funding:** EU

**Keywords:** Effectiveness, international environmental agreements

## Emission Trading with Greenhouse Gases

The aim of the project is to discuss the potential gains from emission trading and to raise some crucial questions. Model simulations and numerical examples generated from the project are likely to show that the total costs of the Kyoto Protocol could be reduced considerably through emission trading. From the Nordic perspective it is important to note that the Nordic countries probably are among the Annex B countries benefiting most from this trading.

Emission trading is a policy option also in domestic arenas. The Kyoto Protocol allocates emission limitations (quotas) to each of the Annex B countries. The governments of these countries might consider allocating these quotas further to domestic enterprises as emission permits. If such allocation takes place, new markets for greenhouse gas (GHG) emission quotas and permits might emerge domestically as well as internationally. The projects also aims to consider cost saving potentials also from domestic mission trading.

**To be completed:** Spring 1998

**Project leader:** Bjart Holtmark

**Funding:** Nordic Council of Ministers

**Keywords:** Emission trading, Kyoto Protocol.

## Institutional Requirements for Voluntary Agreements

The aim of this project is to determine how voluntary agreements compare to other policy tools in terms of effectiveness when meeting an environmental target, specifically in terms of cost-effectiveness and administrative effectiveness.

The project is divided into two parts. In the first part, the potential of voluntary agreements to solve regional and international environmental problems will be compared to alternative policy tools. In the second part, some institutional requirements for such agreements are studied in terms of communication patterns, information flows, and industrial structure.

**To be completed:** 31.12.98

**Project leader:** Asbjørn Torvanger

**In collaboration with:** Espen Moen, Fo-

undation for Research in Economics and Business Administration - Oslo (SNF), Kjell Sunnevåg SNF-Bergen.

**Funding:** The Research Council of Norway

**Keywords:** Efficient policy tools, international environmental problems, voluntary agreements

## Institutional Roles in Disseminating Renewable-energy Technologies: The Case of China and India

This study is intended to provide a better understanding of the functional roles and dynamics of institutions in determining the effectiveness of national and regional public-sector initiatives to promote the dissemination of renewable-energy technologies, in particular wind turbine technologies. The structures, roles, and relationships between relevant institutions involved in wind energy technology development in China and India will be analyzed.

The objective of the study is to identify the steering mechanisms in renewable-energy technology dissemination, and the obstacles involved. A "process approach" is used as an analytical framework. Regional aspects will be addressed with empirical case-studies to analyze regions with similar physical conditions but different social, economic and institutional settings.

**To be completed:** 1999

**Project leader:** Lin Gan

**Researchers:** Sjur Kasa/Cathrine Hagem

**In collaboration with:** Energy Research Institute in China and Tata Energy Research institute in India

**Funding:** Research Council of Norway

## Integrated Assessment of Climate Change as a Likely Factor to Force Migration: A Case-Study of the Nile Countries

This project deals with climate change as a force that triggers migration of people. It is assumed that climate change will increase the competition for basic resources, sometimes leading to large-scale migration.

If the international community and

aid organizations are to respond to this problem, it is essential to improve the knowledge of the interdependency of climate vulnerability issues and projected changes in climate parameters. Both factors will ultimately influence the migration process. The study will assess the scope of the problem of affected people. The underlying case-study area will be the Nile countries Egypt, Ethiopia and Sudan with their marginal agro-climatic zones and low-lying delta areas.

The main theoretical objective is to explore methods of linking social decision-making processes about migration with projected changes in climatic parameters. A more practical objective will be to see how different assumptions of climate sensitivity can be used to identify regions that are likely to be affected by migration within the Nile area.

**To be completed:** 2000

**Doctoral thesis:** Elisabeth Meze

**Funding:** The Research Council of Norway

**Keywords:** Egypt, Ethiopia, Sudan, climate change, forced migration

## International Regimes: Institutional Changes and Effectiveness

The underlying purpose is to increase knowledge about the factors determining the "effectiveness" of international regimes. The project focuses on analyzing the effect of institutional structures. One important methodic objective is to lay the foundations for wider and more systematic comparative analyses.

The project will therefore play a role in the development of "The International Regimes' Database" - a project led by Professor Oran R. Young, Dartmouth College, and also prepare the work of an international project group for advanced studies at the Center during the academic year 1999 - 2000.

**To be completed:** 1998

**Project leader:** Arild Underdal

**In collaboration with:** FNI, Norway

**Funding:** The Research Council of Norway

**Keywords:** International regimes

## Modeling International Negotiations: Exploring the Settlement Range in the Global Climate Change Negotiations

The aim of this project is to develop a model which can be used to systematically explore (a) the political feasibility of alternative policy options, and (b) the settlement range of the global climate-change negotiations.

As a starting point, the outcome of an international negotiation process is conceived of as a function of three major determinants: the configuration of participant country preferences (interests, positions); the distribution of relevant political resources ("power"); and the institutional setting (with particular attention paid to the decision rule[s]). The team pursues an incremental approach, starting out with a simple static model including only a small number of countries and a limited range of policy options.

**To be completed:** 1998

**Researcher:** Arild Underdal

**In collaboration with:** Fridtjof Nansen Institute. Future collaboration envisaged with research team led by Professor Harold K. Jacobson, University of Michigan, Ann Arbor

**Funding:** Research Council of Norway

**Keywords:** Climate change, international negotiations

## The Politics of Environmental Reform in the Third World: The Contrasting Cases of Brazil and Indonesia 1988-1992

Between 1988 and 1992, Brazil implemented important changes in regulatory policies focused on the management of tropical moist forest land, particularly Amazonia. Deforestation in Brazil was caused by the uncontrolled, government-sponsored extension of ranching. Large family-based and corporate ranchers played a major role in forest conversion in the region. These ranches were affected by the most important regulatory changes, including cancellations of various subsidies for ranching and the implementation of environmental monitoring.

Though severely hampered by serious organizational and financial problems, reforms in Brazil represented a break with the past. Changes were especially motivated by concerns for the contribution of deforestation to global warming. A main indicator of the extent of change in Brazil is the wave of protests from ranchers and business organizations motivated by reforms.

The Indonesian government also expressed global environmental concerns. Much like the Brazilian ranching sector, the logging sector in Indonesia was out of control. It was recognized both by government agencies and the environmental non-governmental organizations (NGOs) that the regulatory regime of the sector encouraged short-sighted, environmentally destructive strategies. Though regulatory changes were signaled by the government in this period, only small changes were actually implemented. The destructive incentive regime continued. The same was the case with ground-level inspection efforts. The provincial branches of the regulatory authority were still hampered by heavy corruption.

Hypotheses based on differences in dependency, financial and ecological interdependence as well as hypotheses focused on differences in the influences of domestic government agencies and social groups fail to explain the observed outcome. The contrast is understood as the outcome of a combination of external and internal incentives, the organization of domestic societal groups, and the ability of domestic NGOs to connect themselves to foreign NGOs with an ability to put pressure on financing institutions and influence consumer behavior in foreign markets.

**To be completed:** 1998

**Doctoral thesis:** Sjur Kasa

**Funding:** The Research Council of Norway

**Keywords:** Brazil, Indonesia, forest policy, environmental regulation

## Policy-making Behavior in Climate Change Policy: A Comparative Analysis of Four Annex I States

The study investigates policy-making

behavior in climate-change policy by conducting a comparative analysis of Norway, France, Germany and Poland. The objective is to give the background and reason for 1) each country's position in the climate-change negotiation process, and 2) the independent variables which influence both policy choices and perceptions of the range of policy choices at the national level.

In addition, the study will develop information on both systemic and domestic variables that govern policy-making behavior. Investigations at the systemic level will be based on the assumption that the countries' perceptions of abatement costs and damage costs play a deciding role. At the domestic level, the basic assumption is that policy-making processes are influenced both by societal demand and support, as well as governmental supply of abatement policies. Furthermore, an assumption is made about social learning and policy diffusion as important influential mechanisms. The causal chains between factors such as national interests, domestic politics, problem perception, knowledge and attitude, and the actual policy measures and strategies chosen will be established.

**To be completed:** 2000

**Doctoral thesis:** Guri Bang Sjøfting

**Funding:** The Research Council of Norway

**Keywords:** Climate change policy and decision-making

## Power and the Environment

The main purpose of the project is 1) to reach an understanding of how national power structures influence the transition to more climate-friendly production and consumption systems in Norway, and 2) to analyze how national power structures can influence the climate political process internationally.

The project will have two main phases: the first (1997-98) will deal with economic and political science analyses of the climate-related coalitions in the Green Tax Commission; the other (1999) will examine which influences the finds relating to power-sharing can have for international climate negotiations. The final report will be submitted in 2000.

**To be completed:** 2000

**Project leader:** Sjur Kasa

**Funding:** Research Council of Norway

**Keywords:** Power structures, power-sharing, the Green Tax Commission, climate negotiations.

### The Role of Institutions in Global Environmental Change

The objective of the project is to develop an international and interdisciplinary program of research regarding the role of institutions in global environmental change. The program is scheduled to become a "core project" of the International Human Dimensions of Global Environmental Change Program (IHDP).

The overall purpose of the research program being developed is to summarize, integrate and extend the knowledge and understanding about the ways in which various kinds of institutions - ranging from governments to markets - influence human activities causing global environmental change, as well as individual and collective responses to such change. A scoping report was submitted to the IHDP Scientific Committee in November 1996.

**To be completed:** No set date

**Project leaders:** Arild Underdal, CICERO, and Professor Oran R. Young, Dartmouth College, USA

**In collaboration with:** Several scholars in America, Europe, Asia and Australia

**Funding:** IHDP. Applications submitted to NSF and EU

**Keywords:** Institutions, global change, environment

### The Role of Interest Groups in Environmental Policy (preliminary title)

The study will seek to analyze the role of interest groups in environmental policy. It will try to reveal if and how interest groups influence policy makers. Further it will look at various ways to regulate the industry under different asymmetric information structures.

Regulation based on contracts will be compared to classic regulation based on, for example, taxes. A survey of incentive mechanisms on which the policy makers can base their regulation will form the basis.

**To be completed:** January 2002

**Doctoral thesis:** Camilla Bretteville

**Funding:** The Research Council of Norway

**Keywords:** Interest groups, asymmetric information, incentive-based regulation, contracts

### Source-related Studies of Greenhouse Gases and Measures for Implementing Emission Limitations

The main purpose of the project is to calculate the total effect (based on several gases) on man-made climate influences caused by a few selected activities/sources, assess whether this is a useful approach, and how it could be used in the development of measures, strategies and international agreements.

Whereas previously it was more common to study the impact of one or two specific gases on the radiative balance and climate changes without considering the emission sources, in this project we wish to concentrate on the effects caused by the various activities/sources, and thereby consider the optimum number of gases simultaneously.

An approach of this kind can facilitate the assessment of how different activities influence the climate through the emission of several gases, which measures it is appropriate to implement, and what the consequences of these measures may be.

**To be completed:** 31.06.98

**Researchers:** Ivar Isaksen, Arild Underdal and Jan Fuglestad

**In collaboration with:** The Department of Political Science and the Department of Geophysics

**Funding:** The University of Oslo

**Keywords:** Greenhouse gases, total emission, sources/activities

### Strategies for EU Leadership for Climate and Sustainability Regimes

The project aims at exploring possible joint strategies for EU countries in achieving sustainable development, with particular emphasis on climate policy.

The project will analyze countries'

attitudes towards common initiatives to achieve sustainability. Economic, political and institutional frameworks for an international climate regime will be analyzed on three levels: Within the EU, global preconditions, and the EU's role in the development of an international regime. CICERO's contribution is to try to identify specific interests within a number of EU countries on the basis of economic performance, sector composition and pattern of energy use.

**To be completed:** 01.08.98

**Project leader:** Asbjørn Aaheim

**In collaboration with:** Fridtjof Nansen Institute (FNI), Norway, Royal Institute of International Affairs, UK

**Funding:** EU, the Research Council of Norway

**Keywords:** Climate policy regimes, EU

### Structure and Agent in Scientific Diplomacy

Science constitutes a central component of international environmental policy-making. Still, the conditions for, and mechanisms by which, scientific knowledge is transformed into premises for policy decisions have, and to a very limited extent, been subject to systematic analysis.

The study investigates, how the extent to which the institutional arrangements of the science-policy dialog may influence and serve as an instrument for facilitating the transformation of scientific knowledge into decision premises. The study also explores the role and impact of "scientific élites" in performing leadership functions in the process and, in particular, the extent to which leadership performance may serve as a possible mechanism by which the transformation of knowledge takes place.

The project is a case-study of the role and function of the Intergovernmental Panel on Climate Change (IPCC) during the period from 1988 to 1995.

**To be completed:** Spring 1998

**Doctoral thesis:** Tora Skodvin

**Funding:** The Research Council of Norway

**Keywords:** International environmental management (processes, institutions)

## Uncertainty and the Greenhouse Effect

The aim of this project is to improve our ability to make optimal climate policy decisions in a situation with many types of uncertainties.

The project is divided into three parts: the first part studies optimal investments in generating new knowledge, whereas the second part studies irreversible damages and abatement measures. The final part studies how an optimal climate policy is affected by risk aversion, allocation of consumption over time, and habit formation.

**To be completed:** 31.12.99

**Project leader:** Snorre Kverndokk (Statistics Norway)/Asbjørn Torvanger

**In collaboration with:** Statistics Norway

**Funding:** Research Council of Norway

**Keywords:** Optimal climate policy, uncertainty, information generation, irreversibility

## UNEP Country Case-Studies Program on Climate Change Impacts and Adaptations Assessment

The project will test the IPCC's guidelines for impact assessments and adaptation in five countries - Estonia, Antigua-Barbuda, Cameroon, Pakistan and Cuba. CICERO's role is to coordinate the technical assistance to the five national project teams. CICERO organizes technical training, workshops, seminars, etc. and advisory services for the five national teams as needed. CICERO will use the expertise from an international Technical Assistance Team consisting of technical experts from UNEP, IPCC and CICERO among others.

The project aims to aid capacity building in the countries, contribute to the preparation of the country studies and suggest improvements to the IPCC's guidelines for climate impact assessments.

**To be completed:** 1998 (1999 for Cuba)

**Project leader:** Karen O'Brien

**Funding:** The United Nations Environment Program - UNEP/Global Environment Facility (GEF), Danida, Denmark

**Keywords:** Estonia, Antigua-Barbuda, Cameroon, Pakistan, Cuba, climate change, assessment, adaptation

# 4 Board of Directors

## Board of Directors

### February 1997 – February 1999

- Kjær, Knut N. – Director, Central Bank of Norway (chair)
- Saglie, Tor – University Director, the University of Oslo (co-chair)
- Hanssen-Bauer, Inger – Senior Scientist, the Norwegian Meteorological Institute
- Hestenes, Anne Therese – Senior Vice President, Statoil
- Rødseth, Asbjørn – Professor, Department of Economics, the University of Oslo
- Skjeie, Hege – Associate Professor, Department of Political Science, the University of Oslo
- Wiese, Inger Johanne – Advisor, the Ministry of the Environment
- Aaheim, Asbjørn – Senior Research Fellow, CICERO
- Herstad, Bente – Advisor, the Ministry of the Environment (alternate member)
- Raino Malnes – Professor, Department of Political Science, the University of Oslo (alternate member)

The Board of Directors held four meetings in 1997.

## Board of Directors

### November 1994 – February 1997

- Osmundsen, Terje – Director, Kværner Water Systems AS (chair)
- Saglie, Tor – University Director, the University of Oslo (co-chair)
- Cappelen, Frede – Advisor, Statoil
- Heimdal, Berit Riddervold – Professor, Department of Fisheries and Marine-Biology, the University of Bergen
- Midgaard, Knut – Professor, Department of Political Science, the University of Oslo
- Rødseth, Asbjørn – Professor, Department of Economics, the University of Oslo

- Wiese, Inger Johanne – Advisor, the Ministry of the Environment
- Aaheim, Asbjørn – Senior Research Fellow, CICERO (from Autumn 1996)
- Henriksen, Ellen – Research Fellow, Department of Physics, the University of Oslo (alternate member)
- Herstad, Bente – Advisor, the Ministry of the Environment (alternate member)

## Advisory Board

### 1994 - 1997

- Ullring, Svein – President, Det norske Veritas (chair)
- Salbu, Brit – Professor, the Agricultural University of Norway (co-chair)
- Astrup, Erle Grieg – Ph.D, Corporate Specialist, Elkem
- Bojer, Hilde – Head of Department of Economics, University of Oslo
- Bugge, Hans Christian – Associate Professor, Faculty of Law, the University of Oslo
- Faanes, Turid – Scientist, SINTEF-NHL, University of Trondheim
- Grammeltvedt, Arne – Director, Norwegian Meteorological Institute
- Hannay, Alastair – Professor, Department of Linguistics and Philosophy, the University of Oslo
- Heintz, Natascha – Senior Curator, Paleontological Museum, the University of Oslo
- Johnson, Hilde Frafjord – Member of Parliament
- Mangerud, Jan – Professor, Department of Geology, the University of Bergen
- Nordheim, Karita Bekkemellem – Member of Parliament
- Østreng, Willy – Director, Fridtjof Nansen Institute
- Aakvaag, Torvild – Chairman of the Board, Norsk Hydro

The Advisory Board was disbanded in June 1997.



# 5 Information

The volume of the information activities at CICERO in 1997 was at it's highest level ever. Of special importance was the active engagement in the public debate on climate issues, specially before, under and after the global warming treaty conference in Kyoto, Japan in December. In October an information officer started working full time.

## Homepage

The Center's presence on the World Wide Web was improved in 1997. The site now

contains detailed information about CICERO, its research and its employees, as well as updated news about climate change in English and Norwegian. The number of visits to the site have been climbing steadily (see figure).

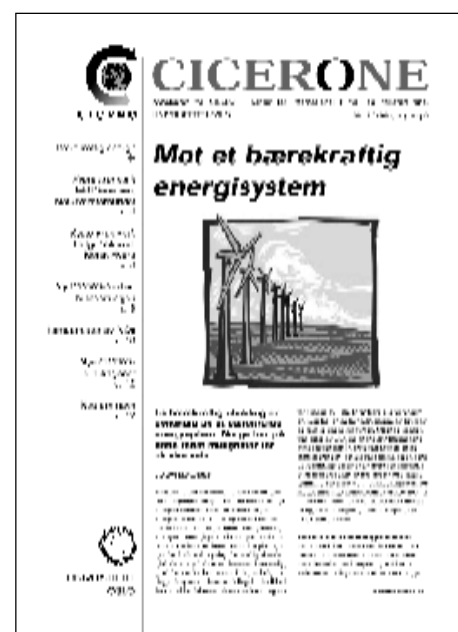
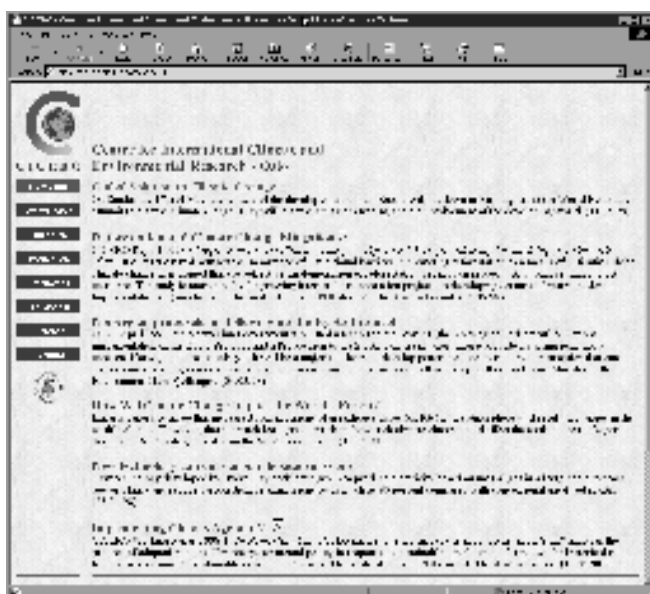
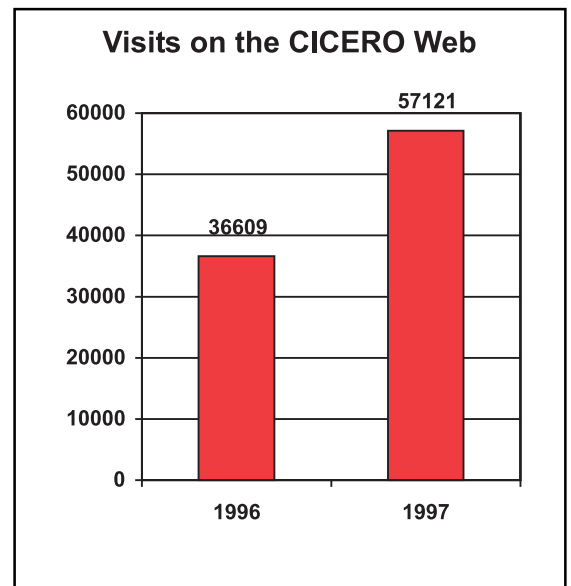
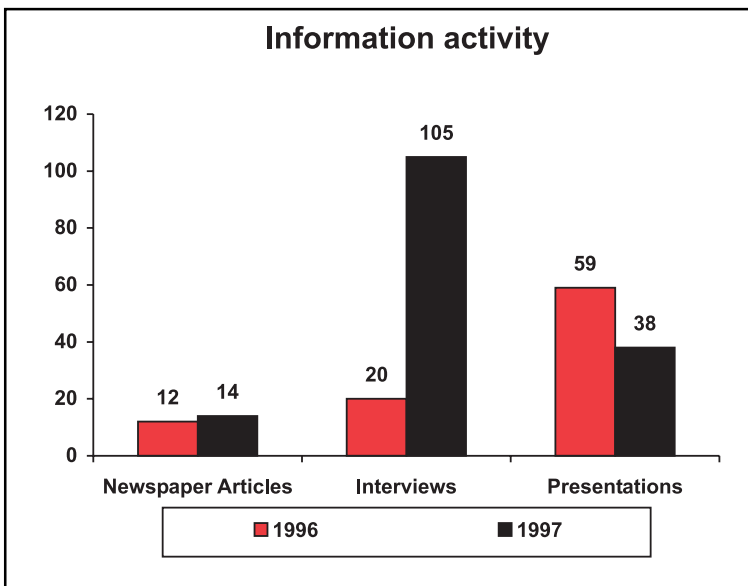
## Cicerone

The newsletter *Cicerone* was published four times in 1997 as volume six. The newsletter has a circulation of about 1300 and is distributed free of charge to ministries, directorates, businesses,

research institutions, schools, as well as individual persons.

## Climate Forum

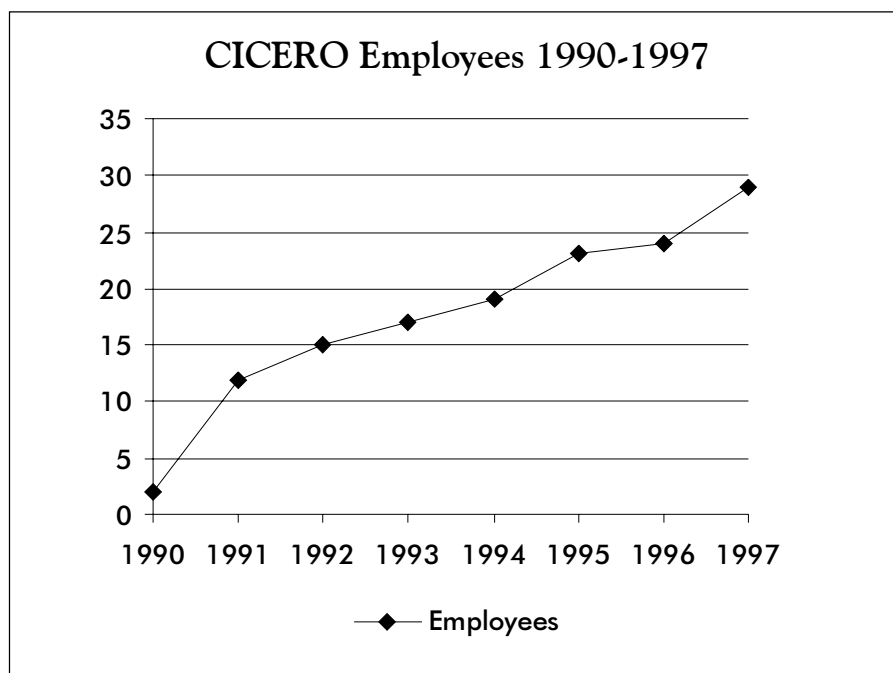
Climate Forum met four times in 1997. The forum assembles members from industry and business, as well as government and researchers, to share information about trends of development with regard to international climate research and policies, and to improve the dialog between the different parties involved. There are fifteen members.



# 6 Personnel

During 1997 the following persons were employed by CICERO. If it isn't explicit indicated, the employee was working full-time.

- Alfsen, Knut H., Director (from January 1, 1997)
- Alver, May Ranveig, Secretary (from April 29, 1997)
- Aunan, Kristin, PhD student (biology/chemistry)
- Berntsen, Terje, Senior Research Fellow, (geophysics) (50%)
- Bretteville, Camilla, Post Graduate Student (economics) (from February 2, 1997)
- Borg, Lene Kristin, Senior Accountant
- Dahle, Øystein, Senior Advisor (20%)
- Dalfelt, Arne, Senior Environmental Advisor
- Evensen, Reidar, Information Officer (from October 21, 1997)
- Fuglestedt, Jan S., Senior Research Fellow (chemistry)
- Gan, Lin, Senior Research Fellow (Energy and Environmental Policy Analyst) (from May 15, 1997)
- Hagem, Cathrine, Research Fellow (economics)
- Hagen, Kjell Arne, Assistant Director/Research Coordinator
- Holtmark, Bjart J., Senior Research Fellow (economics)
- Ihlen, Øyvind, Information Officer (50%) (until August 18, 1997)
- Isaksen, Ivar S. A., Professor, (geophysics) (50%)
- Kasa, Sjur, PhD student (sociology)
- Meze, Elisabeth, PhD student (geography)
- Murvoll, Mariann, Post Graduate Student (political science) (until July 31, 1997)
- Mytting, Tor Sigurd, Conscientious Objector (until September 2, 1997)



- Nordlund, Berit, Secretary (until April 30, 1997)
- Næss, Lars Otto, Research Assistant
- O'Brien, Karen, Senior Research Fellow (geography) (from August 1, 1997)
- Ringius, Lasse, Senior Research Fellow (political science)
- Romstad, Bård E.W., Conscientious Objector (from January 29, 1997)
- Rørvik, Frode, Information Technology Manager (30%)
- Seip, Hans Martin, Professor, (chemistry) (20%)
- Skodvin, Tora, PhD student (political science)
- Sundstøl, Arnt, Conscientious Objector (until January 29, 1997)
- Søfting, Guri Bang, PhD student (political science)
- Torvanger, Asbjørn, Senior Research Fellow (economics)
- Underdal, Arild, Professor, (political science) (20%)
- Aaheim, Asbjørn, Senior Research Fellow (economics)

Four of CICERO's part-time employed Professors and Senior Researchers are permanently affiliated with the University of Oslo.

Senior Research Fellow Berntsen and Professor Isaksen share their time equally between CICERO and the Institute of Geophysics. Professor Seip and Professor Underdal each have 20% part-time positions at CICERO.

All of CICERO's PhD student's are taking part in doctoral courses at the University of Oslo. Eleven of the Researches at CICERO hold doctorates.

# 7 Publications

## CICERO Publications

### CICERO Reports

- Report 1997:1 Aunan, K., G. Pätzay, H. A. Aaheim and H. M. Seip: *Health and Environmental Benefits from the Implementation of an Energy Saving Program in Hungary*
- Report 1997:2 Berntsen, T., I. S. A. Isaksen, J. S. Fuglestedt, G. Myhre, T. Alsvik Larsen, F. Stordal, R. S. Freckleton and K. P. Shine: *Effects of Anthropogenic Emissions on Tropospheric Ozone and its Radiative Forcing*
- Report 1997:3 Fuglestedt, J.S., T. Berntsen, I.S.A. Isaksen, H. Mao, X-Z Liang and W.-C. Wang: *Climatic Effects of NO<sub>x</sub> Emissions through Changes in Tropospheric O<sub>3</sub> and CH<sub>4</sub> - A Global 3D Model Study*
- Report 1997:4 Aaheim, A.H.: *Many Gases and Many Measures - Choice of Targets and Selection of Measures in Climate Policy*
- Report 1997:5 Torvanger, A., J.S. Fuglestedt, B. Holtmark og L.O. Næss: *Klimaforskning og klimaforhandlinger - status og utsikter framover*
- Report 1997:6 Dahle, Ø.: *Towards a Sustainable Energy System - A long Term Transition Strategy*
- Report 1997:7 Torvanger, A.: *Frivillege avtaler som internasjonalt miljøpolitisk verkemiddel*
- Report 1997:8 Ringius, L.: *Differentiation, Leaders and Fairness: Negotiating Climate Commitments in the European Community*

### CICERO Working Papers

- Working Paper 1997:1 Fuglestedt, J.S., T. Berntsen, I.S.A. Isaksen, H. Mao, X-Z Liang and W-C Wang: *Impacts of Reduced NO<sub>x</sub> Emissions on Radiative Forcing Through Changes in Tropospheric O<sub>3</sub> and CH<sub>4</sub> - a Global 3-D Model Study*
- Working Paper 1997:2 Dalfelt, A. and L.O. Næss: *Climate Change and*

*Environmental Assessments: Issues in an African Perspective*

- Working Paper 1997:3 Ringius, L. og G. Bang Softing: *Norsk gjennomføring av Klimakonvensjonen*
- Working Paper 1997:4 Gan, L.: *Energy Development and Environmental Constraints in China*
- Working Paper 1997:5 Holtmark, B.: *Climate agreements: Optimal taxation of fossil fuels and the distribution of cost and benefits across countries*
- Working Paper 1997:6 Ringius, L.: *Identifying and selecting significant, less significant and insignificant actors in global climate change negotiations*
- Working Paper 1997:7 Alfsen, K.H.: *Possible Criteria for Differentiated Commitments: Fair or Feasible?*
- Working Paper 1997:8 Underdal, A.: *Modelling the International Climate Change Negotiations: A Non-Technical Outline of Model*
- Working Paper 1997:9 Hovi, J. og B. Holtmark: *Betingete posisjoner i klimaforhandlingene*
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- **Flatlandsmo, T. and Isaksen, I.S.A.:** Methane and the  $\delta^{13}\text{C}$ -relationship. Poster presentation at Summer School Clermont Ferraud, Riom, France (21.-31.07)
- **Holtmark, B.:** Climate agreements, fossil fuel taxation, and the distribution of costs across countries, IAEES 20. årlige forskerkonferanse, Dehli (January)
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- **O'Brien, K.:** Globalization and Climate Change. SEPMA Ph.D. Course, The Norwegian School of Management, Sandvika (17.-19.10)
- **O'Brien, K.:** The Tropical-Forest – Climate Connection: Comparing Model Projections to Local Realities in Chiapas, Mexico. Aspen Global Change Institute's 1997 Summer Science Session: Session I: Scaling from Site-Specific Observations to Global Model Grids (17.07)
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- **Alfsen, K.H.:** Annex-I costs of mitigating Annex-I CO<sub>2</sub> emissions, Discussant on session on Economic Impacts of Mitigation Actions on Annex I Countries, IPCC Workshop on the Economic Impacts of Annex I Actions on All Countries, held in Oslo (18.-20.8)
- **Alfsen, K.H.:** Scenarier for bærekraftig energi i Norge, Nasjonal konferanse om Energi for et bærekraftig samfunn, arrangert av Norges Forskningsråd på Voksenåsen hotell (18.-19.06)
- **Alfsen, K.H.:** Hva kan vi vente av Kyoto-forhandlingene?, Aktuelle økonomiske problemstillinger, Sosialøkonomisk institutt, Universitetet i Oslo (05.11)
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- **Gan, L.:** Research conference Society, Environment, and Sustainability – The Nordic Perspective, Oslo. Presentation: International Environmental Aid and National Capacity Building: Implementing Agenda 21 in China (25.-27.08)
- **Gan, L.:** The 1997 Symposium for Young Scientists on Strategies for Sustainable Development, held in Beijing, China. Presentation: Energy Development and the Environment in China (22.-24.07)
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- **Isaksen, I.S.A.:** The role of N<sub>2</sub>O in the atmosphere, International Workshop on N from Human N-Cycle, and its Role in Present and Future N<sub>2</sub>O Emissions to the Atmosphere, NLH, Ås
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  - **Torvanger, A.:** Energy and economics og Economic approaches to CO<sub>2</sub> abatement ved sommarskulekurset Energy planning and sustainable development, Universitetet i Oslo (09.07)
  - **Torvanger, A.:** Forskningsprosjekt om frivillige avtaler som miljøpolitisk verkemiddel ved NFR/SAMRAM forskarseminar, Oslo (24.04)
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- **Fuglestedt, J.S.:** WOK, NRK Radio (January)
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- **Fuglestedt, J.S.:** Teknisk Ukeblad (12.11)
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- **Gan, L.:** Wind Energy (28.11)
- **Holtmark, B.:** Nettavisen (November)
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- **Ringius, L.:** Her og Nå, NRK Radio (07.03)
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- **Torvanger, A.:** Dagsnytt, NRK Radio (09.05)
- **Torvanger, A.:** Dag og Tid (10.07)
- **Torvanger, A.:** Teknisk Ukeblad nr. 27 (31.07)
- **Torvanger, A.:** Dagens Næringsliv (04.08)
- **Torvanger, A.:** Firda (13.08)
- **Torvanger, A.:** Dagens Næringsliv (15.10)
- **Torvanger, A.:** Dagsnytt, NRK Radio (October)
- **Torvanger, A.:** Ukeslutt, NRK Radio (October)
- **Torvanger, A.:** Utenriksmagasinet, Nyhetskanalen (06.10)
- **Torvanger, A.:** Adresseavisen (05.12)
- **Torvanger, A.:** Klassekampen (12.12)



# Styrets beretning

## Report of the Board of Directors

CICERO - Senter for internasjonal klima- og miljøforskning ble opprettet ved Kgl. res. av 27. april 1990. Stiftelsens oppgave er å drive forskning, utredning, rådgivning og informasjon om klimarelaterte globale miljøspørsmål og internasjonal klimapolitikk med sikte på å framskaffe kunnskap som kan bidra til å løse det menneskeskapte klima-problemet og å styrke det internasjonale klimasamarbeidet.

CICEROs visjon er å utvikle seg til en institusjon der det utføres genuint tverrfaglig forskning på klima- og miljøproblemer av høy internasjonal faglig kvalitet. Videre ønsker man å utvikle informasjonssiden slik at den tverrfaglige innsikten i problemområdene kommer raskt fram til politikere, forvaltning, næringsliv og øvrig publikum i en form og på tidspunkter som sikrer stor nytteverdi av denne informasjonen.

CICERO skal også analysere og informere om usikkerheten knyttet til klima- og miljøspørsmål, samt påvise mulige politikk-konsekvenser av denne usikkerheten.

### Kort om 1997

Fjoråret var preget av høy aktivitet og oppdragstilgangen var meget god. Knut H. Alfsen tiltrådte direktørstillingen 01.01.97. Alfsen kom fra Seksjon for ressurs- og miljøøkonomi i Statistisk sentralbyrås forskningsavdeling.

Informasjonsvirksomhet ble økt betydelig i 1997. Informasjonsvirksomheten var på høsten spesielt rettet mot klimaforhandlingene som fant sted i Kyoto i desember. Det ble i 1997 startet arbeid for å styrke og fokusere CICEROs forskningsmessige profil.

### Bemanning

I løpet av 1997 var 33 personer knyttet

til senteret (i 1996 31 personer). Av disse var 29 ansatt (i 1996 24), tilsvarende 20,9 årsverk (i 1996 18,8). Antall forskerårsverk var 17 (i 1996 15). Ved utgangen av 1997 hadde senteret 26 ansatte (i 1996 26). CICERO hadde to sivilarbeiderstillinger i 1997. I tillegg hadde to studentstipendiater kontor plass ved senteret.

Fem personer hadde fødsels- eller pappapermisjon i 1997, tilsammen 1,7 årsverk.

I 1997 ble det utbetalt kr. 160.000 i samlet godtgjørelse til medlemmer og varamedlemmer av CICEROs styre og totalt kr. 420.000 i lønn og godtgjørelse til daglig leder.

### Økonomiske nøkkeltall

Regnskapet for 1997 er gjort opp med et overskudd på kr. 763.261. Egenkapitalen er ved utgangen av 1997 på kr. 6.707.833. Overskuddet i 1997 vil bli tilført driftsfondet, som etter tilførsel av årsresultat vil være på kr. 6.657.833.

Basisbevilgningens andel av samlede driftsinntekter utgjorde i 1997 35%. Tilsvarende tall for 1993, 1994, 1995 og 1996 var henholdsvis 73%, 49%, 49% og 45%.

Driftsresultatet var i 1997 på kr. 312.618 (tilsvarende 2% av omsetningen), mens det i 1996 var på kr. 468.831. Nedgangen i driftsresultat kompenseres av en økning i finansinntektene slik at årsresultatet for 1997 blir noe bedre enn i 1996.

Styret ser med tilfredshet på CICEROs evne til å tiltrekke seg oppdrag. Styret ser derimot med bekymring på at basisbevilgningen stadig reduseres i reelle termer og at dette skjer uten at det gis en faglig begrunnelse fra Norges forskningsråd.

Inntekter fra internasjonale oppdragsgivere utgjorde i 1997 26% av samlede inntekter (i 1996 21%), med

22% fra UNEP, 2% fra Verdensbanken og 2% fra Nordisk Ministerråd. Fra nasjonale kilder utgjorde oppdragsinntekter fra ulike departementer 6% (i 1996 15%) og fra Norges forskningsråd 25% (i 1996 9%).

Selv om det må anses som positivt at CICERO har fått en økende andel finansiering fra Norges forskningsråd, bør man framover differensiere inntektsgrunnlaget slik at man ikke blir for avhengig av noen få forskningsprogrammer i Forskningsrådet. Det er også en målsetning å differensiere produktutvalget for å sikre robusthet i CICEROs økonomi.

Nøkkeltallene viser at CICERO har hatt en tilfredsstillende økonomisk utvikling i 1997 med god likviditet og soliditet. Likviditetsgraden er på 2,1 (i 1996 4,1) mens egenkapitalen ved inngangen til 1998 utgjorde 68% av gjeld og egenkapital (i 1996 76,8%).

### Forskning og publisering

Senterets vitenskapelige personale er fordelt på tre grupper: Sosialøkonomi, statsvitenskap/sosiologi og naturvitenskap. Samtidig er CICERO en tverrfaglig matriseorganisasjon der hovedaktivitetene, dvs. prosjektene, går på tvers av gruppene. Denne modellen er valgt for å fremme CICERO som et akademisk basert miljø der forskerne arbeider tverrfaglig og samtidig har en solid forankring i egen disiplin.

Det stilles krav til forskerne ved senteret om at de skal kunne kombinere grunnleggende vitenskapelig arbeid med anvendt forskning, utredning og rådgivning til norske myndigheter og internasjonale organisasjoner.

CICERO utarbeidet i 1997 en strategisk plan for de nærmeste årene og fulgte opp denne med søknad til basisbevilgningsutvalget om midler til et strategisk instituttprogram.



Strategien og instituttprogrammet bygges opp under arbeidet med å etablere formaliserte modellelementer med særlig vekt på å studere betydningen av "de andre" klimagassene i tillegg til CO<sub>2</sub>.

Modellrammen vil fungere som et felles referansesystem og sikre en tilstrekkelig fokusering av den faglige aktiviteten slik at senterets begrensede ressurser utnyttes best mulig i forsknings- og informasjonsvirksomheten. Dette vil være med på å sikre den langsiktig utvikling av senteret.

CICERO har i løpet av 1997 deltatt i en rekke sentrale nasjonale og internasjonale prosesser knyttet an til klimaproblemet, og Styret registrerer med tilfredshet at bruken av CICERO som et sentralt kompetansesenter innen klimaforskning er økende. Foruten IPCC, forskningsråd og departementer er det spesielt gledelig å konstatere en økt etterspørsel etter senterets tjenester også fra næringslivet.

Det var en oppgang i interne publikasjoner i 1997 i forhold til foregående år. Også eksternt publisering har økt, samtidig som det har vært en økning av populærvitenskapelig formidling.

### Informasjonsvirksomhet

CICERO hadde stor økning i informasjonsvirksomhet i 1997 i forhold til foregående år. Senteret hadde fra begynnelsen av 1996 en informasjonsmedarbeider i halv stilling, men dette ble omgjort til full stilling i oktober 1997. Foruten at aktiviteter som nyhetsbrevet Cicerone og Klimaforum ble videreført, var senterets medarbeidere hyppige deltakere i den offentlige debatten om klimaspørsmål og foredragsholdere i ulike fora.

CICERO laget i 1996 en hjemmeside på Internett. Kvaliteten er blitt stadig bedre og antall besøk på hjemmesiden har økt fra 36.609 i 1996 til 57.121 i 1997. Styret merker seg med glede at CICERO i økende grad nyttes som kompetansesenter av norske medier. Spesielt stor var pågangen før, under og etter klimaforhandlingene i Kyoto.

Senterets nyhetsbrev Cicerone

utkom med fire numre i 1997, som var nyhetsbrevets sjette årgang. Cicerone distribueres gratis til ca. 1.300 abonnenter. Hovedtyngden av abonnentene er å finne i departementer, direktorater, næringslivet, forskningsinstitusjoner og den videregående skole. Cicerone gjennomgikk i 1997 en fornyelse redaksjonelt og designmessig.

Klimaforum hadde fire møter i 1997. Forumet samler deltakelse fra næringsliv, myndigheter og forskning og har som formål å videreformidle kunnskap om utviklingen på klimaoområdet og å skape en dialog om sentrale klimapolitiske emner mellom alle aktørene. Femten bedrifter og statlige institusjoner er medlemmer av forumet.

CICERO er gjennom sitt mandat gitt en stor oppgave knyttet til informasjon om internasjonal klimapolitikk og klimaforskning. Fremdeles er det rom for å gjøre mer, men satsingen vil ikke kunne opprettholdes dersom basisbevilgningene i årene framover fortsatt blir redusert.

### Forsknings samarbeid

CICEROs plassering ved Universitetet i Oslo og senterets nære samarbeid med relevante institutter er viktig på et felt hvor grunnforskning og anvendt forskning er meget tett knyttet til hverandre. Senterets tilknytning til Universitetet er strategisk viktig og av gjensidig nytte og verdi.

Samarbeidet med Universitetet i Oslo er formalisert gjennom ramme-, drifts- og leieavtaler. Ved UiO påtar CICERO seg så langt kapasiteten rekker oppgaver i forbindelse med undervisning og veiledning av hovedfagsstudenter i samarbeid med de aktuelle instituttene. CICEROs tre seniorforskere og en forsker er fast tilknyttet Universitetet i Oslo. Senterets seks doktorgradsstipendiater deltok alle i den organiserte doktorgrads utdannelsen ved UiO. Én av stipendiatene avla doktorgrad i 1997.

I Norge samarbeider CICERO med Universitetet i Oslo og dets institutter såvel som med andre forskningsmiljøer slik at en kan trekke veksler på

hverandres internasjonale kontaktnett.

Med utgangspunkt i Regjeringens og Stortingets intensjon for opprettelsen av CICERO, er det en spesiell oppgave å bistå i den nasjonale koordinering på området klimapolitisk forskning i Norge. CICERO fikk i 1996 ansvaret for å koordinere det nyopprettede forskningsprogrammet "Samfunnsmessige rammebetingelser og virkemidler for norsk miljø- og energipolitikk" (SAMRAM) i Norges forskningsråd. CICEROs direktør sitter i programstyrene for KLIMATEK og NORMIL 2000.

Gjennom særskilte midler som Norges forskningsråd har stillet til rådighet for samarbeidstiltak mellom de utenrikspolitiske institutter i Oslo-regionen, har CICERO i løpet av 1997 fortsatt samarbeidet med Fridtjof Nansens Institutt. CICERO deltar sammen med fire andre institusjoner i Norwegian Consortium for Energy and Environment (NORCE). Konsortiets medlemmer er, i tillegg til CICERO, Senter for økonomisk analyse (ECON), Fridtjof Nansen Institutt (FNI), Institutt for energiteknikk (IFE) og Norsk institutt for luftforskning (NILU). Konsortiets aktiviteter har vært minimale i 1997.

### Arbeidsmiljø

Generelt var arbeidsmiljøet ved CICERO bra. Sykefraværet i 1997 var på 5% (i 1996 4%). Virksomheten forurenser ikke det ytre miljø.

### Rådet og styret

CICERO hadde fra opprettelsen i 1990 og fram til 1997 en rådsforsamling. Erfaringene har vist at Rådet hadde en viktig rolle i en etableringsfase. Etter at innkjøringsperioden var over var det ikke det samme behovet for Rådet og Styret foreslo i samråd med leder av CICEROs rådsforsamling, konsernsjef Sven Ullring, Det Norske Veritas, nedleggelse av Rådet.

Rådet sluttet seg enstemmig til dette og de nødvendige vedtektsendringer ble godkjent av Det akademiske kollegium ved Universitetet i Oslo,

Miljøverndepartementet og Kirke-, utdannings- og forskningsdepartementet. Vedtektsendringene innebærer overføring av Rådets vedtaksmyndighet til Styret. Styret ønsker å uttrykke takknemlighet for den innsats og aktive rolle Sven Ullring har spilt i CICEROs relativt korte historie både

som leder av interimsstyret, og som nestleder og senere som leder av senterets rådsforsamling.

Miljøverndepartementet oppnevnte medio februar 1997 nytt styre for CICERO med funksjonstid 21.02.97-20.02.99 med direktør Knut N. Kjær, Norges Bank, som styreleder.

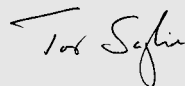
Direktør Terje Osmundsen, Kværner ASA, ledet Styret fra høsten 1994 fram til primo 1997. Universitetsdirektør Tor Saglie har siden 1991 vært Styrets nestleder.

Styret hadde i 1997 fire møter hvorav ett var kombinert med et faglig seminar med deler av CICEROs stab.

Oslo, 12. mars 1998



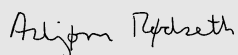
Knut N. Kjær  
Styrets leder



Tor Saglie  
Nestleder



Inger Hanssen-Bauer



Asbjørn Rødseth



Inger Johanne Wiese



Bente Herstad  
Varamedlem



Anne Therese Hestenes



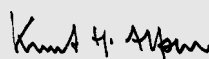
Hege Skjeie



Asbjørn Aaheim  
Ansattes representant



Raino Malnes  
Varamedlem



Knut H. Alfsen  
Direktør

## Resultatregnskap for CICERO 1997

Driftsinntekter	Noter	1997	1996
Prosjektinntekter	1	9 224 406	6 441 503
Basisbevilgning		4 951 000	5 189 000
Andre driftsinntekter		16 600	13 000
		<u>14 192 006</u>	<u>11 643 503</u>
<b>Driftskostnader</b>			
Innkjøp av FoU og andre underleveranser		2 894 930	1 005 043
Lønn og sosiale kostnader		7 114 753	6 264 408
Husleie		849 744	880 405
Reiser		1 234 462	1 181 162
Konferanser og møter		92 987	365 448
Andre driftskostnader		1 069 776	1 001 057
Avskrivninger	2	308 856	493 817
Tap på fordringer	4	313 881	-16 668
		<u>13 879 388</u>	<u>11 174 672</u>
<b>Driftsresultat</b>		<u>312 618</u>	<u>468 831</u>
<b>Finansinntekter</b>			
Renteinntekter		323 252	238 118
Agio		133 193	21 509
		<u>456 446</u>	<u>259 627</u>
<b>Finanskostnader</b>			
Rentekostnader		3 166	911
Agio		2 637	3 279
		<u>5 803</u>	<u>4 190</u>
<b>Finansresultat</b>		<u>450 643</u>	<u>255 437</u>
<b>Årsresultat</b>		<u>763 261</u>	<u>724 268</u>
<b>Disponering av årets resultat</b>			
Overført driftsfond		<u>763 261</u>	<u>724 267</u>

## Balanse for CICERO per 31.12.97

EIENDELER	Noter	1997	1996
<b>Omløpsmidler</b>			
Kontanter og bankinnskudd	3	4 324 875	5 799 363
Kundefordringer	4	234 155	994 724
Andre fordringer		98 536	48 743
Forskudd til leverandører		50 531	
Opptjent/ikke fakturert arbeid	5	1 954 413	566 039
		6 662 510	7 408 868
<b>Anleggsmidler</b>			
Statsobligasjoner	6	2 876 580	
Inventar og datautstyr	2	311 654	333 656
		3 188 234	333 656
<b>Sum eiendeler</b>		9 850 744	7 742 524
<b>GJELD OG EGENKAPITAL</b>			
<b>Kortsiktig gjeld</b>			
Leverandørgjeld		402 394	295 622
Skyldig forskuddstrekk, arbeidsgiveravgift, pensjonsinnskudd, fagforeningskontingent og feriepenger og annet pl. trekk		1 232 820	1 004 569
Forskuddsbetalte prosjektmidler		985 006	404 247
Annen gjeld	7	522 692	93 517
		3 142 911	1 797 955
<b>Egenkapital</b>			
Grunnkapital		50 000	50 000
Driftsfond		6 657 833	5 894 569
		6 707 833	5 944 569
<b>Sum gjeld og egenkapital</b>		9 850 744	7 742 524

## Noter

### Note 1: Prosjektinntekter

CICEROs prosjekter mottok, foruten basisbevilgningen, finansiering fra følgende instanser:

	1997	1996
Forskningsrådet	25%	9%
UNEP	22%	12%
Departementer	6%	15%
Organisasjoner/stiftelser	3%	2%
Næringsliv m.m.	3%	2%
Verdensbanken	2%	9%
Nordisk Ministerråd	2%	
Andre off. institusjoner	2%	6%
	65%	55%

### Note 2: Varige driftsmidler

	Datautstyr	Kontorutstyr	Sum
Anskaffelseskostnad per 01.01.97	1 012 996	468 456	1 481 452
Årets investeringer	231 075	55 779	286 853
Avgang til anskaffelseskostnad			0
Akkumulerte avskrivninger per 31.12.97	976 770	479 882	1 456 652
Bokført verdi per 31.12.97	267 300	44 353	311 653
Årets avskrivninger	245 099	63 757	308 856
Avskrivningsmetode	Lineær avskrivning over 3 år	Lineær avskrivning over 3 år	

Varige driftsmidler har tidligere blitt avskrevet for hele år, uavhengig av når på året driftsmiddelet ble anskaffet. For 1997 har driftsmidlene blitt avskrevet forholdsvis i samsvar med måneden kjøpet ble foretatt.

Investering i varige driftsmidler de siste fire år (tidligere års anskaffelser ble kostnadsført i sin helhet).

År	Datautstyr	Kontorutstyr	Sum
1994	407 655	311 463	719 118
1995	366 708	156 993	523 701
1996	238 633		238 633
1997	231 075	55 779	286 854
Sum	1 244 071	524 235	1 768 306

#### Omløpsmidler

Omløpsmidlene er vurdert til virkelig verdi og ikke høyere enn anskaffelseskostnad.

### Note 3: Kontanter og bankinnskudd

Posten inkluderer en bankkonto i USD som står oppført i balansen med kurs per 31.12.97. Regnskapsposter i utenlandsk valuta i løpet av året er inntekts- og kostnadsført til periodens kurs.

### Note 4: Kundefordringer

Posten inkluderer en avsetning for forventet tap på fordring i forbindelse med et prosjektoppdrag for Verdensbanken pålydende kr. 222.609. I tillegg er det kostnadsført i regnskapet et tap på uoppgjort fordring fra 1996 i tilknytning til samme prosjekt.

### Note 5: Optjent/ikke fakturert arbeid

Posten består av direkte lønnskostnader ved den nedlagte arbeidsinnsats med tillegg av andel felleskostnader og direkte prosjektutlegg.

### Note 6: Statsobligasjoner

CICERO kjøpte 24.07.97 statsobligasjoner for 2,7 millioner kroner som står oppført i balansen til anskaffelseskost.

### Note 7: Annen gjeld

Denne posten består av avsetning for påløpte, ikke fakturerte kostnader per 31.12.97.

## Kontantstrømanalyse 1997

#### Kontantstrøm fra operasjonelle aktiviteter

Årets resultat	763 261
Avskrivninger	308 856
Økning i varelager	-1 388 374
Reduksjon av kundefordringer	760 568
Økning i leverandørgjeld	106 772
Endring i andre tidsavgrensningsposter	1 188 391
<i>Netto kontantstrøm fra operasjonelle aktiviteter</i>	<u>1 739 474</u>

#### Kontantstrøm fra investeringsaktiviteter

Utbetaling ved kjøp av varige driftsmidler	-286 853
Kjøp av statsobligasjoner	-2 876 580
<i>Netto kontantstrøm fra investeringsaktiviteter</i>	<u>-3 163 433</u>

#### Netto endring i kontanter og kontantekvivalenter

Kontanter og kontantekvivalenter per 01.01.97	5 799 363
<i>Kontanter og kontantekvivalenter per 31.12.97</i>	<u>4 375 403</u>



Riksrevisjonen

## REVISJONSBERETNING FOR 1997

Vi har revidert årsoppgjøret for Cicero for 1997 som viser et årsoverskudd på kr.763.261,-. Årsoppgjøret, som består av årsberetning, resultatregnskap, balanse og noter, er avgitt av stiftelsens styre.

Vår oppgave er å granske stiftelsens årsoppgjør, regnskaper og behandlingen av dens anliggender for øvrig.

Vi har utført revisjonen i henhold til gjeldende lover, forskrifter og god revisjonsskikk. Vi har gjennomført de revisjonshandlinger som vi har ansett nødvendige for å bekrefte at årsoppgjøret ikke inneholder vesentlige feil eller mangler. Vi har kontrollert utvalgte deler av grunnlagsmaterialet som underbygger regnskapspostene og vurdert de benyttede regnskapsprinsipper, de skjønsmessige vurderinger som er foretatt av ledelsen, samt innhold og presentasjon av årsoppgjøret. I den grad det følger av god revisjonsskikk har vi gjennomgått stiftelsens formuesforvaltning og internkontroll.

Etter vår mening er årsoppgjøret gjort opp i samsvar med regnskaps- og stiftelsesloven, forskrifter og stiftelsens formål, og gir et forsvarlig uttrykk for stiftelsens økonomiske stilling pr. 31.12.97 og for resultatet av virksomheten i regnskapsåret i overensstemmelse med god regnskapsskikk.

Oslo, 13. mars 1998

Etter fullmakt

Gro Hansen  
Underdirektør

Morten Bråthen  
Hovedrevisor

## ***This is CICERO***

CICERO was established by the Norwegian government in April 1990 as a non-profit organization associated with the University of Oslo.

The research concentrates on:

- International negotiations on climate agreements. The themes of the negotiations are distribution of costs and benefits, information and institutions.
- Global climate and regional environment effects in developing and industrialized countries. Integrated assessments include sustainable energy use and production, and optimal environmental and resource management.
- Indirect effects of emissions and feedback mechanisms in the climate system as a result of chemical processes in the atmosphere.

