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Picture: Yongguan (Y-G) Zhu at Beiyunhe in Tianjin addressing the eutrophication issue in the region
Short description of main achievements in 2007

The main SINCIERE event in 2007 was the visit to Oslo by the honourable Chinese SINCIERE delegation consisting of eight prominent colleagues from CAS, RCEES and Univ. of Petroleum. During their stay they visited SINCIERE member institutes and held meetings with representatives from the Norwegian Research Council, Ministries of Environment and Foreign Affairs (UD) as well as the State Pollution Control Authorities. A Member Forum meeting was held at CIENS during their visit, attracting more than 87 participants. An invitation to participate in CAS’s integrated research activities in the Beijing-Tianjin region, expressed during the Member Forum meeting, was followed up by a feasibility study, partly funded (i.e. NOK 400 000) by UD. This study included a study visit to the Beijing – Tianjin area (Cover photo) followed by the 3rd SINCIERE Member Forum meeting held at RCEES. A SINCIERE concept paper, *Sino-Norwegian Cooperation on Environmental Research in the Beijing-Tianjin area* (Attachment 1), was completed and submitted to UD, early 2008.

Other achievements in 2007 are the establishment of the SINCIERE office in RCEES (Picture below) and progress made on the design and content of the not yet released SINCIERE internet homepage. Formalities around the associated memberships were sorted out and we now are proud to present that BioForsk, Univ. of Life Science, Norw. Forest & Landscape Institute, HiT, ECON, FNI, and NORDECO are members of SINCIERE in addition to UiO and the CIENS institutes. The centre was consecutively staffed with two administrative coordinators, due to a maternity leave. In addition there was a secretary and a director provided in kind by RCEES/CAS and Scientific coordinator provided in kind by UiO. There has also been an active working committee handling the ongoing activities on the Norwegian side.

Above picture: Name plate of centre at the entrance of the RCEES office building
Main activities in 2007

• Council meeting:
  o March 20th at RCEES in Beijing (Minutes in Attachment 2)

• Board meetings:
  o March 199th at RCEES in Beijing (Minutes in Attachment 3)

• Member Forum meetings:
  o May 11th at CIENS. 87 Norwegian participants from more than 24 Institutes. (Agenda and Participation list in Attachment 4)
  o October 19th at RCEES. Approx. 30 participants. (Agenda in Attachment 5)

• Norwegian working committee meetings:
  o January 8th (Minutes in Appendix 6)
  o January 19th (Minutes in Appendix 7)
  o February 26th (Minutes in Appendix 8)
  o May 25th (Minutes in Appendix 9)

• Presentations of SINCIERE
  o January 30th: BioForsk
  o February 5th: Telemark Regional College (HiT)
  o February 8th: Norwegian Pollution Control Authorities (SFT)
  o May 11th: CIENS
  o August 16th: Ministry of Foreign Affairs
  o September 17th – 18th: CAS-Nordic conference at Lund, Sweden
  o November 19th: RCEES

• Meetings:
  o Sept. 20th: Chen Yongning at the Chinese Embassy in Oslo

• Delegation visit to Oslo
  o 8 colleagues from CAS/RCEES + Univ. of Petroleum visited Norway May 6th - 13th (List of delegation members in Appendix 10) and had visits to UiO, NRC, CIENS w/repr. from all institutes, UMB w/repr. from BioForsk, Norwegian Forest & Landscape Inst., MD w/repr. from UD and SFT (Travel plan in Appendix 11).

• Project acquisition visit to Beijing-Tianjin
  o October 15-16th: Tour of the Beijing-Tianjin region. Visit to project sites Beiyunhe, Tianjin Airport Logistics Processing Zone and Tianjin Academy of Environmental Sciences (Plan of journey in Appendix 12)
  o October 17th: Discussion meeting RCEES
**SINCIERE balance of accounts**  
*Financing year 2007*

The accounts are managed by the Department of Chemistry and supervised by the accounts department of the Faculty of Mathematics and Natural Sciences, University of Oslo. The bookkeeping follows good accounting practice.

The accounts are managed through 3 accounts;  
SINCIERE Norwegian Research Council account – 142699  
SINCIERE Membership fee account – 460731  
SINCIERE Minestry of Foreign Affairs account – 200610

### SINCIERE 2007

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<td>Council and Board Members travel</td>
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<td>Conferences, Workshops, Meetings</td>
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<td><strong>330 621</strong></td>
<td><strong>-29 379&lt;sup&gt;3&lt;/sup&gt;</strong></td>
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Notes to the accounts:

1. Stipulated project overhead from SINCIERE/RCEES project NOK 40 000 greater than actual result. This is balanced by lower costs invoiced by Chinese side of SINCIERE through RCEES.
2. NOK 400 000 in Project income for the Beijing-Tianjin Feasibility study was credited in 2007, while invoices for NOK 360 000 are claimed in 2008.
3. Accumulated deficit from 2007 of NOK 29 379 is balanced through proposed account for 2008.
SINCIERE Concept Paper

Sino-Norwegian Cooperation on Environmental Research in the Beijing-Tianjin area
Preface

This concept paper is prepared with basis in a feasibility study carried out by the Norwegian partners in The Sino-Norwegian Centre for Interdisciplinary Environmental Research – SINCIERE. The feasibility study was funded by the Norwegian Ministry of Foreign Affairs. An important part of the feasibility study was a field trip to the Beijing-Tianjin area in October 2007 with subsequent meetings with Chinese scientists and scientific institutions.

The preparation of the paper has been coordinated by Thorjørn Larssen (NIVA), with inputs from a large team of Norwegian scientists from SINCIERE partner institutes, including Rolf Vogt (Dept. of Chemistry, UiO), Chongyu Xu (Dept. of Geosciences, UiO), Frode Stordal (Dept. of Geosciences, UiO), Geir Orderud (NIBR), Haakon Thaulow (NIVA), Haakon Vennemo (ECON), Jan Mulder (UMB), Kristin Aunan (CICERO), Lasse Fridstrom (TØI), Lin Gan (CICERO), Nils Roar Sælthun (Dept. of Geosciences, UiO), Odd Eilertsen (Norwegian Forest and Landscape Inst.), Petter Jenssen (UMB), Rune Bakke (University College Telemark), Steinar Larssen (NILU), Valter Angell (NUPI), Yu Bai (TØI), Liu Li (NILU), Jon Naustdalslid (NIBR).

Oslo and Beijing, 24 January 2008
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Summary

In order to strengthen the cooperation between Norway and China regarding environmental research, *The Sino–Norwegian Centre for Interdisciplinary Environmental Research – SINCIERE* – was established in 2006. The Centre is a joint effort of The University of Oslo, CIENS (Oslo Centre for Interdisciplinary Environmental and Social Research) and the Chinese Academy of Sciences (CAS).

China has a large number of reputable scientists at internationally leading level, also within environmental sciences. Typically, Chinese scientists are strong in classical research fields, and may in this respect play a valuable role in developing Norwegian research. In Norway, science related to integrated aspects of environmental science is more developed and we have thereby much to contribute in China in this aspect.

The Norwegian institutions of SINCIERE have been invited by CAS to participate in major environmental research projects in the Beijing-Tianjin region. This is an extremely important region in China in terms of scientific research, with the best scientists and research groups attracted to projects in this region. The region is therefore particularly suitable for research collaboration in order for the Norwegian partners to get maximum outputs from the collaboration.

We propose a research program where we utilize the strengths of both Chinese and Norwegian environmental scientists. The suggested program build on a common, integrated, interdisciplinary approach called DPSIR (Drivers - Pressures - State - Impacts - Response) and covers a range of major environmental aspects, including climate change, energy and water and span the range of scientific disciplines from natural to social sciences. The DPSIR approach is well suited for building the necessary scientific understanding needed for sustainable management of natural resources. The approach motivates both interdisciplinary research and policy relevant scientific development in basic disciplines. Interdisciplinary research must meet both traditional scientific quality standards in basic disciplines and in addition be innovative in its exploitation of the interfaces between them. Interdisciplinary progress requires therefore strong interfaces. Mismatches in scientific culture, methods and data are among the major obstacles to be overcome. Data and insight obtained in one field should provide a basis for results in other fields that otherwise would be unlikely. Thus, successful interdisciplinary research also strengthens basic disciplines.
Energy production, industrial activities, transportation, agriculture and urban development are all pressures to the Chinese environment. A set of sub-projects are integrated in the suggested research program. The sub-projects will analyze how these activities produce various pollutants, consequently changed properties of water, air, soil, and eventually the climate-change effects on the nature resources. The proposed sub-projects target these core activities and mechanisms of the complex changes in processes of the environment. The proposed policies and technologies interfere at different stages of the environmental changes. Based on a holistic understanding of the problems under research, the policy assessment takes into consideration multiple effects of a policy on different resources and the possible interaction among the effects at different levels.

Therefore, the sub-projects all constitute several elements of the DPSIR structure and interact among them in an integrated manner. In addition, a set of over-arching activities are proposed. We believe such a structure gives substantial benefits compared to a set of similar independent projects, not only in terms of applicability of the results to the society, but also in scientific outputs. The magnitude of the program, the many research fields covered, and the common DPSIR approach taken across the program, signals a commitment that Norway will contribute to develop an interdisciplinary environmental research capacity in China. We believe such a capacity is a prerequisite for sustainable development in the country.

The sub-projects targets the following, partly overlapping (and hence integrated) fields:

- Abating air pollution – impacts on regional climate
- Abating air pollution on a local and regional scale – integrated analysis of costs and benefits
- Integrated assessment of bioenergy resources, technology applications, wetlands restoration and waste water treatment
- Climate change and water resources
- Development and demonstration of decentralized sustainable sanitation
- Land use change – effects on biodiversity, land cover and land degradation
- POPs cycling from land to ocean – an integrated approach for reducing POPs impacts
- Heavy metal and the quality of soils and waters – an integrated approach for reducing heavy metal impacts
- Development of a circular economy

An interdisciplinary approach will be applied in order to find cost-effective solutions to resolve pressing problems in local, regional and global environmental protection. Likely, the results will stimulate demonstration projects for policy and technology implementation. If successful, the results from the research, and possible demonstration, have large potentials for being disseminated to other regions facing similar problems.

Norwegian involvement will to a large extent be in connection with already funded Chinese activities. Norwegian funds will be needed first and foremost for the involvement of Norwegian scientists. Expenses related to Chinese partners are covered mainly by Chinese funds, although some additional funds for facilitating the cooperation may be needed. A minimum financial input of approximately 15 million NOK per year over a five year period is necessary to carry out a program as outlined. More funding will ensure more time and resources for more thorough and focused research efforts, and also have larger possibilities for additional research topics.
1. Sino-Norwegian Environment Cooperation

Cooperation between China and Norway in the field of environmental protection and related research has a history of some 20 years. The cooperation was formalized at the Government level in November 1995 when a Memorandum of Understanding was signed by the National Environmental Protection Agency (NEPA) and the Norwegian Ministry of Environment (MoE). A wide range of environment related projects has been funded by Norwegian funds for development cooperation since 1995\(^1\). These projects have focused on capacity building at institutions associated with the Chinese environmental authorities at city-, provincial- and state-levels. Some of the projects have had aspects of research, although main focus has been capacity building and training. In many cases project collaboration has resulted in lasting scientific relationships and cooperation between Norwegian research institutions and their Chinese partners, albeit often on an ad hoc basis, based mostly on individual contacts and networks.

In the last decade, the motivation for international cooperation for Chinese research institutions had changed substantially. This is mainly related to the rapid development of the Chinese economy as well as the changes in institutional structures for research and funding and incentives for employees. Ten years ago, foreign funding was a major motivation for Chinese scientists for cooperation. Today, however, the best scientists in China have good funding conditions from national and international sources, and the main motivation for cooperation is primarily related to scientific merits, e.g. publications in leading international journals and, to a lesser extent, presentations at international conferences. Hence, only those merited foreign scientists and research institutions are invited for cooperation with leading Chinese researchers. However, this situation is somehow different at some of the provincial-level universities and research institutes where their desire to cooperate with international research institutes is still strong, due to both financial and scientific capacity development perspectives. To a large extent, a large amount of research funding in China is concentrated at a small number of leading research institutes, while the majority of normal research institutes are challenged with resources and quality of scientific personnel. We believe that this divided situation will become even more pronounced in the future. China gives high priority to applied and market relevant research, and substantial resources, especially for the leading research groups, are available. Chinese research institutions and their scientific quality are developing quickly. More and more Chinese scientists are publishing their work in internationally leading journals and they are becoming increasingly more attractive partners in the international scientific community.

As a consortium of leading environmental research institutions in Norway, with interest in cooperation with China, we believe further coordination amongst us is important in order to constitute a stronger and more attractive partner for leading Chinese environmental research institutions. SINCIERE (Sino-Norwegian Centre for Interdisciplinary Environmental Research) is established with the overall aim to act as a catalyst and mediator for cooperation between China and Norway within the field of environmental research. The Centre also seeks to facilitate interdisciplinary and policy relevant research and serve as a node for a broad network of associated institutions. Furthermore, the aim is to strengthen the institutional and scientific capacity in China to facilitate sustainable development. Special emphasis will be on

conducting integrated assessments, taking into account the full range of factors of importance for the impact and mitigation of environmental stressors. The Centre has potential for developing novel approaches linking natural and social sciences within the field of environmental research in a Chinese context, particularly in developing policy relevant and solution-oriented approaches for sustainable development in China in a long-term perspective. We consider it important to linking science and innovative solutions to pressing environmental problems, which has a large potential in China.

The founding institutions of SINCIERE are in a strong position to fill their roles in the Centre, especially due to their comprehensive contacts and research networks and long experience in interdisciplinary research. The Norwegian institutions involved in the Centre have broad experience in conducting and leading international environmental monitoring and research projects as well as a long history of research cooperation with China. For the Chinese partners, the Centre constitutes a formalized forum for cooperation, which will also increase their access to international research communities.

Enhanced cooperation between China and Norway in environmental research will be of mutual benefit. Chinese institutions are increasingly strong in the traditional discipline-oriented research fields and leading groups are equipped with state-of-the-art laboratories, which are considerably more advanced and well equipped than their Norwegian counterparts. These are utilized to perform internationally leading research in an increasing number of fields. Norway also has internationally strong research groups in environmental research fields. We believe one of our strengths is the experience with and desire to cooperate across scientific disciplines and hence create holistic views and integrated approaches to complex environmental problems, which is a prerequisite for guiding policy-making and searching for alternative solutions to key environmental problems.

Traditionally, China has given priority to regional and local environmental challenges, especially on water, air pollution and land degradation, but less emphasis on global environmental issues, such as climate change, its impact and mitigation measures. China has a great potential in utilizing possible co-benefits of linking the local/regional- with global environment in holistic approach. We see this as our strength, which can be promoted in China to bring new perspectives in linking regional environmental protection, sustainable development and climate change mitigation and adaptation.

Today’s environmental problems are increasingly complex, and interdisciplinary cooperation is more crucial than ever. This is a field where China can benefit from Norwegian experiences. The Norwegian institutions behind SINCIERE constitute the strongest environmental research consortium in Norway covering a broad range of disciplines and research fields. We believe our capacities in interdisciplinary research enables us play an important role in promoting an integrated approach to environmental research in China – a development path that in our opinion is strongly needed.

Norway could benefit from more coordinated and integrated cooperation on environmental research with China. The strong position of science and the integrated use of scientists as key advisors in development of Chinese policies make research cooperation an excellent platform for promoting cooperation within policy development as well as trade. The Chinese society has a strong tradition for emphasizing personal connections and long-term cooperation is crucial for developing such personal relationships. Hence, our good and long standing connections with leading Chinese scientists that act as agenda setters are therefore an
important basis also for communication at the political level and to promote Norwegian environmental technology. This is furthermore of importance regarding China’s crucial role in future international treaties on global environmental challenges. China is, due to its size, one of the worlds leading emitters of global pollutants, such as CO₂ and mercury. History has shown that provided with appropriate facts and science-based, politically feasible solutions the Chinese government is able to implement abatement measures.

We therefore propose that strengthened Norwegian cooperation with China in the field of the environment will benefit from having three different (yet partly overlapping) mechanisms: One is the classic development cooperation with a strong capacity building component, the second is environmental technology and business cooperation, the third is environmental research cooperation (Figure 1).

Figure 1. Three different mechanisms for environmental cooperation with China: Development cooperation and capacity building, Environmental technology and business cooperation, Environmental research cooperation. This document focuses on environmental research cooperation.

2. Cooperation with Chinese Academy of Sciences and other partner institutes

SINCIERE has been invited to cooperate with the Chinese Academy of Sciences (CAS) in research related to several large national (Chinese) projects in the Beijing-Tianjin area. These are large projects with several participating institutions hosting large teams of scientists, sponsored by Ministry of Science and Technology (MOST), National Science Foundation and the Chinese Academy of Sciences.
One of these projects, which started in late 2007, is a MOST² ‘973 project’³ called “Study on combined pollution process, eco-toxicity impacts, control and remediation principles in the Jing-Jin-Bohai Bay Region”. This project targets basic research in a range of different aspects related to industrial pollution and environmental degradation, including sources and distribution of main pollutants, pollution characteristics in air-water-soil environments, transport mechanisms of multi-pollutants,, eco-toxicity, biological impacts in the marine and coastal environments, as well as risk assessment and remediation technologies. The budget is approximately 30 million Yuan over 5 years. Participating institutes include several CAS institutes, universities and other research institutes. Linked to the MOST ‘973 project’ is a project funded by CAS, with the aim to strengthen and extend the ‘973 project’. This project contains many of the same elements of which the CAS institutes in the ‘973 project’ are involved. The total budget is 20 million Yuan.

In the same geographical region there are in addition several other environmental research and development projects. One of them is titled “Study on key technologies for water-environment security and engineering demonstration in Tianjin Binhai New District” and is a National 11th Five-Year-Plan key project. The project is particularly interesting because it targets the Binhai New District in Tianjin, which is a new city (special economic zone) basically being built from scratch. This project has its main focus on water pollution issues, and includes several aspects of non-conventional water sources and water pollution control and remediation technologies.

² MOST: Ministry of Science and Technology <http://www.most.gov.cn/eng/ >
³ The ‘973’ program is MOST’s “National Basic Research Program of China”<http://www.973.gov.cn/English/Index.aspx >
The Beijing- Tianjin region (Figure 2) is among the fastest developing zones in China, with a large and exponentially increasing population of some 30 million inhabitants, heavy and rapidly growing traffic, energy intensive industries and plans for development of more fossil fuel based industries, e.g. petro-chemical industry and a severe fresh water scarcity problem due to the combination of naturally dry climate, poor water management and lack of large fresh water sources.

The development of the region is given high priority by the central government in order to ensure continued rapid economic growth and integration of the regional economy with international trade, due to its strategic location. Hence the pressures on the regional and local environment will continue to increase, including increased air and water pollution, decrease in agriculture land, and greenhouse gas emissions related to increasing energy consumption and transport emissions. Conflicts over water use between different sectors will grow and there will be increased attention on access to safe drinking water. Land use changes and soil degradation are also important topics and food safety linked to environmental contaminants a growing concern.

Research cooperation on the environment within this region is therefore high on the local agenda and clearly anchored to national priorities. Hence the region receives great attention and is provided with the best skilled personnel to abate the emerging environmental problems in the region. An environmentally and economically sustainable development of the Beijing-Tianjin region could serve as a model for other regions in China experiencing rapid development and urbanization. In this context, this region should be of great interest for Norwegian involvement in environmental research considering its strategic importance and potential role as a showcase for Norwegian environmental technology. There is also a growing international dimension in environmental management in this region, which can be
viewed as a potential challenge to the Norwegian engagement. For example, the governments of Finland and Singapore have signed agreements with the Binhai Economic Zone for building up an eco-city by using their technologies and know-how.

CAS is eager to establish international cooperation, especially with Nordic research communities. Norwegian scientists have a long standing fruitful and constructive interdisciplinary cooperation with CAS resulting in numerous publications, reports, training of PhD- and Master students. Based on these relations our colleagues in CAS shows a special desire to continue and further develop cooperation with Norwegian research institutes within the theme of Resources and Environment. However, the best scientists in China are increasingly attractive as international cooperation partners, and they have an increasingly solid “home base” with ample funding for further scientific development of “their” field of interest. Hence, in order to develop successful and long term cooperation with leading Chinese scientists and institutions, we need to understand their concerns and priorities and provide added value, new thinking and ideas of innovation to their research. Important factors for establishing a long-term and committed research cooperation include the prospects for: access to good (international) scientific networks, exchange of students and staff, and international high quality scientific publications. We aim at bringing new thinking and practice to integrating regional environmental issues with global solutions and providing case-relevant assessment on challenges, opportunities, risks, cost-benefits and counter measures. This will be very much in line with what has been proposed by the Chinese government to build a sustainability based economy and equity in social development.

3. Proposed research program

3.1 The DPSIR philosophy/approach

The Drivers - Pressures - State - Impacts - Response (DPSIR) philosophy (Figure 3) is the key conceptual model for the research cooperation proposed by SINCERE, and is well suited for building the necessary scientific understanding needed for sustainable management of natural resources. The model motivates both interdisciplinary research and policy relevant scientific development in basic disciplines. Interdisciplinary research must meet both traditional scientific quality standards in basic disciplines and in addition be innovative in its exploitation of the interfaces between them. Interdisciplinary progress requires therefore strong interfaces. Mismatches in scientific culture, methods and data are among the major obstacles to be overcome. Data and insight obtained in one field should provide a basis for results in other fields that otherwise would be unlikely. Thus, successful interdisciplinary research also strengthens basic disciplines.
Through the DPSIR-philosophy, the scientific basis for policy and decision-support systems to ensure sustainability is provided. Sustainable development safeguards the needs of the present generation without undermining the needs for coming generations. Our suggested research cooperation applies a concept of sustainability with three dimensions (Figure 4). The need for local and global social security, human influence, justice, and societal stability (social equity) is weighted against the limitations imposed on production of goods and services normally constrained by short-term concerns (economic production), and the limitations inherent in the long-term preservation of ecosystems which, inter alia, conditions life and prosperity for coming generations (environmental protection). Thus, sustainable development implies efficient production of goods and services in ways which facilitate social equity both for the present and for future human generations through protection of the environment. To obtain sustainability, a thorough understanding of the natural environment and its dynamic relations with human drivers and societal response is needed. The sustainability concept is therefore closely linked to the DPSIR-philosophy.

### 3.2 Proposed research program

Traditionally, environmental studies are conducted within single disciplines and for one type of media (soil, water, air). This is useful for understanding the environment’s natural behavior and documenting anthropogenic influence. However, there is an urgent need for understanding the interactions between nature and society in order to promote formulation of policy and decision-making towards sustainable targets in which compliance can be monitored. Scientific quality within the basic disciplines combined with innovative

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4 From “Strategies and Actions for Common Research” (SACRE), the long-term plan for common research in the Oslo Centre for Interdisciplinary Environmental and Social Research (CIENS).

<http://www.ciens.no/5135/>
Mechanisms for interactions between disciplines provide the logical framework needed to produce the knowledge base for sound policy and decisions ensuring sustainable development. Norwegian SINCIERE partners are internationally renowned for their experience and ability in interdisciplinary research both within their own institutions and in co-operative efforts.

Energy production, industrial activities, transportation, agriculture and urban development are all pressures to the Chinese environment. The sub-projects integrated in this research program analyze how these activities produce various pollutants, consequently changed properties of water, air, soil, and eventually the climate-change effects on the nature resources. The proposed sub-projects target these core activities and mechanisms of the complex changes in processes of the environment. The proposed policies and technologies interfere at different stages of the environmental changes. Based on a holistic understanding of the problems under research, the policy assessment takes into consideration multiple effects of a policy on different resources and the possible interaction among the effects at different levels.

Therefore, the sub-projects all constitute several elements of the DPSIR structure and interact among them in an integrated manner. In addition, a set of over-arching activities are proposed. We believe such a structure gives substantial benefits compared to a set of similar independent projects, not only in terms of applicability of the results to the society, but also in scientific outputs. The magnitude of the program, the many research fields covered, and the common DPSIR approach taken across the program, signals a commitment that Norway will contribute to develop an interdisciplinary environmental research capacity in China. As summarized above, we believe such a capacity is a prerequisite for sustainable development in the country.

An interdisciplinary approach will be applied in order to find cost-effective solutions to resolve pressing problems in local, regional and global environmental protection. Likely, the results will stimulate demonstration projects for policy and technology implementation. If successful, the results from the research, and possible demonstration, have large potentials for being disseminated to other regions facing similar problems.

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5 From SACRE <http://www.cnien.no/5135/>
3.2.1 Proposed sub-projects

**Abating air pollution in China – impacts on regional climate**
Estimate to what extent current emissions in China of air pollutants exerting a radiative forcing influence climate in various regions in China, and how policies to improve air quality and policies to reduce the fossil energy intensity of the Chinese economy will alter the anthropogenic impact on climate in China.

**Abating air pollution on a local and regional scale – an integrated analysis of costs and benefits**
Estimate to what extent policies to improve air quality and policies to reduce the fossil energy intensity of the Chinese economy will improve public health and reduce crop losses and at the same time reduce emissions of greenhouse gases (GHG) and other components affecting climate. Identify the costs and benefits of alternative policy scenarios. Quantify co-benefits of policies that mitigate CO₂ emissions and vice versa quantify GHG benefits from air pollution abatement.

**Integrated assessment of bioenergy resources, technology applications, wetlands restoration and waste water treatment**
Assess the feasibility of linking wastewater treatment with wetlands restoration and use of biomass resources from the irrigated wetlands for sustainable rural-urban energy supply. Co-benefits from this development will be substantial and contribute directly and indirectly to sustainable regional development.

**Climate change and water resources**
Increase the understanding of climate-change effects on water resources in the Hai River basin (Beijing-Tianjin-Bohai area); develop an integrated modeling system for better planning and management of the water resources in the region based on future climate scenarios.

**Development and demonstration of a full scale decentralized sustainable sanitation system**
Demonstrate in full scale a source separating wastewater treatment and recycling system and collaborative research on key issues regarding reuse of nutrients and greywater.

**Land use change – Effects on biodiversity, land cover and land degradation.**
Increase the understanding and awareness of the effects of land use change on environmental indicators in the Beijing-Tianjin area and suggest initiatives and counteractions to secure sustainable ecosystem management.

**POPs cycling from land to ocean – an integrated approach for reducing POPs impacts**
Increase the understanding on the sources and fates of persistent organic pollutants (POPs) in the Beijing-Tianjin area and suggest measures for reducing the most imminent problems.

**Heavy metal and the quality of soils and waters – an integrated approach for reducing heavy metal impacts**
Increase the understanding of contamination of soils and waters with heavy metals and its ecological impact in the Beijing-Tianjin area. Risk assessment and suggested countermeasures for reducing the risks of single metals as well as mixtures.
Development of a Circular Economy (CE) in the Beijing – Tianjin area
Contribute to the development and implementation of the Circular Economy approach in the Chinese society – in production, consumption, and management; thereby reducing pollution, including climate gases, and developing a more sustainable society.

Figure 5. The proposed project or program follows the DPSIR approach, targeting all major drivers, pressures, states and impacts as well as nature’s and society’s responses in an integrated manner.
3.2.2 Stimulating inter-disciplinarity through integration of sub-projects

In order to fully accomplish the ambitions of achieving inter-disciplinary and policy relevant research, several joint activities will be carried out. Such activities will be coordinated through SINCIERE and coordinators ensuring that synergies are utilized. An important contact point between activities should be annual (or biannual) seminars for presenting and discussions research results and more general experiences from the research cooperation – between China and Norway, as well as within China and Norway.

Experiences with inter-disciplinary research, especially cooperation across the natural- and social science divide will be focused specifically. For instance, it is important to identify challenges and barriers, and strategies how to solve them, but also more fundamentally to discuss inter-disciplinary use and development of methodologies.

The basic natural science is used to understand the underlying processes and thereby the environmental pressures and feedback mechanisms. The social- and economic science identifies co-benefits and establishes cost-benefit of different abatement strategies. This develops the societal needs in which we open up for the basic to applied science dimension.

Linkages to policy design, policy measures, and policy implementation are approached differently in the individual sub-projects according to their current status and needs. Therefore, it is important to include such linkages as specific elements in the integrating activities. One issue of this should also be how research knowledge is to be transformed into policy making, with the aim of revealing barriers to the effective/efficient use of scientific knowledge in environmental and regional development policies.

Interdisciplinary environmental research comprising different natural- and social sciences is a research field in making, and therefore a systematic study of how the cooperation is conducted is suggested. Each sub-project will be requested to report on how their interdisciplinary research has been carried out, with a specific focus on barriers and how these have been surmounted. How methodologies in different sciences are compatible will be addressed.

The overall aim is to generate knowledge and scientific-based decision support systems, or strategies, ensuring sustainable regional development in a long-term perspective, e.g. till 2050. In order to achieve this objective, there is a need to develop a holistic approach where we compile, systematize and balance policy relevant findings from the different sub-projects and discuss how they can be transformed into policy recommendations and implementation in the Chinese context. Here, the Chinese partner will play an important role in dialogue with Norwegian researchers and respective government authorities.

There are several links between the separate sub-projects, which illustrates the need for an integrated approach. Important links includes:

- Emissions of climate gases and aerosols that impact climate are strongly linked to local and regional air pollution issues; measures targeting one scale (e.g. local) of air pollution problems will also give benefits on the other scales (regional and global).
- There are numerous direct and indirect links between the production- and consumption dimension of the circular economy approach and studies on pollution to air, soil, and water. Most sub-projects will relate to production, whether it is agriculture,
manufacturing, or services, or consumption, and hence interact with the circular economy concept.

- As all sub-projects are conducted within the same geographical region there will be added value in terms of sharing data as well as providing important inputs to other sub-projects. This enables a unique possibility for documentation of environmental conditions which customary are based on assumptions.
- Impacts of climate change and land-use change (of major importance in the Beijing-Tianjin area) are strongly linked to soil and water resources, the latter both in terms of water quantity and quality.
- Pressing environmental quality issues exist relating to soil and water contamination with POPs and heavy metals. Both water quality and quantity issues are strongly dependent on water use and measures to develop water use in more sustainable ways will contribute to improve both aspects. Sustainable water use and sanitation are important aspects of a circular economy. The use of an integrated climate change and hydrological modeling system will allow taking into account important feedbacks in the climate system. Further, land use depends mutually on climate change.
- POPs and heavy metals follow pathways in the atmosphere which are similar to those of greenhouse gases, aerosols and other air pollutants, while water is the basic transport media on the ground.
- An important link between several of the projects is the use of common scenarios for economic development and emission growth. For instance, scenarios for alternative developments in the transportation sector will be used as input to regional air pollution modeling and estimation of future emissions of greenhouse gases and aerosols.
- There are strong links between land use (spatial development, commercial/industrial/residential area planning, transport planning) and local and regional air pollution. Land use changes are both of short-term and long-term nature. Long-term land use planning is both development driven as well as potential abatement measures for reducing pollution and exposure, and enters into analysis scenarios for pollution effects mitigation.
- Land-use patterns of densely populated areas with high concentrations of employment in the core have increased the inner-city travel demand. Improved coordination of land-use planning and transport planning is necessary to meet the Chinese environmental challenge. In the long-run, nature of transport demand by private automobile will be heavily influenced by urban expansion dynamics. An expansion in a compact manner along well-defined corridors with high density development will support a larger share of public transport which is preferred in Chinese urban transport strategy.
- Due to the main contribution of manufacturing, heavy industry and agriculture to the Chinese economy, there is a high demand for transportation of large quantities of freight. Logistics and cargo transport, which contributes up to 70 percent of a manufacturer’s carbon footprint, as well as noise, air and water pollution is therefore critical to the circular economy approach. In addition, passenger and goods transport is actually one of the key factors driving up the Chinese oil consumption.

In the following, the nine sub-projects are briefly described.
Sub-project: Abating air pollution in China – impacts on regional climate

Thematic area(s): Atmospheric science, climate modeling

Norwegian institutions to be involved: UiO, CICERO, ECON, NILU

Chinese institutions to be involved: IAP (CAS), CMA (CAMS), Development Research Center (DRC) of the State Council, Peking Univ., RCEES, Tsinghua.

Purpose: Estimate how 1) current emissions in China of air pollutants exerting a radiative forcing influence climate in various regions in China, and 2) how policies to improve air quality and policies to reduce the fossil fuel energy intensity of the Chinese economy will alter the anthropogenic impact on climate in China.

Scientific background: Building on research capacities in China and Norway we will join forces in understanding the impacts of Chinese emissions on climate change in China, and study cost-effective policies that reduce emissions. The extent to which climate responds to forcing in the region is believed to be strongly modulated by certain emissions in the region yielding forcings that are spatially inhomogeneous. Such forcings include direct radiative climate effect from aerosols, indirect climate impacts through their interactions with clouds, and radiative forcing resulting from emissions of ozone precursors (NOx, VOC and CO).

Justification for cooperation: Understanding of global climate change due to emissions of well mixed greenhouse gases (GHG), as CO2, CH4, N2O and fluorine containing substances have been strongly advanced over the last years. As opposed to such emissions, emissions that lead to forcing that is not spatially homogeneous will impact climate more directly in the region where they are emitted. Such regional effects are not as well known as the global ones, partly because the processes governing them are more complex and not fully understood. By implication, cost-effective interventions are not well understood either. The Norwegian institutes in the project team have specialized in understanding these processes and have developed and are refining tools that are well suited to study their impacts on climate, and at the same time, such expertise and capacities are being developed at the participating institutes in China. First, aerosol-cloud interactions are crucial, yielding large regional radiative forcings. Various interactions impacting cloud effective radius and the lifetime of warm clouds have been studied. Recently, focus has been extended to study similar impacts in cold clouds, a rather pristine and very important research area. Second, formation of ozone from ozone precursors such as NOx, VOC and CO also takes place on a regional scale, yielding regional forcing and climate change. A main emphasis in the study of regional climate change will be on the changes in the water cycle, e.g. changes in precipitation patterns and severe events like flooding and droughts. The group of institutions in China as well as in Norway carrying out the project provides a team with broad expertise within air pollution modeling, as well as climate modeling.

Project activities:
- Implementation of emissions of particulates and ozone precursors from available sources, including from the air pollution emissions module of the multi-regional computable general equilibrium model (CGE) for China adopting economic and policy scenarios.
- Modeling of distributions of regional radiative forcing agents (aerosols and ozone), the concurrent regional forcing and regional climate change under current conditions using a climate model (NCAR/CAM3-Oslo version).
- Modeling of distributions of regional radiative forcing agents (aerosols and ozone), the concurrent regional forcing and regional climate change adopting selected scenarios from the CGE model, including abatement scenarios.
- Analysis of changes in the hydrological cycle and extreme events like flooding and droughts. Analysis of cost-effective policy interventions.

Relevance for Norway’s China Strategy and Norwegian priorities:
- The project addresses core topics in Norway’s China Strategy as they are described under the heading ‘Development that is sustainable at the local, regional and global level’ in particular exploring boarders between local and regional pollution on one hand and climate and energy on the other.
**Sub-project:** Abating air pollution on a local and regional scale – an integrated analysis of costs and benefits

**Thematic area(s):** Atmospheric science, health impacts, crop loss, environmental modeling, macro-economic modeling

**Norwegian institutions to be involved:** CICERO, ECON, UiO, NILU

**Chinese institutions to be involved:** RCEES, Tsinghua, Development Research Center (DRC) of the State Council, IAP (CAS), Peking Univ.

**Purpose:** Estimate how 1) policies to improve air quality and 2) policies to reduce the fossil energy intensity of the Chinese economy will improve public health and reduce crop losses and at the same time reduce emissions of greenhouse gases (GHG) and other components affecting climate. Identify the costs and benefits of alternative policy scenarios. Quantify co-benefits of policies that mitigate CO₂ emissions and vice versa quantify GHG benefits from air pollution abatement.

**Scientific background:** Building on previous research collaboration with Chinese partners on the costs and benefits of improving air quality on a local scale in China, the project will extend the focus to include environmental benefits attributable to reductions in the regional air pollution levels resulting from national policies on air pollution, energy, and climate change. Cost-effectiveness of various policies and scenarios will be investigated, taking regional and local pollution mitigation into account. Regional impacts that will be attempted quantified are: The contribution to public health damage from regional scale air pollution; crop loss from surface ozone and reduced insolation due to regional haze.

**Justification for cooperation:** Up till recently the main focus of Chinese policies on air pollution has been on urban air quality in the main cities and acid rain from SO₂ emissions. For instance, in the most developed cities heavy polluting industries are increasingly being shut down and moved to less developed areas. In these areas, including rural China where 60% of the population still lives, emissions from relocated industries, numerous local dirty small-scale industries, and poor households burning solid fuels result in a heavy atmospheric burden of particulates and other pollutants. The ubiquitous particulate air pollution over large parts of China is a major environmental concern. Knowledge about the cost to society of this pollution is, however, to a large extent unknown. The group of institutions carrying out the project provides an interdisciplinary team with expertise within air pollution modeling, macroeconomic modeling and environmental impact assessment.

**Project activities:**
- Development of economic and policy scenarios for implementation into a multi-regional computable general equilibrium model (CGE) for China. The model includes an air pollution emissions module and enables calculation of distributional consequences of alternative policies. Improvement of the PM and NOₓ emission factor modules.
- Modeling of changes in regional air pollution levels resulting from CGE-derived emission changes by using a global chemical tracer model (Oslo CTM2). Development of reduced form dispersion model to be integrated with the macroeconomic model
- Modeling of regional and local air pollution and contributions from main sources, using nested regional/local dispersion models. Investigations into cost effectiveness of various policies and scenarios.
- Further development of health impact assessment module in CGE to include health benefits from regional air quality improvements and calculation of impacts of emission scenarios.
- Development of module for estimation of crop loss due to regional haze and calculation of impacts of emission scenarios.

**Relevance for Norway’s China Strategy and Norwegian priorities:**
- The project address core topics in Norway’s China Strategy as they are described under the heading ‘Development that is sustainable at the local, regional and global level’ as the project analyses some crucial linkages between economic growth and environmental and social impacts.
Sub-project: Integrated assessment of bioenergy resources, technology applications, wetlands restoration and waste water treatment in the Beijing – Tianjin region

Thematic area(s): Renewable energy technology, bioenergy assessment, wetlands management, water resource management, soil science, sustainable agriculture and rural development

Norwegian institutions to be involved: CICERO, UIO, NVE, UMB, NIVA, TUC

Chinese institutions to be involved: RCEES, Tsinghua, Tianjin RAES, Nankai University, Tianjin University, Beijing Forest University, China Agriculture University

Purpose: To assess the feasibility of linking waste water treatment with wetlands restoration, agriculture irrigation, and use of biomass resources from the wetlands for sustainable rural-urban energy applications. Co-benefits from this development will be large and may lead to multi-benefits in these sectors for sustainable regional development.

Scientific background: Beijing – Tianjin region has large areas of wetlands and waste lands that can potentially be used for waste water recycling, from which cleaned water can be used for agriculture irrigation, and reduced waste water discharge to the Bohai sea. Wetlands can also produce large quantities of biomass resources that can be used in households to replace coal use, through introduction and dissemination of pellets-burning stoves and facilities. This will lead to a large reduction of GHG emissions and other pollutants from household coal use and contribute to global and regional environmental protection. The proposed project is seen as a new experiment with an integrated approach, linking the DPSIR philosophy to sustainable regional development.

Justification for cooperation: Tianjin-Bohai Bay region relies heavily on the burning of coal as an energy source. It has large environmental impacts in regional air quality and GHG emissions. The region has also lack of fresh water supply and severe waste water pollution problems, due to rapid industrialization and urbanization, particularly from energy intensive, fossil fuel-based industries and household emissions. This has led to increased pollution to agriculture lands and the Bohai Bay, and consequent human and eco-system damages. Waste water pollution and treatment is a high priority in Tianjin and the Binhai economic zone. Concerns for sustainable rural development are also high. However, the current measures, mostly end-of-pipe solutions, are seen as having limitations in long-term development. SINCIERE member institutes have good experiences in applying interdisciplinary approaches in sustainable regional development and integrated technology assessment, which is lacking in China.

Project activities:
• Assessment of wetlands resources and capacities in waste water treatment and recycling.
• Assessment of potential risks in soil/plant contamination, and ecological impacts in wetlands eco-systems.
• Assessment of biomass resources and productivity from increased waste irrigation in wetlands.
• Assessment of bioenergy technology applications in rural/urban communities and consequent environmental co-benefits and social impacts.
• Policy recommendations to governments on relevant measures to promote demonstrations in the region.

Relevance for Norway’s China Strategy and Norwegian priorities:
• Support to Norway’s strategy in China’s shift toward sustainable development and global environmental protection.
• Putting bioenergy in a higher agenda in Sino-Norwegian cooperation.
• Improvement in water resource quality and management, and sustainable agriculture development.
• Potential involvement of Norwegian industries and expertise in a fast growing region with major environmental impacts.
• Meet MDGs through promotion of sustainable bioenergy technologies and regional development.
Sub-project: Climate change and water resources in the Hai River basin (Beijing-Tianjin-Bohai area)

Thematic area(s): climate modeling, water balance modeling, water resources management

Norwegian institutions to be involved: UiO, NVE, others…

Chinese institutions to be involved: IGSNR (CAS) Institute of Geographical Sciences & Natural Resources Research, CAS; Hydrological Bureau of Ministry of Water Resources of China, National Climate Centre

Purpose: Increase the understanding of climate-change effects on water resources in the Hai River basin (Beijing-Tianjin-Bohai area); develop an integrated modeling system for better planning and management of the water resources for future climate.

Scientific background: Water shortage threatens north China. The reasons for the shortage include (1) the area is located in a semi-arid climate region with annual rainfall of about 600mm, of which 80% returns to atmosphere by evaporation, (2) historical data showed that rainfall in arid north China has been decreasing, (3) global warming has contributed to falling water tables in north China, (4) rising consumption both by farmers and booming cities as well as severe pollution have also led to the problem, and (5) mismanagement and lack of knowledge about existing water resources have made the problem even worse. Water shortage has seriously restricted sustainable social and economic development. There is an urgent need for understanding how climate change will further worsening the situation and provide an integrated modeling tool for the efficient use and regional planning of water resources for the present and changing climate.

Justification for cooperation: Norway is perhaps the only country having about 99 % of the electricity production based on hydropower. Climate change can lead to changes in the amount and seasonality of flow in Norwegian rivers, which affects the production of electricity. Therefore, study of climate change impacts on water resources to ensure consistent and environmentally sound management of water resources has since long been an important research topic in Norway. This has not only resulted in internationally leading scientists, but also advanced knowledge in understanding, modeling and managing of water resources. Chinese scientists are also internationally leading in certain fields of water resources research. Northern China is facing big problems related to water shortage water pollution; these issues are therefore among the top issues in China’s national development strategy. Cooperation between the Norwegian and Chinese institutions has already been ongoing for years (e.g. between UiO and CAS and National Climate Centre of China, and NVE with Hydrological Bureau of Ministry of Water Resources).

Project activities:
• Assessment of water resources of the region under present climate by using observation data and different modeling techniques, in cooperation with the Ministry of Water Resources
• Provide with reasonable regional climate change scenarios by using regional climate models and downscaling techniques, in cooperation with National climate centre of China,
• Assessment of future water resources of the region by using an integrated climate change and hydrological modeling system

Relevance for Norway’s China Strategy and Norwegian priorities:
• Climate change is a major priority in the Norway’s China Strategy
• Climate change and water resources are of global concern
• Water shortage and water pollution are among the top issues in China’s national development strategy
**Sub-project:** Development and demonstration of a full scale decentralized sustainable sanitation system

**Thematic area(s):** Wastewater treatment, drinking water treatment, nutrient recycling, agroecology, bioenergy production

**Norwegian institutions to be involved:** UMB, Bioforsk, NILF, NILU, NIBR, TUC, Industrial partners from China and Norway, others?

**Chinese institutions to be involved:** Tsinghua, RCEES, Tianjin EPB

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**Purpose:** A full scale demonstration of a source separating wastewater treatment and recycling system and collaborative research on key issues regarding reuse of nutrients and greywater.

**Scientific background:** China is facing severe water pollution and water shortage problems. The sustainable sanitation approach minimizes the use of water, regards waste water as a resource and facilitates removal as well as reuse of the major water polluting nutrients like nitrogen and phosphorus. Organic household waste and organic matter in toilet waste (black water) is converted to biogas thus further reducing input of polluting agents to waterways. Source separation of grey- and black water facilitates water reuse options by treating the low nutrient and pathogen containing grey water. The proposed project will target emissions from domestic sources and demonstrate technologies and best practices which can nearly eliminate emissions of nutrients and organic matter to groundwater and surface waters and produce fertilizer, biogas and water for reuse.

**Justification for cooperation:** Norway has been at the forefront of developing ecological sanitation technologies and Norwegian industry has key commercial components for construction of source separating recycling water and wastewater handling systems. China has an urgent need for environmentally sound systems for water treatment and reuse. In addition, production of biogas and organic fertilizer from black water are important contributions to decrease the dependence on fossil fuels and to increase the sustainability of agriculture. Both, Chinese and Norwegian research institutions and industries have a strong mutual interest in developing and implementing ecological sanitation systems for Chinese conditions. Ecological sanitation is receiving increasing interest in China and initial installations were made at the Tsinghua University and in the Olympic park. The project will include a systems analysis approach and cost-benefit analyses.

**Project activities:**
- Setting up a demonstration project involving source separation (of black- and grey water); Optimization of following processes: Treatment of grey water in constructed wetlands; Biogas reactors, using black water and household residues; Using bio-waste from biogas reactors as organic fertilizer in agriculture.
- System analysis comparing ecological sanitation and conventional systems regarding technical, environmental (including GHG emissions), economical, health and social issues.
- Investigation of agro-ecological aspect of reuse of nutrients and water from domestic sources
- Optimization of processes for reduction of medicine residues, endocrine disruptors, organic chemicals

**Relevance for Norway’s China Strategy and Norwegian priorities:**
- Scientific and industrial support to a rapidly developing field in China targeting major water pollution and water shortage problems
- Improvement of water resources quality and management
- Visible involvement in a major high pressure, fast developing area of a major environmental concern
Sub-project: Land use change in Beijing-Tianjin-Bohai area – Effects on biodiversity, land cover and land degradation.

Thematic area(s): Biodiversity and habitat change; land cover and land use change; soil erosion and land degradation; natural resource management; environmental technology development; LIDAR technology, remote sensing and GIS; effects on biota of change in air, soil and water chemistry

Norwegian institutions to be involved: NFLI – Norwegian Forest and Landscape Institute, Bioforsk – Norwegian Institute for Agricultural and Environmental Research

Chinese institutions to be involved: CAS/RCEES, CAF, CRAES, Beijing Normal University, Tianjin EPB

**Purpose:** Increase the understanding and awareness of the effects of land use change on environmental indicators in the Beijing-Tianjin-Bohai area and suggest initiatives and counteractions to secure sustainable environment.

**Scientific background:** Human population increase causes considerable changes in infrastructure and land use in the Beijing-Tianjin-Bohai area. These land use changes result in extensive land cover changes, threatening the natural environment. Impact of land use change on biodiversity, habitat structures and land degradation needs more attention. Pollution from industrial activities and increased traffic makes severe pressure on the biodiversity, agricultural areas and the limited area of forests and other natural habitats. Land use change influences not only the terrestrial ecosystems but also aquatic systems. An important aspect of the terrestrial-aquatic interactions is the different recipients in the Beijing-Tianjin-Bohai area, both locally with deficiency of high quality water supply and regionally with high influx of pollutants to the partially closed Bohai sea.

**Justification for cooperation:** Scientists from NFLI and Bioforsk have played an active role in developing (administrative) tools for environmental and agricultural management. GIS (Geographical Information Systems), remote sensing and LIDAR (laser scanning) technologies have been used to document environmental effects of land use change over time. We have also developed predictive models for future land use scenarios. The Norwegian partners have more than ten years experience in interdisciplinary collaboration and integrated environmental monitoring in China and Central Asia.

The increasing industrial development and increasing population in the Beijing-Tianjin area, results in severe land cover and land use changes. These changes have for a long time been studied by leading Chinese scientists at RCEES and CAF. The next step is to quantify these changes and to study the effects on the environment, i.e. biodiversity, soil erosion, land degradation and soil contamination by a joint effort from Chinese and Norwegian scientists.

**Project activities:**
- Assessment of land cover and land use change using GIS, remote sensing and LIDAR technologies
- Evaluation of changes in forest cover, agricultural area and biodiversity
- Evaluation of forest vitality, crop condition and biodiversity caused by chemical pollution to air, soil and water.
- Estimation of fluxes of chemical emissions from industry, traffic, and agricultural areas
- Quantification of land use change induced land degradation and soil erosion

**Relevance for Norway’s China Strategy and Norwegian priorities:**
- Intensify development cooperation with China on the environment in accordance with the “Norwegian Action Plan for Environment in Development Cooperation”.
- Focus on pollution reduction, conservation of biological diversity and the sustainable use of natural resources
- Assistance in building up China’s institutional technical capacity within the environmental sector.
- Scientific support to international conventions, i.e. the biodiversity convention
- Improve land cover and natural resource management
**Sub-project:** POPs cycling from land to ocean – an integrated approach for reducing POPs impacts

**Thematic area(s):** Atmospheric science, soil science, aquatic chemistry, environmental modeling, environmental engineering, environmental chemistry,

**Norwegian institutions to be involved:** NIVA, NILU, UiO, others…

**Chinese institutions to be involved:** RCEES, Tsinghua, Tianjin EPB, others…

| Purpose: | Increase the understanding on the sources and fates of persistent organic pollutants (POPs) in the Beijing-Tianjin-Bohai area and suggest measures for reducing the most pressing problems. |
| Scientific background: | POPs is a major nation wide challenge for China. “Classic” POPs are still released to the environment from different sources and “new” or “emerging” POPs, for instance from personal care products, are increasingly released to the environment. The sources of these compounds, their transportation and transformation in the environment as well their environmental impacts need more attention. An important aspect is the land-ocean interactions when these compounds are transported to the ocean. This is particularly important in the Beijing-Tianjin-Bohai area since the influx of pollutants to the Bohai sea is large, while the sea itself is partially closed, has low circulation of water and hence tends to concentrate pollutants at high rates. |

| Justification for cooperation: | Norway has played an active role in developing international attention on POPs release reduction, and Norwegian scientists have played an active role in developing different fields of POPs research internationally. Norway’s strong position is especially linked to the accumulation of POPs in the Arctic. China’s size, its large population and its major role as home for chemical industries makes it a crucial partner to solve the World’s POPs problems. The increasing industry development and increasing population in the Beijing-Tianjin area, together with the increasing water shortage problems makes the region particularly suited for an integrated POPs cycling study. Chinese scientists are internationally leading in certain fields of POPs research, especially related to chemical analyses and identification of compounds. |

| Project activities: | Assessment of sources for “old” and “new” POPs, including emerging pollutants from personal health care products  
Evaluation of the fate of POPs when increasing the reuse of water in the future (increased accumulation in soils over time when recycling water?)  
Estimation of fluxes of POPs from the rivers to the Bohai sea  
Assessment of the POPs cycling and land-air-ocean interactions  
Assessment of current environmental impacts from POPs and potential increasing threats in the future |

| Relevance for Norway’s China Strategy and Norwegian priorities: | Scientific support to international conventions (esp. Stockholm Convention) and a global environmental problem.  
Improvement of water resources quality and management  
Visible involvement in a major high pressure, fast development area on a major environmental concern  
Potential changes in POPs cycling due to changes in climate is highly relevant |
**Sub-project:** Heavy metal and the quality of soils and waters – an integrated approach for reducing heavy metal impacts in the Beijing-Tianjin area

**Thematic area(s):** Soil science, aquatic chemistry, environmental modeling, environmental engineering, environmental chemistry, risk assessment

**Norwegian institutions to be involved:** UMB, NIVA, UiO, others…

**Chinese institutions to be involved:** RCEES, Tsinghua, Tianjin EPB

**Purpose:** To increase the understanding of contamination of soils and waters with heavy metals and its ecological impact in the Beijing-Tianjin-Bohai area. Risk assessment and suggested countermeasures for reducing the risks of single metals as well as mixtures.

**Scientific background:** Heavy metal contamination of soils and waters is a major challenge in industrialized areas of China. Specific problems occur in the Beijing – Tianjin - Bohai region, which is notorious for its heavy industries established after the foundation of new China. Heavy metal contamination of agricultural soils in this region is exacerbated by the use of sewage - and reclaimed water for irrigation. In many areas metals are present in soils as mixtures, rather than as single contaminants, thus knowledge on multiple stressors is crucial for its application in the field. Research groups in China and in Norway have complementary expertise in areas covering determination of contamination levels, metal mobility (including modeling) and bioavailability, metal uptake in (food) plants, impacts on micro organisms and on micro biological processes, risk assessment and alternative remediation technologies.

**Justification for cooperation:** The Norwegian research group has extensive experience with in-situ measurements of metal mobility, speciation and bioavailability in soils as well as laboratory investigation of effects of heavy metals (single and mixtures) on the development of metal tolerance of micro organisms. Extensive work on modeling metal mobility has been done in collaboration with Ed Tipping (CEH, UK). Prof. Zhu’s research group at RCEES has a large research group looking at soil-plant system as a continuum, focusing on soil microbial communities under contamination, and contaminant accumulation in plants (thus related to the issue of food safety). His group has state-of-art facilities to characterize metals in soil and plant systems, as well facilities to conduct molecular microbial ecology. He has extensive international collaboration with Prof Andy Meharg, Prof Sally Smith.

**Project activities:**
- Assessment of metal contamination levels in soils and waters (including metal speciation) at selected sites
- Determination of metal mobility; modeling
- Uptake of heavy metals by (food) plants; assessment of the potential of phyto-remediation
- Assess the impact of heavy metals (single and mixes) on microbial tolerance and microbial function (using the impact on methane oxidation and nitrification as indicators)
- Risk assessment and suggestions for remediation

**Relevance for Norway’s China Strategy and Norwegian priorities:**
- Improve the quality of life through reduction of human exposure to heavy metals (food and water)
- Scientific support to improve the quality of soil and water resources
- Potential changes in the mobility and bioavailability of heavy metals in this rapidly developing area, due to large changes in land-use.
Sub-project: The development of a Circular Economy (CE) in the Beijing – Tianjin area

Thematic area(s): Regional economics, public management, transportation economics, industrial analysis, household strategies, and indicators,

Norwegian institutions to be involved: NIBR, TØI

Chinese institutions to be involved: Institute for Policy and Management, CAS (IPM-CAS); Institute for Population and Labour Economics, CASS (IPLE-CASS)

Purpose: Contribute to the development and implementation of the Circular Economy approach in the Chinese society – in production, consumption, and management; thereby reducing pollution, including climate gases, and developing a more sustainable society.

Scientific background: The CE approach has been adopted by the Chinese government as an instrument for developing the Chinese economy and society in a more environmental friendly direction. The concept has been integrated in China’s 11th five-year plan. From a narrow focus on material flows between production plants, the CE concept has been broadened to aim for balancing economic development and protection of the environment, also taking into account the quality of life of the population. The approach addresses different levels, as individual companies, industrial parks, and regional linkages between the urban and the rural. This means that there are challenges regarding regional development, transportation, planning and policy making, and people’s welfare and living standard.

Justification for cooperation:
Norwegian institutes have a strong competence on elements that are decisive for the development of and implementation of the CE approach, including regional economic development, transportation, and public management and have for many years been engaged in interdisciplinary environmental research. However, conversely, it is the case that China has introduced the CE concept and is making strong efforts for developing and implementing it at different levels and different areas of China. Therefore, the benefits of the collaboration clearly are going in both directions. Norway now has the opportunity to learn from and draw upon Chinese experiences as a basis for designing Norwegian policies and policy measures. The collaborating Chinese institute, IPM-CAS, is well renowned, with a competent staff on environmental-industrial analysis, as well as policy making. The Beijing – Tianjin area is particularly relevant because it is one of the most economically developed areas of China, facing the challenges of a relatively highly developed economy but also comprising traditional rural economic systems. The structure of this area also makes it relevant for Norwegian policy making.

Project activities:
- Assess effects of and conditions, including policy measures, for a regional economic development framed by CE
- Assess the supply chains related to industrial manufacturing, and evaluate methods for reducing emissions and wastes involved in logistics process.
- Develop the organization of public management at different levels and the interaction between different levels, the private-public interaction, to help achieve CE, including transforming science into policies
- Develop evaluation indicators for different dimensions of CE (pollution, resource use, economy, welfare)
- In general, and based on the other activities, assess barriers against CE, including path dependence and lock-in, and discuss/recommend measures for addressing the revealed barriers

Relevance for Norway’s China Strategy and Norwegian priorities:
- The CE will contribute to reduce emissions of GHG and increase the society’s resilience against climate change. By addressing resource use, it will contribute to a more energy efficient and less polluting society. The CE will contribute to a more balanced regional development and more balanced distribution of resources.
- The collaboration between Norwegian and Chinese scientists will help build the institutional capacity of
addressing environmental and societal challenges in China, as well as in Norway
**Resources required**

Long term funding is required in order to uphold and sustain the cooperation that is established over the last 20 years.

As a basis, Norwegian funds should cover mainly Norwegian counterparts; the Chinese partners will have their own, existing funding in most research areas. The general rule should be that we join in on applied or ongoing Chinese activities, although some funds for facilitation may be needed to Chinese partners.

A minimum financial input of approximately 15 million NOK per year over a five-year period is necessary to carry out a program with sub-projects along the lines drawn up in this document. Such funding will be sufficient to cover core activities in all the outlined sub-projects in addition to a strong coordinating activity ensuring proper integration.

More funding will ensure more time and resources for more thorough and focused research efforts with the sub-projects, and also have larger possibilities for additional research topics.
Appendix A.

Founding members of SINCIERE:

Norway:
CIENS: NIVA, NILU, NIBR, NINA, NVE, UiO (Inst. for Geosciences), CICERO and TØI and
UiO: Faculty of Mathematics and Natural Sciences

China:
CAS (Chinese Academy of Sciences)
RCEES (Research Center for Eco-Environmental Sciences) of CAS

Associated members:

BioForsk, UMB, Norwegian Forest & Landscape Institute, HiT, ECON, FNI, NORDECO

SINCIERE Council

<table>
<thead>
<tr>
<th>Rep. of</th>
<th>Position</th>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>CAS</td>
<td>Chair</td>
<td>FU Bojie</td>
<td>Director, Bureau of Science and Technology for Resources and the Environment, CAS</td>
</tr>
<tr>
<td>CREAES</td>
<td>Member</td>
<td>WANG Wenxing</td>
<td>Academician, Chinese Academy of Engineering</td>
</tr>
<tr>
<td>SEPA</td>
<td>Member</td>
<td>LI Xinmin</td>
<td>Deputy, Department of Pollution Control, SEPA</td>
</tr>
<tr>
<td>NSFC</td>
<td>Member</td>
<td>LUO Yunfeng</td>
<td>Department of Earth Sciences, NSFC</td>
</tr>
<tr>
<td>CAS</td>
<td>Member</td>
<td>LU Yonglong</td>
<td>Deputy, Bureau of Planning and Finance, CAS</td>
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<tr>
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<td>Member</td>
<td>QU Jiuhui</td>
<td>Director, RCEES</td>
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<td>Member</td>
<td>JIANG Guibin</td>
<td>Deputy, RCEES</td>
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<td>CIENS</td>
<td>Chair</td>
<td>Jon Naustdalslid</td>
<td>Director of NIBR</td>
</tr>
<tr>
<td>UMB</td>
<td>Member</td>
<td>Per Schive</td>
<td>Environmental Counsellor</td>
</tr>
<tr>
<td>UiO</td>
<td>Member</td>
<td>Geir Ellingsrud</td>
<td>Rector (i.e. President) of the University of Oslo</td>
</tr>
<tr>
<td>UiO</td>
<td>Member</td>
<td>Rolf D. Vogt</td>
<td>Professor in Chemistry at UiO</td>
</tr>
<tr>
<td>CIENS</td>
<td>Member</td>
<td>Kristin Aunan</td>
<td>Person appointed by CIENS</td>
</tr>
<tr>
<td>UiO</td>
<td>Member</td>
<td>Nils Roar Saelthun</td>
<td>Director Inst. of Geosciences</td>
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SINCIERE Governing Board

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<td>QU Jiuhui</td>
<td>Director</td>
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<tr>
<td>CAS</td>
<td>Member</td>
<td>ZHUANG Xuliang</td>
<td>Head of Department, Bureau of Science and Technology for Resources and the Environment</td>
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<td>JIANG Guibin</td>
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<td>ZHU Yongguan</td>
<td>Assistant Director</td>
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<td>CRAES</td>
<td>Member</td>
<td>CHAI Fahe</td>
<td>Senior Scientist</td>
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<td>ZHANG Xiaoshan</td>
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# SINCIERE Scientific Members’ Forum

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Phone</th>
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</table>
APPENDIX 2
Council Meeting Minutes
20 March 07
Beijing

Chair: Rolf D. Vogt (UiO)

Chinese:
Yang Min, (RCEES, CAS), Qu Jiuhui, (RCEES, CAS), Zhang Xiaoshan (RCEES),
Jiang Guibin (Associate Editor, Environmental Science and Technology)
(Observer: Wang Dongyao, SINCIERE assistant)

Norwegian:
Krinstin Aunan (CIENS), Bente Wathne (NIVA), Nils Roar Sælthun (UiO), (Observer and
referee: Anne Kari Johansen, SINCIERE administrative coordinator)

1. Approval of Agenda
Agenda approved.

2. Appointment of referee: Anne Kari Johansen

3. Statutes
Zhang Xiaoshan gave a briefing in Chinese to the Council Members of the Board Meeting
discussions regarding the statutes and the amendments made.

A comment was made regarding Article 4 in the statutes that it does not reflect the work
responsibilities of the Scientific Coordinators. The leading role of the Scientific Coordinators
should be reflected in the statutes so amendment to this should be looked at and prepared
before the next council meeting.

On the basis of the briefing, the amendments already made by the Board and the amendment
to be made the Council approved the SINCIERE statutes.

4. Budget for the notice of the Council
Rolf D. Vogt gave a briefing of the budget and Zhang Xiaoshan explained in Chinese. The
budget for 2008 and 2009 should be considered as minimum budgets. A brief discussion
regarding the administration of the SINCIERE finances on the Chinese side was made. It was
concluded that it would have to be administrated in the same way as projects are
administrated under RCEES.

5. Work Description
The Council was informed about the plan to further revise this document.

6. Staff Members
The Council was informed about the appointed positions and titles.

The Council was informed about the amendments made by the Board.

Strategy Document approved!
The aim is to link and merge the three sciences together, Natural science, social science and economics, in order to achieve good research and results. 
Aim to achieve interdisciplinary research and projects.

The Council was informed about the amendments made by the Board to this document.

A wish to include and develop student exchange not only from China to Norway but also from Norway to China was raised. Ideally both student exchange and research based exchanged. For exchange on Master level the language problem was pointed out as few courses are delivered in English on Master level.

Student exchange should be developed over time so the Council approved the Action Plan 2007-2009 without further amendments.

Information was given on the content and discussion regarding the Operation Plan.

Yearly Operation Plan approved by the Council.

10. Approval of the Associate Membership Agreement
The Council was informed about the amendments made to the associated membership agreement and that this is the document currently used on the Norwegian side. At the moment it is too early to take this in use for Chinese members but this should be considered at a later stage.

The Associate Membership Agreement approved with amendments.

11. How to make the center attractive or projects.
The Council was informed about the discussions by the Board regarding this topic. A brief discussion was made on this topic and it was agreed that this should be an ongoing discussion.

12. What kind of projects should be encouraged by the center?
The Council was informed about the discussions during the Board meeting regarding this issue and the plan to map out the knowledge gaps according to the DPSIR model and that a workshop discussing this would be held while the Chinese delegation was visiting Norway in May.

The Council was informed about the meeting that was held with the MoE in November 2006. The Norwegian representatives asked the Chinese Council members for advice on how to continue with this. It was suggested that the Norwegian side should identify a task group to take responsibility in this process and then the Chinese side could help find and appoint a Chinese person that the task group could seek help from and relate to in this process.

CAS has an education department that can try to help, but CAS cannot do very much in this process, as CAS does not have any power to influence the MoE. CAS could try to mention the issue of stipends in it’s dialog with the MoE. It could, however be more efficient to work through Tsinghua or Renmin university. Another suggestion was to go through a smaller university like Whuan University or Shandong University as Tsinghua has so many contacts.
14. Other:
The possibility of direct student exchange between CAS and Norwegian institutes was discussed briefly. CAS showed interest in sending maybe 5 students to Norway and should be able to find funds for that. There should be a MoU between CAS and NRC, signed by Kari Kveseth. The administrative coordinator is to check this with the Norwegian Embassy.
APPENDIX 3
Chair: Rolf D. Vogt (UiO)

Chinese:
Yang Min, (RCEES, CAS), Qu Jiuhui, (RCEES, CAS), Zhang Xiaoshan (RCEES),
Jiang Guibin (Associate Editor, Environmental Science and Technology)
(Observer: Wang Dongyao, SINCIERE assistant)

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Agenda seminar
and Matchmaking workshop on
Interdisciplinary Environmental research cooperation with China

Registration: hr. 08:30 – 09:00
Venue: CIENS Forum

PROGRAMME

09:00 Welcome address and presentation of SINCIERE
    Prof. Rolf D. Vogt, UiO

Part 1
Session 1 – Setting the agenda
Challenges, needs and opportunities for environmental research in China
Chair: Dr. Jon Naustalslid
09:10 Main environmental challenges in China
    Prof. Fu, Bojie, CAS
09:40 Major ongoing and planned environmental research projects in China
    Prof. Lu, Yonglong, CAS
10:10 Research needs open for cooperation between China and Norway
    Dr. Zhu, Yongguan, RCEES

10:40 Tea and coffee break, fruits

Session 2 – Completing the picture
Institute presentations of associated SINCIERE member institutes not visited by Chinese
delegation with focus on competence and ongoing and future activities in China as well as
possible contribution to collaboration partners:
Chair: Prof. Zhang, Xiaoshan
11:00 Environmental co-benefit analysis
    Dr. Haakon Vennemo, ECON
11:20 Environmental management, resources and waste handling
    Dr. Rune Bakke, Telemark University College
11:40 FNI past – present and planned activities in China related to environment, energy and
climate. Dr. Gørild Heggelund, FNI

12:00 Lunch

12:50 End of Part 1; Chinese delegation leave for sightseeing in Oslo.
**Del 2; Norsk vitenskaplig medlemskaps forum.**  
Hensikten med denne delen av programmet er å samle medlemmene i SINCIERE på Norsk side for å identifisere muligheter til fremtidig tverrfaglig samarbeid på miljøproblerene i Kina.

### Sesjon 3 – Gode eksempler på tidligere og pågående samarbeids prosjekter

**Ordstyrer:** Dr. Kristin Aunan  
12:50 *BioForsks aktiviteter i Kina*  
  Dr. Jihong Liu-Clarke, Bioforsk  
13:00 *Statens Kartverks aktiviteter i Kina*  
  Dr. Bente Lilja Bye, Statens Kartverk  
13:10 *Betydningen av boliglokaliseringer for transportatferd i Hangzhou Metropolitan Area, China,* Dr. Arvid Strand, TOI  
13:20 *Kina overgjødsles med nitrogen; Deposisjon og utvaskning av nitrogen i sørvest Kina*  
  og *Et gjesteprofessorat i Environmental soil science ved Tsinghua Universitetet, Beijing,* Prof. Jan Mulder, UMB  
13:30 *NIBR prosjekter i Kina*  
  Dr. Jon Naustalslid, NIBR  
13:40 *Norsk Institutt for Skog og Landskaps aktiviteter i Kina*  
  Dr. Nicholas Clarke, NISL

13:50 Kaffe, te og frukt

### Sesjon 4 – Oppsummeringer på fokus, planer og mål hos CIENS, UiO og Ås miljøet - åpent panel

**Ordstyrer:** Prof. Frode Stordal  
14:00 *Konklusjoner fra CIENS-SACRE-SINCIERE arbeidsmøte*  
  Dr. Haakon Thaulow, CIENS  
14:30 *Forskningsaktiviteter knyttet til Miljøproblemer i Kina ved UiO*  
  Prof. Nils R. Sælthun, UiO  
15:00 *Forskningsfokus på Miljøproblemer i Kina ved UMB og Instituttene på Ås.*  
  Prof. Jan Mulder, UMB

15:30 Åpent Panel:  
  Diskusjon på mulige fremtidige samarbeidsprosjekter innen samfunn, økonomi og naturfag

Seminar slutt kl. 16:00
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AGENDA

SINCIERE Member Forum

At RCEES on the 19.10
Date: 19th October, Wednesday
Venue: Room 608, Ecology Building, RCEES

Hr. 09:00 Opening, Chair: Zhang Xiaoshan, RCEES
Hr. 09:05 Welcome address By Prof. Guibin Jiang, Deputy, RCEES
Hr. 09:10 SINCIERE - Rolf D. Vogt
   SINCIERE presentation
Hr. 09:25 Royal Norwegian Embassy - Environmental Counsellor Per Schive
   Norwegian government’s China strategy
Hr. 09:45 Coffee/tea

Session 1 Chair: Rolf Vogt, UiO
Hr. 10:00 Prof. ShuTao, PKU
   Emission, contamination and respiration exposure of PAHs in China
Hr. 10:15 CICERO - Lin Gan
   1. CICERO's interest and involvement in China;
   2. "Sustainable Energy and Environment in Rural Development: Technology Innovation, Policy Change and Social Development"
Hr. 10:30 UmB - Jan Mulder
   More reactive nitrogen in the environment:
   How does it affect soils and waters?
Hr. 10:45 UiO-Chem – Rolf D. Vogt
   The IMPACTS project – Producing policy relevant science for abating the Acid rain problem
Hr. 11:00 Norwegian Forest and Landscape Institute – Odd Eilertsen
   Sustainable rangeland management in areas with severe soil erosion and land degradation - linking economy, social and natural science in a geographical information system in north and west China
Hr. 11:15 Dr. Qing Hu, RCEES
   Current research of cellulosic ethanol in China
Hr. 11:30 BioForsk - Ellen Merethe Magnus
   How can Bioforsk contribute to Chinese-Norwegian collaboration on environmental issues? Challenges related to food production and agricultural practices.
Hr. 11:45 Open for presentation
Hr. 12:00  Lunch (lunchbox)

Session 2  Chair: Lin Gan, CICERO
Hr. 13:00  Prof. Yonglong Lv, CAS
Topics: to be confirmed
Hr. 13:15  UiO-Geo - Chongyu-Xu,
Climate change and hydrological modelling of future water resources -
achievements and challenges
Hr. 13:30  NUPI - Valter Angell
The role of the public sector in the formulation and implementation of
environmental policy
Hr. 13:45  Prof. Guojun Song, Renmin University of China
Challenges to Environmental Policies in the context of pollution control in
China
Hr. 14:00  NIBR - Geir Orderud
"Environmental related research at NIBR, and engagements in China"
Hr. 14:15  NORDECO - Olav Aanestad
Climate and environmental change: Facilitating local involvement
Hr. 14:30  TØI - Lasse Fridstrom
Sustainable mobility - interests, indicators, and instruments
Hr. 14:45  Dr. Hua Zheng, RCEES
Topics: to be confirmed

Hr. 15:00  Coffee/tea
Hr. 15:15  Open for presentation
Hr. 15:30  Discussion
Hr. 16:00  Seminar end - Concluding remarks

Hr. 18:00  SINCIERE member forum dinner
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<th><strong>Referat</strong></th>
<th><strong>Møte i Arbeidsutvalget (AU), SINCIERE</strong></th>
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<td><strong>Tilstede:</strong></td>
<td>Jon Naustdalslid (JON), Kristin Aunan (KRA), Karen C. Johansen (KCI), Annik Myhre (ANM), Hans M. Seip (HMS), Nils Roar Sæltun (NRS) (vara for Stordal) og Rolf D. Vogt (RDV)</td>
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<td><strong>Ikke tilstede:</strong></td>
<td>Frode Stordal (FST),</td>
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<td><strong>Referat sendt til:</strong></td>
<td>Alle nevnt ovenfor, Anne Kari Johansen (AKJ), Thorjørn Larssen (TJL), Jan Mulder, Haakon Vennemo, Odd Eilertsen, Steinar Larssen, Trygve Lande, Per Schive,</td>
<td><strong>Møteleder:</strong></td>
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### Sak Kommentar

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<td>01</td>
<td>Det var ingen merknader til referatene fra styre- og rådsmøte. De kan derfor nå sendes ut til alle medlemmene i Styret</td>
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<td>RDV ble valgt som referent, med bistand fra KCJ</td>
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<td>03</td>
<td>Det var enighet om at sakska ut for omfattende. Det ble derfor besluttet at vi måtte splitte behandlingen over to møter og at vi på dette møtet kun skulle ta de sakene som var mest presserende og utsette resten til neste møte (se sak 22)</td>
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<td>Fire eventuelt saker som kom opp under møtet er lagt til sak 23.</td>
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<td>Orienteringsaker utsatt til neste møte</td>
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<td>Utarbeiding av senter statutter utsatt til neste møte</td>
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<td>07</td>
<td>Det ble tilrådd av arbeidsgruppen at Anne Kari tilbyes et engasjement som Kinesisk koordinator i SINCIERE i 60% stilling i ltr. 48 fra 15.01 ut 2007. Nærermere stillingsbeskrivelse skal utarbeides av AU.</td>
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<td>Valg av offisiell representant utsatt til neste møte</td>
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<td>09</td>
<td>Fokus og de generelle prinsippene til senteret er en overordnet problemstilling som berører en rekke av de punktene vi diskuterte på dette møtet.</td>
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<td>Hvordan gjøre senteret mer attraktivt for prosjekter er en viktig sak. Muligheten for å ha to forskjellige tilknytningsformer av prosjekter til senteret ble nevnt. Det ble besluttet å vente med å ta videre diskusjonen med Miljøråd og rådsmedlem Per Schive ang. tilknytningsmuligheten for statlige bilaterale prosjekter til vi kan ta en samtale om dette sammen i Beijing i mars. Muligheten av å knytte til seg dr. stip. eller post/docs finansiert av MoE (se sak 18) burde kunne være et sterk insitament til å</td>
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<td>Kartlegging av ekspertise og pågående prosjekter er viktig innspill til handlingsplanen. Videre behandling av dette ble utsatt til neste møte – referent kommentar: det bør avsettes noen til å følge opp i både CIENS og UiO samt på kinesisk side.</td>
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<td>Utlysning av nye prosjekter ble ikke behandlet - Mulighetene innen EUs 7. RP skal screenes</td>
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<td>Utarbeiding av handlingsplan inngikk i sak 09</td>
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<td>14</td>
<td>- En revisjon av budsjett må avvente en avklaring fra NFR på vår søknad. Dette følges opp videre. - Regnskapet for senteret legges til Kjemisk Inst, UiO, etter at dette er avklart med UiO. - Kontingent fra medlemmene i CIENS skal drives inn. - Muligheten for midler fra SFT må avklares. Vi må derfor få til et møte med repr. fra SFT. - Hva som er bevilget av rene penger og hva som må anses som ”inkind” fra kinesisk side må avklares (se også pkt 19). ”In kind” bidrag bør imidlertid også prises. Størrelselslikhet mellom norske og kinesiske bidrag bør synliggjøres/tilstrebes. - Er det behov for å engasjere en kinesisk sekretær ved senteret eller er det mer behov for å kunne trekke på ekstrahjelp på timesbasis? - I tilfelle det er nødvendig med en sekretær må det avklares hva dette vil koste i lønnsmidler. - Det ble besluttet å be AKJ utarbeide et revidert forslag til budsjett.</td>
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<td>15</td>
<td>Vi tar sikte på å holde et norsk SINCIERE seminar/workshop i Oslo etter styremøte i mars, for eksempel 07.05 eller 24.04. På dette seminaret skal vi legge opp til at UiO/CIENS i felleskap informerer om senteret og dets mål, muligheter: - Vi ønsker også å invitere NFR, bl.a. EU kontoret, til å orientere om mulige prosjektmidler.</td>
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<td>diskutere hvorvidt finansiell støtte til denne type</td>
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<td></td>
<td>medlemsaktivitet er mulig</td>
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<td>17</td>
<td>Planer om et evt. nytt SINCIERE workshop i sammenheng med</td>
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<td></td>
<td>NIVA/SINCIERE møtet ble utsatt til neste møte</td>
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<td>18</td>
<td>Det ble over bordet på møte mellom MoE og UiO etter åpningen</td>
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<td></td>
<td>av SINCIERE forespeilet midler fra MoE til 10—20 dr. grads</td>
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<td>stipender og post docs – til enten hele grader inkl. joint degree</td>
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<td></td>
<td>eller kortere opphold. Et problem som må løses før vi kan ta imot</td>
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<td>eventuelle stipendiater er at flere instituttene ved UiO (særlig de</td>
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<td>mindre ressurssterke) ikke kan ta imot disse studentene uten at</td>
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<td>det følger driftsmidler.</td>
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<tr>
<td></td>
<td>- Forslaget fra MoE må følges opp med ambassaden og KD.</td>
<td>09.01</td>
<td>ANM, KCJ</td>
</tr>
<tr>
<td></td>
<td>- Kan KD og evt. UD komme opp med driftsmidler? (Ref.</td>
<td>09.01</td>
<td>ANM</td>
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<td></td>
<td>kommentar: dette er et generelt Ph.d. problem, og er tidligere tatt</td>
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<td>opp med KD i andre sammenheng. UD bør også kunne bringes</td>
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<td>på banen her. NFR har også finansieringsordninger som bør sess</td>
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<td>nærmere på)</td>
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<td>- Muligheten for driftsmidler fra CIENS aktører når stipendiatene</td>
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<td>knyttes opp mot prosjekter må avklares.</td>
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<td>19</td>
<td>Et SINCIERE kontor ved RCEES må etableres. Dette henger</td>
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<td></td>
<td>sammen med avklaringen om ”in kind” bidraget fra kinesisk side.</td>
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<td></td>
<td>- Hva slags kontorutstyr stiller RCEES med?</td>
<td>09.01</td>
<td>AKJ</td>
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<tr>
<td></td>
<td>- Vi trenger laptop, videokanon, faks, kopimaskin.</td>
<td>09.01</td>
<td>AKJ</td>
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<td>En innkjøpsliste må utarbeides og kostnad må innarbeides i</td>
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<td>budsjettet (sak 14)</td>
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<td>20</td>
<td>En SINCIERE web side må etableres.</td>
<td>snarest</td>
<td>AKJ, RDV</td>
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<td></td>
<td>- Et forslag til en slik side må utarbeides.</td>
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<tr>
<td>21</td>
<td>Avklarging av ansvarsområder inngikk i behandlingen av de</td>
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<td></td>
<td>enkelte sakene.</td>
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<td>22</td>
<td>Neste møte i arbeidsgruppen ble satt til 19.01 kl 09:00 – 12:00 i</td>
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<td>5.et. i CIENS</td>
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<td>23</td>
<td>Eventuelt:</td>
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<td></td>
<td>- NFR har ennå ikke foreslått styremedlem. Ragnhild Solberg er</td>
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<td></td>
<td>imidlertid nevnt over bordet av NFR. Hvis ikke hun blir aktuell</td>
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<td></td>
<td>kan vi evt foreslå Jørgen Randers fra Lavutslipputvalget eller</td>
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<td></td>
<td>Peter Johan Schei, leder for Fritjof Nansen Instituttet.</td>
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<td></td>
<td>- Neste Board og Council meeting er foreslått til 19-20.03</td>
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<td></td>
<td>- Prioritering av arbeidsoppgaver for Anne Kari Johansen:</td>
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<tr>
<td></td>
<td>1. Forberede det som skal forberedes til styremøte i mars:</td>
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<td></td>
<td>Utarbeide sakspapirer til styre, handlingsplan, budsjett</td>
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<td>2. Arbeide med NIVA/SINCIERE workshop</td>
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<td>3. Web side</td>
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<td>- Info om mulige nye assosierede medlemmer ble presentert av</td>
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<td>RDV: UMB, Bioforsk, Kartverket og Institutt for Skog og</td>
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<td>landskap. (ifn det ble AU enig om å ikke utvide hovedmedlemskapet i senterets nåværende etableringsperiode for</td>
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<tr>
<td>Sak Kommentar</td>
<td>Tidsfrist</td>
<td>Ansvarlig</td>
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<td>å ikke komplisere situasjonen</td>
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<tr>
<td>Referat</td>
<td>Møte i Arbeidsutvalget (AU), SINCIERE</td>
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<td>Møtenr.:</td>
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<td>Dato:</td>
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<td>Tid:</td>
<td>09:00 – 12:00</td>
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<td>Møteleder:</td>
<td>JON</td>
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<tr>
<td>Referent:</td>
<td>RDV</td>
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</tbody>
</table>

| Tilstede: | Jon Naustdalslid (JON), Kristin Aunan (KRA), Frode Stordal (FST), Annik Myhre (ANM) og Rolf D. Vogt (RDV) |
| Ikke tilstede: | Karen C. Johansen (KCJ), Hans M. Seip (HMS), |
| Referat sendt til: | Alle nevnt ovenfor, Anne Kari Johansen (AKJ), Thorjørn Larssen (TJL), Jan Mulder, Haakon Vennemo, Odd Eilertsen, Steinar Larssen, Trygve Lande, Per Schive |

**Sak Kommentar**

/07 Se inntakningen for beskrivelse av de enkelte sakene Sakspapirer tilgjengelig på [http://folk.uio.no/rvogt/SINCIERE/](http://folk.uio.no/rvogt/SINCIERE/)

<table>
<thead>
<tr>
<th>Dagsorden ble enstemmig godkjent</th>
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<tbody>
<tr>
<td>RDV ble valgt som referent</td>
<td>snarest RDV</td>
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<tr>
<td>Referat fra AU møte 08.01.07 ble godkjent</td>
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<td><strong>Orienteringsaker</strong></td>
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<tr>
<td>- Referater fra gruppediskusjoner ble fremlagt</td>
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<td>o Atmosfære</td>
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<tr>
<td>o Vann</td>
<td></td>
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<tr>
<td>- Innspill fra AKJ ang. referatet fra AU møte 08.01.07</td>
<td></td>
</tr>
<tr>
<td>o Sak 07/07: AKJ har laget et utkast til sin Stillingsbeskrivelse som hun ber oss se på og gi tilbakemeldinger på.</td>
<td>26.01 Alle</td>
</tr>
<tr>
<td>o AKJ har satt opp budjettforlaget i et nytt og mer anvendelig format. Dette blir behandlet i sak 35/07</td>
<td>26.01 RDV</td>
</tr>
<tr>
<td>o RCEES stiller også møterom til rådighet for senteret.</td>
<td></td>
</tr>
<tr>
<td>o AKJ kom med en del spørsmål og kommentarer til det tidligere budjettforlaget som RDV skal gi tilbakemeldinger på. Disse sakene blir behandlet videre i sak 35/07</td>
<td></td>
</tr>
<tr>
<td>o Sak 16/07: NIVA har takket ja til tilbud om SINCIERE assistanse til gjennomføring av arbeidsmøte 21-22.03.07. Det vil sannsynligvis ikke komme søknad om midler til arbeidsmøtet. NIVA vil ha møte om saken 23.01.07. 22.07 er verdens vanndag!</td>
<td></td>
</tr>
<tr>
<td>o Sak 20/07: AKJ foreslår å bruke hennes kollega China Access til web design. AKJ vil innhente prisanbud. Dette blir behandlet i sak 38/07.</td>
<td></td>
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<tr>
<td><strong>Budsjett</strong></td>
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<tr>
<td>o Til tross for gjentatte forespørsler fra RDV har NFR fremdeles ikke gitt tilbakemelding på vår søknad om driftsmidler. Jon N. skal forfølge saken med NFR</td>
<td>26.01 JON</td>
</tr>
<tr>
<td>o ANM melder at det er OK for MatNat fakultetet, UiO, at regnskapet for senteret legges til Kjemisk Institutt.</td>
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Sak Kommentar

/07 Se [inntekkelse] for beskrivelse av de enkelte sakene
Sakspapirer tilgjengelig på [http://folk.uio.no/rvogt/SINCIERE/]
CIENS går også inn for at Kjemisk Inst. tar regnskapet
for SINCIERE.

- Vi må fakturere hvert av inst. i CIENS, samt UiO sentralt
og MatNat fakultet kkr. 50 hver.
- Det er kommet i stand en miljøteknologiavtale som
involverer NFR, IN og SFT. SFT engasjement i Kina går
på kapasitetsbygging, noe som passer godt inn i
virksomheten til SINCIERE.

Jon N. og Rolf V. vil ha et møte med SFT 08.02.

- Avklaring av hva som kan forventes av ”in kind” og av
rene midler på kinesisk side beror på en avklaring av
søknaden til NFR.
- Zhang Xiashan (RCEES/SINCIERE) og AKJ var enige
om at det p.t. ikke var behov for en sekretær ved senteret.

Det er mulig at CAS evt. bidrar med en sekretær til
senteret.

- Utgifter til kontorutstyr vil bli utredet i løpet av uke 4.
Dette går inn i sak 35/07

Snarest
08.02
RDV

26.01
AKJ

28 Senter statutter
Statuttene senteret skal basere sin drift på de tre første
etableringsårene må utarbeides. Disse skal være begrenset i
omfang men må:
- Regulere rollen og ansvaret til Råd og Styre
- Fastlegge rollene og mandatene til Koordinatorer, Kinesisk
direktør og sekretær
- Beskrive arbeidsoppgaver og ansvarsområder

Utgangspunktet til disse statuttene er pkt. 2 i [samarbeidsavtalen
til SINCIERE]: Hva som er målet, hva vi skal gjøre …
En mulighet er å bruke statuttene til [Nansen-Zhu] som eksempel.
Det er imidlertid viktig å gjøre statuttene praktiske.
Vi ber Anne Kari i felleskap med Einar Noreik ved juridisk avd.
UiO til å komme med et utkast til statutter i løpet februar

AKJ

29 Representanter for SINCIERE
Rolf V. og Zhang Xioshan er repr. for hhv. den norske og
kinesiske delen av SINCIERE

30 Generell faglig fokus og generelle prinsipper til SINCIERE
Senteret skal facilitere forskningsamarbeid slik det er befestet i
[samarbeidsdokumentet]. Vi skal være forsiktige med å lage
foringer som ekskluderer de som kommer med ”bottom-up”
initiativer. Arbeidsgruppen er derfor skeptisk til å bygge et stort
DPSIR byggverk da vi har ingen mulighet til å strukturere
forskningen top-down siden vi ikke har noe apparat til å utvikle
dette.
- Senteret bør imidlertid bruke en DPSIR struktur til å
synliggjøre det som foregår innen miljøforskningen i Kina, hvor
det er kunnskapsmangler og synliggjøre hva vi kan tilby fra
Norsk side.
### Sak Kommentar

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<th>Ansvarlig</th>
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<tr>
<td>- Spesifikt der det er kunnskapshull bør senteret ta initiativ til seminar/workshops der en inviterer nøkkelpersoner innen samfunnsfag økonomi og naturvitenskap til å komme sammen og utvikle samarbeids prosjekter. Til dette kan vi evt. søke BILAT midler.</td>
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<tr>
<td>Arbeidsgruppen konkluderte med at siden senteret ikke skal drive faglig aktivitet er det ingen grunn til velge generell faglig fokus.</td>
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<tr>
<td>På litt lengre sikt må partnerne i SINCIERE utarbeide et sett av felles strategier og planer for forskningssamarbeid der fokus bør være på integrert forskning som knytter naturvitenskap sammen med samfunnsvitenskap og økonomi.</td>
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**31 Kartlegging av ekspertise og kunnskapshull.**

Senteret bør ta mål av seg til å se miljøforskningssamarbeidet mellom Norge og Kina i en større sammenheng slik at evt. manglende ledd og kunnskapshull i DPSIR kjeden kan bli identifisert og fokusert på. Videre er det klart at nye prosjektmuligheter vil være basert på eller spinne ut fra etablert virksomhet. Integrert informasjon om avsluttede og pågående prosjekter vil derfor være et nyttig verktøy for utvikle og skrive nye prosjektsøknader.

- Slik det ble konkludert i sak 30/07 ønsker senteret derfor å bruke en DPSIR rammeverk for å kartlegge og synliggjøre
  - hva slags forskning samarbeid mellom Norge og Kina har vært drevet og drives av partnerne i SINCIERE
  - hvor virksomheten til partnerne i SINCIERE passer inn i DPSIR systemet.
  - kunnskapshull
  - hvilke temaer er medlemmene interessert i

Thorjørn Larssen (TJL) har begynt på dette viktige arbeidet i luft gruppen. Sekretariatet skal gjennomføre disse tingene sammen med TJL.

| 21.03 | TJL, AKJ |
| 30.06 | AKJ, KCJ |

**32 Prosjektgenerering**

Vi må være klare på at vi ikke disponerer midler til forskning. Utlysning av prosjektideer må vi derfor være forsiktige med siden det er en helt annen greie å finne penger til prosjektene.

I stedet skal vi:

- Synliggjøre forskningsbehov
  | 21.03 | TJL |
- Arrangere seminar.
- Initiere og være fødselshjelp til nye prosjekter
- Kartlegge hvor det er midler tilgjengelig til samarbeid og opprette en info base på alt det som er mulig å søke på av midler (for eksempel NORAD – WUN)
  | 30.06 | AKJ, KCJ |
- Være oppdatert på EU
  | 21.03 | NRS |
- Minne om frister for søknader

Dette skal gjøres gjennom Newsletter, samt en åpen og en
<p>| 30.06 | AKJ, RDV |</p>
<table>
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<th>Sak</th>
<th>Kommentar</th>
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<td>/07</td>
<td>Se <a href="http://folk.uio.no/rvogt/SINCIERE/">inntekkningen</a> for beskrivelse av de enkelte sakene. Sakspapirer tilgjengelig på <a href="http://folk.uio.no/rvogt/SINCIERE/">http://folk.uio.no/rvogt/SINCIERE/</a> medlemswebside – se sak 38/07</td>
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</table>
| 33 | **Hvordan gjøre senteret attraktivt for prosjekter**  
Dette blir en viktig sak på råds og styremøte. Det er ikke mulig å føre prosjektmidler gjennom senteret siden ingen som har et forskningsprosjekt der RCEES ikke er en sentral partner vil være villig til det. Vi kan derfor ikke se for at senteret kan drive prosjekter eller være prosjekteier. De eneste midlene som vil gå gjennom senteret er derfor søkte midler til utvekslingsprogram, stipendiat program og workshops etc. + medlemskontingent. Ønsker om å prøve å få dette til kommer av at anerkjennelsen og betyden av senteret på kinesisk side måles nesten utelukkende av størrelsen på omsettingen. Hvis vi ikke lykkes med å sørge for at senteret vil interesser og engasjement fra CAS kunne reduseres betraktelig. En stor utfordring for senteret blir derfor å få medlemmene til å affilere prosjekter de har i Kina til senteret og å aktivt bruke senteret aktivt. Får å få dette til må vi sette opp en liste over fordelene ved å affilere prosjekter til senteret:  
- Synliggjøre hvilke tjenester senteret tilbyr og hvilke økonomiske midler som er tilgjengelig etter søknad til reiser og opphold osv for Kinesiske deltakere på møter etc.  
- Tilby stipendiater til integrete prosjekter.  
  - En viktig faktor som vil kunne bidra til å knytte prosjekter aktivt opp mot senteret er å få fram utvekslingordning (studenter og forskere) slik at senteret skal kunne formidle stipendiatene. De som søker om stipendiatene må bære driftsmidlene – MoE, UD eller MD bidrar med stipend og UiO gir graden (se sak 18/07). Vi må finne ut av hva som ligger i den mulige stipendordningen. Annik M. og Karen C.J. jobber denne saken. Dette er en viktig sak som bør med i Handlingsplanen behandlet i sak 34/07.  
- Det virker greiere med en medlemskontingent enn at prosjekter assosiert til senteret skal betale 2% av sitt budsjett til senteret. |
| 34 | **Handlingsplan**  
Tre forskjellige dokumenter må utarbeides:  
- Strategidokument skal gi den overordnede og prinsipielle visjonen og hensikten til senteret og gi en felles forståelse av hva dette senteret retning og perspektiv på det vi skal arbeide med i denne treårs perioden  
- Årsplan 2007 skal inneholde de konkrete gjøremål med tidsfrister fra 2007. Her skal vi bl.a. ha med at vi må få til en |
<p>| Tidsfrist | Ansvarlig |
| 21.03 | ANM, KCJ |</p>
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<th>Sak</th>
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<th>Tidsfrist</th>
<th>Ansvarlig</th>
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<td>28.02</td>
<td>Zhang, AKJ</td>
</tr>
</tbody>
</table>
| 35          | **Budsjett**<br>Forslag fra AKJ til [foreløpig rammebudsjett](http://folk.uio.no/rvogt/SINCIERE/) for 3års perioden, med utgangspunkt i budsjettet slik det fremkom i søknad til NFR er vedlagt som sakspapirer. Se for øvrig sakspapir 07/07 for beregning av lønnsutgifter til Kinesisk Koordinator.  
- Anne Kari J. må jobbe videre med budsjettet med inntekten vi vet at vi får (Kontigenter: 480kkr) samt de vi regner med at vi får (750 kkr. fra NFR og 500 kRMB fra CAS).  
- Anne Kari J. samler videre inn nødvendig informasjon om utgifter til:  
  - "Inkind" fra Kina  
  - Kontorutstyr  
  - Sekretær utgifter  
  - Web konsulent  
  - Newsletter  
  - Reiseutgifter for deltagelse i styre og råd  
  - Annet?  
- og legger dette inn i budsjettet.  
- AU må på bakgrunn av dette foreløpige budsjettet avklare hvor mye vi ønsker å bruke av budsjettet til:  
  - kjøpe Zhang X. fri fra RCEES til å kunne fungere som Kinesisk direktør  
  - kjøpe Rolf V. fri fra undervisning for å kunne fungere som organisator.  
  - Workshop aktiviteter.  
  - Invitere kinesiske deltakere (reise og opphold).  
- Basert på budsjettavklaring fra AU på neste møte skal Rolf V. utarbeide forslag til revidert rammebudsjett og detaljert driftsbudsjett for 2007 for Råds og Styremøte i mars. | 24.02     | AKJ       |
| 36          | **SINCIERE oppfølgings Workshop**<br>Det ble besluttet at dette har vi ikke kapasitet til nå. Det er andre saker vi bør prioritere. | 26.03     | JON       |
| 37          | **Bidragsmidler til stipendiater ved UiO**<br>For å kunne ta opp stipendiater som kommer kun med stipend til UiO må bidrag- eller driftsmidler skaffes fra andre kilder.  
- Jon N. var skeptisk til at det lot seg gjøre å finne bidragsmidler ved forskningsinstituttene i CIENS. Imidlertid viser erfaringen med NIVA at dette skal det være mulig å få til.  
- Dette er imidlertid et overordnet UiO problem som Annik M. og Karen C.J. skal diskutere med de rette myndigheter (KD, snarest) | 26.03     | ANM, KCJ  |
## Sak Kommentar

| /07 | Se [inntakningen](http://folk.uio.no/rvogt/SINCIERE/UD) for beskrivelse av de enkelte sakene. Sakspapirer tilgjengelig på [http://folk.uio.no/rvogt/SINCIERE/UD](http://folk.uio.no/rvogt/SINCIERE/UD). |
| 38 | **Web side**

Web sidene må ha en ekstern del og en intern del og være på Engelsk og Kinesisk.

**Eksterne sider:**
- Visjon og formål
- Hva senteret kan tilby medlemmene
- Medlemslistet av personer og organisasjoner med linker til deres web sider
- Liste og beskrivelse av affilierte prosjekter
- DPSIR relasjon og relevans
- Info om arrangementer
- Foredrag gitt ved møter arrangert av senteret

**Interne sider:**
- Referater fra møter i Råd og Styre
- Mulige finansieringsskilder for forskningsprosjekter (NFR, EU), kompetanseoverføring, bistand (NORAD) og stipender for studenter og forskere (WUN).
- Søknadsfrister
- Kunnskapshull i DPSIR kjeden

| 39 | **Deltakelse på CIEPEC 2007 og Norway Hubei Week**
- Deltagelse på [CIEPEC 2007](http://www.ciens.no) er ikke relevant siden dette dreier seg om miljøteknologi.
- Det har kommet en forespørsel fra HiT om vi kunne komme til [Norway-Hubei week](http://www.gwpforum.org/) i Wuhan 27-29.06.07 og presentere senteret. Dette er et samarbeid mellom Telemark Fylkeskommune; Hubei province og den Norske ambassaden. Fokus for dette møtet er forskning, nettverksbygging og ”brobygging” mellom Norge og Hubei. Rolf V. skal snakke med Thorjørn Larssen om han kan stille på denne tilstevningen som repr. for SINCIERE. |
| 40 | **Tidspunkt for neste AU møte**
Dato for neste AU møte er 26.02.07

| 41 | **Eventuelt**
- Ansettelsesforhold til Anne Kari J.
  - Formelt har ikke AU fått mandat til å ansette AKJ lengre enn fra til neste styremøte i uke 13. Vi |
Sak Kommentar

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Minutes from SINCIERE strategy meeting

May 25th, 2007, at CIENS

Present: Jon Naustdalslid (NIBR), Kristin Aunan (CICERO), Frode Stordal (Geo-UiO), Nils Roar Sælthun (Geo-UiO), Valter Angell (NUPI) and Rolf D. Vogt (Chemistry-UiO).

Not present: Haakon Thaulow (NIVA), Annik Myhre (UiO), Karen C. Johansen (UiO), Jan Mulder (UMB).

Background:

The purpose of the meeting was to follow up on the SINCIERE member Forum meeting held at CIENS on Friday May 19th. Representatives from RCEES/CAS, in the Chinese delegation visiting Oslo, presented at this meeting concrete offers of participation on three large scale cross-disciplinary environment projects within the Beijing – Tianjin area (see attached main topics of these projects), as well as comments made by members during after the meeting, through sector responsible Haakon Thoulow for CIENS, Nils Roar Sælthun for UiO and Jan Mulder for the Ås environment.

The main challenges lie in rising funding for Norwegian participation on environmental research in China. The Norwegian ministry of Foreign affairs (UD) are these days developing a white paper on their China strategy. It is pertinent that we follow this up with a concrete offer of action from the Norwegian environmental research community.

Member comments:

The comments from members clearly express a wish to participate in the proposed activities, as well as a number of other plans for research project within the field of environment in China. The overall aim is to integrate environmental and social research with management, economy and technology. CIENS was especially interested in the large scale integrated DPSIR approach integrate of the Beijing – Tianjin projects. While it is important to think big several institutes at Ås promoted that there needs to be room also for medium size projects in poorer and more rural parts of China. The UiO, by Rector and the Research director, are keen on contributing to a research collaboration with CIENS, within the framework of SINCIERE. The preparation of a large scale program would require a pilot feasibility study project. Including Norwegian environmental technology trade and industry into the bid was strongly recommended. They can play the role as problem solvers. The scientific research ought to be toned down while competence transfer and management should be promoted in order to comply with the signals from the ministries.

All members agreed that we must urgently approach UD with a note expressing the need for funding. In time such funding should be along the line of the South Africa program or the Chinese program for Human rights of UD. The unanimous experience is that funding from the Norwegian Research Council (NFR), through existing programs, for environmental research cooperation with China is not feasible.
**Discussion**

In order to handle the various issues at hand we need to work along two time axis;
- what we need to address immediately and what is a more long term issue.

It is clear that the most imminent tasks are related to UD and their China strategy. Here it is important to be on the ball with concrete plans and actions. Within 2-3 weeks we need to develop a framework for a flagship project including a task force that can constitute the pilot project (i.e. 1,5 mill NOK) members ready to act within months. We have here an opportunity promote good ideas and to show that we can deliver integrated and policy oriented environmental research. Likely the best way to set up such a large scale project (i.e. ~ 10 mill. NOK yr.¹) is to have several work packages functioning as individual projects with a main integration project package led by SINCIERE. Angell argued that the future policy of UD does not exclude the involvement in richer areas of China and Sælthun pointed out that the existing development policy of UD opens up for most of the Beijing - Tianjin project tasks. The network and infrastructure of SINCIERE should represent an attractive bid for UD as we represent solid environmental research institutes with experience within interdisciplinary and policy oriented science that is thought for in China.

We need to make it more clear for the ministries that:
- Sound environmental management is best achieved through scientific based adaptation of prediction models – not by sending Norwegian bureaucrats to China.
- Global environmental issues are best handled in China by arguing the local and regional benefits achieved through abatement strategies.
- Norwegian environmental technology is best promoted through integrate cooperation with the environmental scientific community. We may act as door openers and provide them with credibility, though they need to show social responsibility and goodwill.
- Norwegian participation in environmental research and development in China is also a question of using the unique position we have acquired, through decades of cooperation, to consolidate ourselves as equal partners to institutions that will be in the forefront of science within few years.

More long term strategies are to:
- develop a China program similar to the South Africa programme at UD.
- work with NFR in developing programs open for research cooperation with China
- develop EU projects
- develop 2-3 medium size projects in more underdeveloped and rural parts of China

**Tasks:**

Rolf:
- Translate project documents from Chinese to English and distributed to the members.
- Keep our Chinese partners, the Norwegian Research Council (Trygve Lande) and the Ministry of Environment (Mari Sæther & Brita Slettemark) informed of our activities.

Valter:
Adress Eivind Homme Marianne Gjørv and arrange a meeting and formulate the note to UD

Jon:
- Within 2-3 weeks set up framework for the Beijing – Tianjin project including a task force that can constitute the pilot project members ready to act within months. The list of project topics (attached) will be used as grounds for selecting relevant institutes and partners.
- Discuss the involvement of Norwegian environmental technology industry with Rune Opheim at the Norwegian Pollution Control Authorities (SFT) as well as Hydro, Jara, Sven Uldring, Kjell Stenstavold
Brief on Delegation members: Bojie Fu, Yonglong Lu, Xuliang Zhuang, Jiuhui Qu, Yongguan Zhu, Min Yang, Xiaoshan Zhang, Fahe Chai

**FU Bojie**, Research professor, is currently the director general of Bureau of Sciences and Technology for Resource and Environment, Chinese Academy of Sciences. He received his Ph.D. from Peking University and University of Stirling (Stirling, UK) in 1989. During 1992-1994, he worked as a postdoctoral research fellow in the Institute of Land and Water Management, Leuven University, Belgium. Professor Fu received the State Excellent Young Scientist Award from NSFC in 1997. He got the CAS Young Scientist Prize in 2001. He got the support from NSFC for the project of Innovation Research Group. Dr. Fu currently has the following scientific related positions including Vice Chairman of SCOPE China, membership of the Council of International Association of Landscape Ecology, Vice President of the Chinese Society of Geography, The Executive Council Member of Ecological Society of China, Editorial Board Members of Acta Ecologica Sinica, Plant Ecology, Applied Ecology, etc., and the Vice Editor-in-Chief of Advance in Earth Sciences.

His major research area is landscape ecology. He takes charge of many national key research projects and international cooperation projects such as the project of ecosystem restoration in western China, the project of regional environment and biodiversity conservation, the project of land use pattern and ecological processes, the China/ Belgium bilateral cooperation research project of farming system analysis.

Dr. Fu got prominent scientific achievements from the research fields of land evaluation and landscape pattern and ecological processes. He integrated the scale-pattern- processes paradigm in a creative way and incorporated it in the systematic research of land use structure and ecological processes in the hilly and gully areas of the Loess Plateau, China, which provided important scientific support for the decision making of sustainable land use in this region. And at the same time, he developed the theory of sustainable land use evaluation and established a system of synthetical and integrative land evaluation methods. He has published 6 books and many papers in peer-reviewed domestic and international journals.

**Lü, Yonglong** is currently a Deputy Director-general of the Bureau of Planning and Finance, Chinese Academy of Sciences (CAS). Research Professor of CAS; Secretary-general, Chinese Committee for SCOPE (Scientific Committee on Problems of the Environment under ICSU); Member, Chinese Committee for ICSU (International Council for Sciences); Core faculty of LEAD-China (Leadership for Environment and Development) supported by the Rockefeller Foundation; Member, Chinese Committee for IHDP; Adjunct Professor at the School of Resource and Environment, Renmin University of China; Vice President, Society for Science Policy and Management, Chinese Academy of Sciences; Secretary-general of Special Committee on Ecology and Environment, Chinese Society for Sustainable Development; Standing council member, Chinese Society for Strategy Studies; Governing council member, Ecological Society of China; Standing council member, Chinese Society for Studies on Science and Technology Indicators; Governing council member of Beijing Society of Systems Science.

Prof. Lü received his B.Sc in agricultural engineering and management from Anhui Agricultural University, M.Sc in systems engineering and management from China Agricultural University, and Ph.D. in resource and environmental economics from Renmin
Dr. Lü is a leading scientist in Environmental Management and Policy. He has a wide range of research interests including theory, methodology and application of sustainable development, environmental technology innovation and dispersion, environmental auditing, environmental economic instrument, ecological impacts and environmental management of persistent toxic substances, and strategic planning of science and technology development. He has published more than 80 papers in the above fields in international and domestic journals, authored or co-authored 14 influential books. He is a peer reviewer for many international journals such as Environmental Science and Technology, Chemosphere, Ecological Modeling, Journal of Environmental Quality, Environmental Science and Policy.

Dr. Lü has accumulated many years' experience in the coordination of international activities, being involved in organizing international academic symposia or activities many times in the fields of ecology, resources and environment, and sustainable development. He served as an Executive Project Leader of UNESCO project on urban ecosystem studies for a long time. He has been invited many times by UNESCO, UNDP, UNEP, ICSU (International Council for Sciences), APEC, and SCOPE to make presentations or keynote speeches at international conferences, and to visit more than 20 countries for cooperative research and academic exchange. As an ICSU-China member and a CAS member of IAC (Inter-Academy Council) and IAP (Inter-Academy Panel), he has been involved in many activities of ICSU, IAP and IAC for promoting science and technology capacities in China and the world.

Dr. Lü has also served on several expert consultation groups involved in science and technology, and environmental decision-making at various levels of the Chinese government. He has been involved in formulating China's Agenda 21 and carrying out its subsequent implementation activities. He has also been a part of strategic research group for China's science and technology development, participating in the formulation and implementation of Long and Mid Term Science and Technology Development Plan. Because of his achievements, he has obtained several awards and honors from the Chinese Academy of Sciences and other organizations he has worked with.

ZHUANG Xuliang, Ph. D. in Environmental Sciences, is now the Director of the Division of Ecology and Environment, Bureau of Sciences and Technology for Resource and Environment, Chinese Academy of Sciences. He did research in the area of Environmental Microbiology during worked in the institute. He also worked as Visiting Scholar in the Department of Biochemistry and Molecular Biology in Dalhousie University, CANADA during 2002 to 2003. Recently has paid more attention on Scientific Management related to ecology, environment, and regional agriculture.

QU Jiuhui, senior research scientist and director general of RCEES, received his Ph.D from Harbin University of Architecture and Civil Engineering 1992. He was postdoctor of Harbin Institute of Technology from 1992-1994.

Dr. Qu is now the chief of the experts panel for the national grand scientific and technical special item, “Water Pollution Control Technologies and Engineering”; the expert consultant of Beijing Municipal Government; the expert of Scientific and Technical Advisory Panel of
United Nations Environment Program; the member of International Water Association, member of Japanese Water Environmental Association.

Dr. Qu’s main research fields include the water quality transformation mechanisms, fundamental theories and applicative technologies research on water pollution control. He put forward the principle of Al_{13} formation in electro-chemical process and created an industrial technology for producing nano-flocculant. Several key techniques invented by him have been applied in water and wastewater treatment.

Dr. Qu has published more than 130 papers in national and international scientific journals in abroad and domestic, owned 37 pieces of Chinese and International Patents, published 1 book, and attained several Chinese and international academic awards.

ZHOU Yongguan, Ph.D, senior research scientist in RCEES, graduated from Zhejiang Agricultural University in July 1989, and obtained his PhD from Imperial College, London in June 1998. In late 2001, he was recruited through the “Hundred Talent Program” of the Chinese Academy of Sciences, and joined the Research Centre for Eco-environmental Sciences in January 2002. He is currently the director of China-Australia Joint Laboratory of Soil Environmental Sciences.

Dr Zhu’s research centres on the chemical and biological aspects of nutrient/contaminant dynamics in soil-plant systems, particularly in the rhizosphere, soil microbial communities and their ecosystem functions. His research findings have wide implications in the remediation of contaminated soils and in the minimization of accumulation of toxic chemicals in crop plants. In the last five years, Dr Zhu and his group have published more than 40 papers in international journals. His recent finding in the interactions between iron plaque of rice roots, arsenic and phosphate has added greatly to our understanding of arsenic dynamics in the rice rhizosphere and may offer hope for mitigating the health impacts of arsenic contamination in paddy soils.

Dr Zhu sits on the Standing Advisory Group of the International Atomic Energy Agency (nuclear applications in agriculture and environment), and serves on a number of editorial boards of international scientific journals, such as Trends in Plant Science, Plant and Soil, Environmental Science and Pollution Research, Environment International.

Apart from his research, Dr Zhu has been actively promoting international collaboration in soil environmental sciences between China and overseas. After he joined RCEES, he has organised two international workshops, and initiated several collaborative projects with Australia, Denmark and UK. With the support from Chinese Academy of Sciences and Australian counterparts, he has established the first joint laboratory between Chinese Academy of Sciences and Australia. The laboratory was hailed by Professor Lu Yongxiang, the President of the Chinese Academy of Sciences as a great success in their joint effort in research and research training, and as a model for future collaboration between China and Australia.

Past awards: Research Fellow of the Royal Society of London; Best Presentation from UK University Nuclear Forum; Jack Loneragan Plant Nutrition Award; Outstanding Young Scientist Award from the National Natural Science Foundation of China; Outstanding Returnees awarded by 6 ministries of the Chinese government.
**YANG Min**, senior research scientist in RCEES, got his Ph.D. from Hiroshima University in 1992. Then, Dr. Yang joined Organo Co., Ltd. as a water treatment research scientist, and had applied for 45 patents by the time he was recruited to the RCEES through the famous Talented Overseas Scientist Program. He was recognized for excellence in the final evaluation of the program. Dr. Yang is now the Director of the State Key Laboratory of Aquatic Chemistry (SKLEAC) in RCEES.

Dr. Yang’s main research interests are the treatment of drinking water and environmental microbiology technology, including: 1) Advanced treatment of drinking water and removal of arsenic and fluoride ions; 2) Wastewater treatment and reclamation technologies; 3) Analysis of microbiology community structure, system simulation and optimization in biological treatment systems. 4) Environmental behaviors and degradation mechanisms of toxic substances (NPnEO, PAHs, dyes and antibiotics). Dr. Yang is adept in combining basic study with practical problems. He has successfully implemented a demonstration project for industrial condensate reclamation (2 400 tons/d) and another for the reclamation of domestic sewage for oilfield injection (10 000 tons/d). He has made a breakthrough in the research on the treatment of highly stable tertiary oil-drilling wastewater and is now implementing an on-site experiment with a practical scale (18 000 tons/d). Thus, it is hopeful that the problem of tertiary oil-drilling wastewater treatment in China will be resolved.

Since his return to China, Dr. Yang has published over 80 papers in scientific journals including 26 SCI papers, and has applied for and been issued 17 Chinese patents and 1 international patent. He has hosted many national projects as well as several international cooperation and company research projects.

**ZHANG Xiaoshan**, Ph.D, senior research scientist in RCEES, graduated from Nanjing University and got B.S degree in 1982. He has been working in the RCEES in the field of air pollution and acid deposition. He got Ph.D from the Graduate School of Chinese Academy of Sciences in 1995. During 1992-1993, Dr.Zhang was a visiting scholar working on air pollution modeling in the National Institute of Environmental Research (DMU) in Denmark. He was also a visiting scholar in the National Center for Atmospheric Research (NCAR) in the United States of America in 1998. He is present the director of the Department of Atmospheric Environment in RCEES,

Dr. Zhang is now leading his group working in the field of atmospheric pollution and deposition with attentions on the impact of acid deposition, airborne particulates and atmospheric mercury. In recent years Dr. Zhang’s group has made several progresses in studies of acid deposition, aerosol chemistry and atmospheric mercury by international collaboration. The group is also involved in the investigation of indoor air pollution in China.

During the years Dr. Zhang has made great achievements in the study of acid deposition. He was awarded the first-class prize of National Science and Technology Progress Arard. He has published many scientific research papers, and is presently responsible for several projects supported by Natural Science Foundation of China(NSFC) and other organizations.

Prof. WANG Tieguan, molecular organic geochemistry and petroleum and coal geology, China. Geosciences Department, University of Petroleum (Beijing). Genetic Mechanism and Occurrence of Immature Hydrocarbon
TRAVEL SCHEDULE

Monday 7th
hr. 18:25  Arrive Gardemoen Airport (AY657)
hr. 19:00  Transport to Thon Hotel Oslofjord, Sandvika
hr. 20:00  Arrive Hotel - rest

Tuesday 8th
hr. 08:00  Dept. hotel
hr. 08:45 – 09:40  Ibsen centre and The Observatory
Host: Dr. habil Knut Brynhildsvoll
hr. 10:10 – 13:45  UiO workshop (coordinated by Prof. N. R. Sælthun)
hr. 10:10  Welcome and introduction to the program, N. R. Sælthun
hr. 10:15  Introduction to the delegation, Professor Fu Bojie
hr. 10:30  Tyge Greibrokk, Head of Department of Chemistry
hr. 10:45  Professor Rolf. D. Vogt, Department of Chemistry
hr. 11:00  Professor Reidar Haugsrud, Centre for Materials Science and Nanotechnology
hr. 11:15  Trond Schumacher, Head of Department of Biology
hr. 11:30  Professor Nils Christian Stenseth, Head of Centre for Ecological and Evolutionary Synthesis, CEES
hr. 11:45  Nils Roar Sælthun, Head of Department of Geosciences
hr. 12:00  Professor Gijs Breedvelt, Department of Geosciences
hr. 12:15  Professor Frode Stordal, Department of Geosciences
hr. 12:30  Round table discussion on cooperation possibilities
hr. 13:00  Lunch at Georg Sverdrup Building (to hr. 13:45)
hr. 14:30 – 16:00  Visit to Norwegian Research Council
Meeting with Director of International unit Kari Kveseth and Special advisor and responsible for cooperation with China Trygve Lande, a.o.
hr. 16:30 – 17:30  Rest in hotel
hr. 18:00 – 20:00  Dinner; Nesøya
**Wednesday 9th**

hr. 08:15  Dept. hotel
hr. 09:00 – 16:00  **CIENS SACRE** workshop (arranged by Haakon Thaulow)
  NINA, NIVA, CICERO, NIBR, UiO-geo, TØI, NILU
hr. 16:30 – 18:00  Meeting with **UiO**
  University president, repr. from research administration, deans of faculty of mathematics and natural science, dept. of Chemistry and Geosciences.
hr. 18:00 – 20:00  Dinner as guest of UiO
  Host: University President

**Thursday 10th**

hr. 07:30  Dept. hotel
hr. 08:30 – 11:15  Ås workshop in **IPM**s large auditorium (arranged by Prof. Mulder)
  hr. 08:30  Welcome announcement
  University of Life science (UMB) president Knut Hove
hr. 08:45  Jan Mulder, **IPM**-UMB
hr. 09:05  Åsa Frostegård, **IKBM**-UMB
hr. 09:20  Petter Jenssen, **IMT**-UMB
hr. 09:35  Coffey / tea
hr. 10:00  Lars Bakken, IPM-UMB
hr. 10:15  Nils Vagstad, **BioForsk**
hr. 10:45  Discussion on possible cooperation projects.
hr. 11:15 – 13:30  **The Norwegian Forest and Landscape Institute**
  (Host Prof. O. Eilertsen, presentations also by Dr. Nicholas Clarke and Dr. Svein Solberg)
hr. 11:15  Institute presentation with focus on China
hr. 12:00  Lunch
hr. 12:30  New project drafts
hr. 14.30 - 16.00  Visit Ministry of the Environment (room 308) (Brita Slettemark, Marianne Gjørv and Mari Sæther) and meet representative from Ministry of Foreign Affairs (Jannicke Graatrud) and Norwegian Pollution control authority (Rune Opheim).

**Friday 11th**

hr. 08:30  Dept. hotel
hr. 09:00 – 13:00  Presentations for SINCIERE Scientific member forum at CIENS
  See separate programme
hr. 13:00 – 22:00  **Sightseeing in Oslo**
  Guide: Ruikai Xie

**Saturday 12th**

hr. 08:11  **Norway in a Nutshell**
hr. 20:34  Arrival Bergen
Sunday 13th
hr. 09:00  Dept. Hotel
hr. 09:00 – 18:00  Sightseeing in Bergen
hr. 18:00  Airport bus to Sola Airport
hr. 20:15  Flight back to Oslo by Norwegian DY685

Monday 14th
Open for individual sightseeing in Oslo, specific meetings and discussing

Tuesday 15th,
hr. 10:15  Leave Hotel
hr. 11:15  Arrive airport
hr. 13:15  Airplane depart (AY656)
Trip to Tianjin

Date: 15th-16th October

15th October:
08:00  Depart from hotel
10:00  Arrive at Tianjin
       Visit project site, Beiyunhe
12:00  Back to downtown
13:00  Lunch
14:30-17:00 Visit and discussion at the Tianjin Academy of Environmental Sciences
17:30  Stay at hotel

16th October:
08:30  Depart from Hotel
09:00  Visit project site, Tianjin Airport Logistics Processing Zone
11:30  Lunch
13:30  Leaving Tianjin
16:00  Arriving at hotel in Beijing
18:30  Dinner