



## Curriculum Vitae

# Haakon Vennemo

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### PROFILE

Haakon Vennemo, PhD, is an expert in environmental economics, energy economics and development issues, with a broad knowledge of macro and micro-economics in general. He has project experience from a large number of countries in Asia, Africa and Latin-America and is an experienced project manager as well as participant. He is currently engaged in several projects in China, including a study on the costs and benefits of clean cooking stoves in rural areas and another on the transfer value of CCS, and he is managing a three-year advisory project to improve the effectiveness of five-year environmental plans in China. He is also engaged in domestic, Norwegian policy issues, e.g., as a member of a team conducting cost-benefit analysis of major public projects in Norway (kvalitetssikringsregimet). In recent years he has done economic analysis of fighter planes, EURO2016 football championship, treatment strategies for a contaminated submarine and Norwegian railway investments, to name a few.

Haakon Vennemo has strong academic credentials and more than 25 referee journal publications. He is Adjunct Professor of Economics at Oslo University College.

### ACADEMIC QUALIFICATIONS

2010 Adjunct Professor, Oslo University College  
1992, 1994, 1998 Post-doc studies at Department of Agricultural and Resource Economics, University of California, Berkeley  
1992 Ph.D. in Economics, University of Oslo  
1986 Master of Economics, University of Oslo  
1980 Undergraduate studies in Liberal Arts, Luther College, Decorah, Iowa, USA

### LANGUAGES

Norwegian Mother tongue  
English Fluent  
Portuguese Beginners

## WORK EXPERIENCE

2010-	Partner, Vista Analysis
2010-	Professor, Oslo University College
1998-2009	Director, Managing Director (1999, 2001) and Partner, ECON Analysis
1995-1998	Senior Research Fellow, ECON Analysis
1994-1995	Senior Research Fellow, Research Department, Statistics Norway
1992-1994	Research Fellow, Research Department, Statistics Norway
1991-1992	Visiting Research Fellow, Department of Agricultural & Resource Economics, University of California, Berkeley
1987-1991	Senior Research Economist, Research Department, Statistics Norway
1986-1987	Research Economist, Research Department, Statistics Norway

## SELECTED PROJECT WORK EXPERIENCE

2011	<b>User fees as an element of the Norwegian system of taxation. <i>The confederation of Norwegian enterprise</i></b>  There is little knowledge of the use of user fees in Norway. We estimate the revenue from user fees on Norwegian enterprises, and compare user fees in nine sectors to the actual costs of the services that the user fees are to cover. Implications of the current system, e.g., for cost control are examined.
2011	<b>A national plan for reducing particulate matter pollution in China. <i>The World Bank</i></b>  Although air quality in Chinese cities is improving the situation is volatile and the level of pollution is still high. China's government has asked the World Bank for assistance in developing a plan that allows all of China's 660 cities to come into compliance with so-called class II air quality. The plan is based on cost-effective pollution control. Advisor.
2011	<b>Disseminating improved stoves to households in Ulaanbaatar, Mongolia. <i>The World Bank</i></b>  A large number of highly inefficient household stoves contribute to Ulaanbaatar's serious air pollution problems. The Government of Mongolia and the World Bank aims to disseminate more than 150,000 new stoves over a two-three year period. An important questions is what combination of subsidies and buy-back schemes that will meet this aim. Advisor.
2011	<b>Railway investment in from Porsgrunn to Larvik – an economic analysis. <i>Ministry of Transport and Ministry of Finance</i></b>

The government of Norway is contemplating a major improvement in the railway line between the cities of Porsgrunn and Larvik, where the current line dates from 1881. The new route will shorten travel distances considerably, but will need tunnels and bridges to do so. As part of the KS regime of quality control we conduct a cost-benefit analysis of single-track and double track alternatives. *Project manager.*

2010-2013 **Diffusion of climate technologies. Norwegian Research Council**

We study the diffusion of climate technologies, with a particular focus on diffusion of CCS from Norway to China. This question has a demand side, in terms of Chinese demand for CCS and Norwegian technology for CCS. Then it has a supply side in terms of Norwegian supply of CCS technology. The first phase of the project studies the demand side, followed by the supply side. With Statistics Norway and Development Research Center of State Council, China.

2010-2013 **Towards a low carbon energy future: Norway's policy opportunities and constraints in an international comparative perspective. Norwegian Research Council**

How are stakeholders in China evaluating costs and benefits of promoting new renewable energy? We suggest that Chinese stakeholders view this question differently, just like the situation in the rest of the world. The project aims to map stakeholders and positions. With CICERO and Chinese Academy of Social Science, China.

2010-2011 **Management of the submarine U864. The Norwegian Coastal Administration.**

The submarine U864, which was torpedoed in World War II, may contain mercury. Lifting it, or covering it on the seabed are two strategies for handling the environmental risk. The project evaluated the costs and benefits of these strategies as part of a "Konseptvalgutredning" (Concept Choice Report). With Holte Consulting.

2010-2011 **Planting Sitka pine along the coast of Norway – an economic analysis. The Norwegian association for forest management (Skogselskapet)**

We examine the case for planting pine trees of the Sitka variety in limited areas along the coast of Norway. Economic benefits are easily dwarfed by the climate benefits of these trees. Sitka on just 100,000 ha goes a long way towards meeting Norway's climate commitments for the next decade. *Project manager.*

2010-2011 **Environmental assessment of a Free Trade Agreement between China and Norway. Ministry of Environment.**

Environmental assessments of free trade agreements are fairly common internationally, but so far rare in Norway. We develop a methodology and conduct an analysis of a potential free trade agreement with China. With FNI. *Project manager.*

2010 **A cost benefit analysis of petroleum exploration outside Lofoten. Ministry of Environment**

As an input to a revised management plan for the area, Vista Analysis is asked to conduct a cost-benefit analysis of petroleum exploration and production in the ocean outside Lofoten. Responsible for probability assessments.

2010 **Tertiary industry in a sustainable economy. Association of trade and services**

Sustainable development, e.g., 80% reduction of CO2 by 2050, will change society and the economy. What is the role of the tertiary industry in this? How will it change? What are the opportunities, where are the threats? The project is reported in a presentation at the annual conference of the association, and a report. *Project manager.*

2010 **Liberia baseline study. NORAD**

Norway is stepping up its assistance to improve electricity coverage in Liberia. For evaluation purposes it is important to benchmark the situation prior to program initiation. This includes, but is not limited to data necessary for an ex post cost benefit evaluation.

2010 **Evaluation of KS1. Ministry of Transport**

For some time, Norway has had a policy of subjecting large public projects to external quality control. The project evaluates whether this policy has been a success with respect to projects in the transport sector.

2010 **Standby helicopters – an economic analysis.** *Ministry of Justice and Ministry of Finance*

As part of the KS regime of quality control the project asked what are the costs and benefits of purchasing a new float of standby helicopters for rescue operations at sea in Norway.

2010 **An economic analysis of impacts of climate change in Norway.** *Government Commission, vulnerability to climate change*

Climate change may lead to a wetter and warmer country in the second half of the century. We study economic impacts of climate change. Focus is on eight sectors, including primary industries, tourism, transport, insurance, electricity production, sewage, building capital and health. We also analyze welfare implications and distributional issues. Project manager.

2009-2012 **Conditions for change in international climate policy: The role of China, the US and the EU.** *Norwegian Research Council*

Which are the driving forces that condition for change in the climate policy of China, the US and the EU? Which forces are of a preserving nature? How do the major players interact and to what extent are driving forces influencing each other? These are key questions of this research project led by FNI.

2009-2011 **Indoor air pollution: Implications for public health and society of promoting clean household fuels in China.** *Norwegian Research Council*

This large research project lead by CICERO has components on measuring health status among rural poor in Guizhou Province, China; relating health status to indoor air pollution, and evaluating the impact of interventions in the form of clean stoves. Our contribution is on the cost-effect and cost-benefit of clean stoves.

2009 **Call for a green China.** *The World Bank*

Four major Chinese cities were treated to a series of performances and conferences designed to raise awareness about these issues among new audiences in an innovative, multimedia format. Our contribution was to lecture the provincial audiences about the dangers and costs of water pollution in the provinces. See <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXT/EAPREGTOPENVIRONMENT/0,,contentMDK:21250451~menuPK:502904~pagePK:2865114~piPK:2865167~theSitePK:502886,00.html>

2009 **The role of developing countries in technology development and transfer** *TERI*

Technology development and transfer, in the context of the UNFCCC, has so far been focusing on the role of developed countries. This project however asks what is the role of developing countries in technology development and transfer.

2009 **How to face the risk of climate change in the context of climate adaptation.** *Government Commission, vulnerability to climate change*

Early adaptation to climate change brings costs that are certain and benefits that are uncertain. How should these be balanced? The project discusses this problem and bridges principles with practical rules of behaviour. Project manager.

2009 **EURO 2016 – an economic analysis.** *Ministry of Culture and Church Affairs, and Ministry of Finance*

As part of the government regime for quality control of large public projects we provide advice and quality control of the proposal to bid for co-hosting EURO 2016 in Norway. Project manager for the economic analysis and cost-benefit evaluation.

- 2009 **Communication satellite for defense purposes.** *Ministry of Defense, Ministry of Trade and Industry, and Ministry of Finance*
- As part of the government regime for quality control of large public projects we provide advice and quality control of a suggested industrial solution for a communication satellite with defense purposes. Project manager for the economic analysis and cost-benefit evaluation.
- 2009 **Incentivizing energy transitions in India** *TERI*
- A project to provide advice on incentives for energy transition in India in the areas of lightning, consumer electronics etc. Project Manager.
- 2009 **Climate impacts in Norway** *Government Commission, vulnerability to climate change*
- The project, conducted jointly between Econ Pöyry, CICERO and Vestlandsforskning, surveys research on the impacts of climate change in Norway.
- 2009 **India 2020** *Norwegian Ministry of Foreign Affairs*
- India is facing huge opportunities as well as difficult challenges. At the onset of the Indian election 2009 we take stock of opportunities and challenges, and develop three scenarios for India in 2020 along economic, social, environmental/energy and security dimensions. The scenarios are meant to inform Norway's strategy for cooperation and trade with India. Project Manager.
- 2008-2011 **Provincial five-year environmental plans** *Norwegian embassy Beijing/Ministry of Foreign Affairs*
- With Chinese institute Chinese Academy of Environmental Planning we analyse and advise on the effectiveness of current provincial five-year environmental plans. Based on best practice from Western countries and the principles of cost-benefit analysis we provide policy recommendations for improving the plans, turning them into effective tools for environmental management. Project Manager.
- 2008-2009 **Co-benefits in India.** *Ministry of Foreign Affairs*
- We take stock of present knowledge about co-benefits in India. Some research has been done on the topic, but there are large gaps. The project includes a research report and a workshop assembling Indian and Norwegian researchers. Project manager.
- 2008-2010 **China climate policy case study.** *Norwegian Research Council and Statoil*
- The study analyses Chinese climate policy from a bottom up perspective. What is the likely development of Chinese climate policy? How does the game between internal actors play out? How is it influenced by outside events such as new information on costs and benefits of climate change mitigation?
- 2008 **Greenhouse gas consequences of the government budget and macroeconomic policy** *Norwegian Pollution Control Authority*
- There is an interest in establishing the consequences for Norwegian greenhouse gas emissions of the annual government budget (short run) and macroeconomic policy along with economic drivers (long run). We analyse how useful the available macroeconomic models are for this purpose, and suggest improvements. Project Manager.
- 2008 **Concept note for clean energy fund.** *Norfund.*
- We analyse the potential for a clean energy fund in a Norwegian context.
- 2008 **Value creation in horse-racing.** *Det norske travselskap*
- We document the value added of Norwegian horse racing. Viewing the sector as a consolidated entity reveals a much higher value added than is commonly acknowledged. Project manager.

- 2008 **ICT common parts in the public sector. Ministry of government administration and reform**  
Common parts in ICT are often not used to their best potential in the public sector, leading to parallel development costs and unnecessary duplications. We suggest a typology and a cost-benefit framework for identifying ICT components that are common parts.
- 2008 **Environmental consequences of Sino-Norwegian Free Trade Agreement Ministry of Trade and Industry**  
A Sino-Norwegian FTA is likely to have consequences for the environment. We analyse impacts from three angles: One is a macroeconomic angle, using a CGE model to demonstrate macro impacts. The other is a microeconomic angle, using a life cycle perspective to work out impacts of increased trade in fertilizer and cotton textiles. The third is a technology angle, discussing barriers and opportunities for Norwegian environmental technology vendors. Project Manager
- 2008 **Further development of Norwegian continental shelf. Ministry of trade and industry**  
The project analyses the state of competition on the Norwegian continental shelf and discusses suggestions for improving competition.
- 2008 **Climate risks in telecom infrastructure. Telenor**  
Climate change is likely to inflict damage and costs on telecom infrastructure. We study and evaluate the risks that climate change poses to the infrastructure of Telenor in countries where they operate.
- 2008 **China 2020 Norwegian Consulate Guangzhou, China/Ministry of Foreign Affairs**  
A scenario process developing three scenarios for China in 2020 along political, economic and environmental/energy dimensions.
- 2008 **Energy strategy Telenor Telenor**  
Assistance to Telenor, the Norwegian telecom company, in developing their energy strategy.
- 2008 **Environmental strategy Petoro Petoro**  
Assistance to Petoro, the Norwegian petroleum company, in developing their environmental strategy.
- 2008 **Sør-Østerdalen as Green Economic Zone? Regionrådet for Sør-Østerdalen**  
Sør-Østerdalen, an inland region of Norway, has large forestry resources and some hydro resources, which provides a basis for renewable energy production. The region is interested in streamlining existing energy stimuli in order to establish what is called a Green Economic Zone in Sør-Østerdalen. Project manager.
- 2008 **China climate policy case study. Norwegian Research Council and Statoil**  
The study analyses Chinese climate policy from a bottom up perspective. What is the likely development of Chinese climate policy? How does the game between internal actors play out? How is it influenced by outside events such as new information on costs and benefits of climate change mitigation? Project manager.
- 2007-2008 **Environment and conflict. Ministry of Foreign Affairs, Norway**  
This is a study of how environmental deterioration conditions for conflict, and how assistance in the building of peace may sever the links between environment and conflict. The study pays particular attention to the links between conflict and climate change. Case studies are carried out in Burkina Faso, China, Nepal and Sudan.

- 2007-2008 **Benefits and costs to China of a climate commitment.** *Ministry of Foreign Affairs Norway.*  
Continuing our advisory services on Chinese climate policy options the 2007-2008 period covers a study of triangular benefits (CO<sub>2</sub>-mercury-health), a study of rural energy use and a macroeconomic study of how alternative designs of a climate might affect China. Initiating a cooperation with the Counselors' Office of the State Council we will organize a Forum on energy, climate and environment. Scientific meetings with Chinese and international partners will also be held. Project manager.
- 2007 **The impact of globalization on Norwegian industrial structure.** *Ministry of Trade and Industry Norway*  
There is interest in analyzing what effect globalization will have on Norwegian industrial structure over the coming 20 years. Using a value-chain approach this study finds that the main driver of Norwegian structural change actually is demographics rather than globalization. However, globalization is important for selected industries.
- 2007 **Norwegian interests in a globalized world.** *Ministry of Foreign Affairs Norway*  
As part of the Ministry's work on Norwegian interests in a globalized world, the Ministry has commissioned a report of factual information on Norway's position. The work refers to the following claims: Norway is small and rich, a vulnerable territory, a heterogenous and liberal society, a peace-minded and charitable society.
- 2007 **Biofuels – status and prospects.** *Ministry of Foreign Affairs Norway*  
The study surveys the literature on biofuels in order to answer three questions: What is the net impact on CO<sub>2</sub> of different technologies for producing biofuels; what is the net impact on food security; and what is possible impact on biodiversity. The study also considers how biofuels is considered in the context of WTO.
- 2006-2009 **Capacity building for reducing mercury pollution in China.** *State Environmental Protection Administration of China (SEPA) and Ministry of Foreign Affairs Norway*  
Using Guizhou Province as a case study the project asks a) how large are current and projected emissions of mercury from different sources, b) what are deposition levels, c) which mitigation options are available, d) what are their costs, e) what are their effect in terms of mercury reductions and f) what are their co-benefits. The project is conducted jointly with Tsinghua University of China and Norwegian Institute of Water Quality Research (NIVA) of Norway.
- 2006-2010 **Discount rates for energy investments.** *Norwegian Research Council with Enova, Statnett, Statoil and SSØ*  
A three year research project to analyse the risk-return tradeoff for energy investments and build a CAPM-based decision tool for making better investment decisions. Project manager.
- 2006-2009 **Power sector investment costs in Africa.** *World Bank.*  
A study to determine power sector demand and least cost expansion plans considering rehabilitation, new generation, transmission and distribution, trade and no-trade, in 24 African countries. Project manager.
- 2006-2007 **The relevance of social and economic research on energy matters.** *Norwegian Research Council.*  
A project to discuss the relevance of social and economic research on energy matters, emphasizing the commercial potential for social and economic research, and secondly the linkages between such research and energy efficiency improvements on the ground.
- 2006 **Concept paper on energy security in Africa.** *OECD.*

A paper was developed for Africa Summit of G8 countries in Moscow, October 06. The paper discusses motivation for, and preconditions for meeting electricity investment needs in Sub-Saharan Africa. A partnership to develop energy supply and energy security puts demands on donor countries and recipient countries alike.

- 2006 **Cross-border energy trade and the poor. UNDP.**  
A study to estimate the linkages between trade in energy goods and energy services on the one hand, and poverty. Quality controller of whole project, and executive responsibility for China case study, involving a model-based macroeconomic analysis and a field study from a Shanxi Province coal city.
- 2005-2006 **Advice on Green National Accounts in China. State Environmental Protection Administration, China**  
A process to advice on the design of Green National Accounts in China. Advice on economic valuation in particular. Project manager.
- 2005-2008 **Investing in fighter planes in Norway – an economic analysis. Ministry of Defense and Ministry of Finance Norway**  
A process to advice on an economic analysis for decisions carried out by the Ministry of Defense, and an independent cost-benefit analysis of the fighter plane investment alternatives. Phase I and II. Part of the government regime for quality control of large public projects. Project manager (phase I).
- 2005-2006 **Advisory services on climate policy in China in the second commitment period. Ministry of Foreign Affairs Norway**  
Continuing our advisory services on Chinese climate policy options in the second commitment period the 2005-2006 period covers a project to estimate in a macroeconomic CGE model the cost to China of “co-control”, that is simultaneous control of SO<sub>2</sub> and CO<sub>2</sub> (and PM<sub>10</sub> and CO<sub>2</sub>). The project also includes annual workshops. Project manager.
- 2005 **Social health costs of accidents and work related illness on the continental shelf. Petroleum Safety Authority Norway.**  
A study to estimate the social health costs of accidents and work related illness on the continental shelf. Excess mortality risk, work day loss and medical health care costs are the most important categories evaluated.
- 2005 **Evaluating the Overall Trade Restrictiveness Index. Norwegian Ministry of Foreign Affairs.**  
The Overall Trade Restrictiveness Index (OTRI) is developed by the World Bank to assess tariff and non-tariff barriers to trade. Expert advice on methodological aspects of the index in relation to Norway’s position in the index, was provided. Project manager.
- 2005 **Drivers behind development of environmental technology. Norwegian Pollution Control Authority.**  
A study to assess the drivers behind the development of environmental technology. Links to public policy instruments emphasized.
- 2005 **Guidance on developing a Strategic Environmental Assessment in Western China. The World Bank.**  
Expert advice on the SEA of the Great Western Development Strategy in China. Advice on conclusions and line of argument in particular. Project manager.
- 2005 **The role of Norwegian power sector competence in development cooperation. NORAD.**  
Member of an expert group to discuss the issue and put forward recommendations. Project manager.
- 2004-2005 **Public Expenditure Review in the rural space. The World Bank.**

A study examining whether or not public expenditures towards rural regions and the agricultural sector in Mozambique have an appropriate design and reach the poor to a sufficient degree. A household survey in rural areas focusing agricultural extension services is central to the study.

2004 **Managing protected areas in China for biodiversity and poverty alleviation.** *China Council for International Cooperation for Environment and Development.*

Expert advice to the Protected Areas Task Force of the China Council. Topic of advice to make sure that linkages between management of protected areas and poverty alleviation are addressed. Project manager

2004 **Circular Economy: An interpretation.** *The World Bank.*

A research note discussing how the concept of Circular economy relates to familiar environmental problems and how it may be tailored into constructive objects of analysis. Project manager.

2004 **Economic research on the impact of research and innovation on productivity and growth. What do we know?** *Norwegian Ministry of Research and Education.*

A workshop for the Deputy Minister explaining what the economics profession knows about this topic. Project manager.

2004 **Discount rates for power transmission investments.** *Statnett (the Norwegian power grid operator).*

A study analysing how the discount rate in practice should be adjusted for risk. Uses an applied structural model of the Nordic power market to analyze the nature of systematic risk facing a transmission line.

2004 **Analyzing PPP indices for education expenses in OECD-countries.** *Norwegian Ministry of Research and Education.*

An analysis of whether PPP-indices gives a good indication of price differences for education across OECD-countries. Discusses the handling of quality of services in particular. Illustrates consequences of possible index choices.

2004 **Analysing the development index Commitment to Development.** *Norwegian Ministry of Foreign Affairs.*

A memo discussing the methodology behind the development index Commitment to Development, with particular emphasis on what affects Norway's position on the index. Project manager.

2003-2004 **Determinants of hardware and software IT industry growth in China and India.** *International Finance Corporation.*

A study discussing why the Indian software- and the Chinese hardware industries are successful, but Indian hardware and Chinese software are not. A survey of 320 hardware and software companies in China and India is central to the study. Project manager.

2003-2004 **Advisory services on climate policy in China in the second commitment period.** *Norwegian Ministry of Foreign Affairs.*

A network of scientists and policy advisors on climate policy in China, the U.S. and Norway is established to discuss options for Chinese climate policy in the second commitment period. The discussion is facilitated by joint projects and an annual workshop. Topics include cobenefits of climate change mitigation, developing a policy framework for integrated assessment in China, cobenefits of mitigation of indoor air pollution, climate and environmental implications of macroeconomic policy. Project manager

2003-2005 **Environmental consequences of Chinese WTO-accession.** *Norwegian Research Council.*

A study to analyze environmental consequences of Chinese WTO-accession. The study is model based, it employs a computable general equilibrium model of the Chinese economy. Project manager.

2003-2005 **The precautionary principle: An economic interpretation.** *Norwegian Research Council.*

A project to discuss an economic interpretation of the precautionary principle. The principle is interpreted as a risk management rule of thumb derived from the CAPM-model. The project consists of sub-projects describing a theoretical framework characterized by endogenous risk, and applying the principle to renewable energy investments. Project manager

2002-2005 **Guidelines for environmental economic guidelines in EIAs.** *NORAD and State Environmental Protection Agency (SEPA).*

A project to formulate guidelines for environmental economic indicators and principles of relevance for the EIA. It contains case studies on a power plant (air pollution), wastewater treatment (water pollution), wastewater irrigation (land and soil pollution) and highway construction (land changes), and builds recommendations on these. Project manager.

2001-2005 **Air quality management system for Shanxi Province, China.** *NORAD, Shanxi Environmental Protection Bureau and Norwegian Institute for Air Quality Research.*

A project to develop a master plan for air pollution control in Shanxi Province. The plan is based on the Urbair concept for cost-benefit analysis of mitigation options. The concept models impact pathways to benefits. The starting point is scenarios for air quality ECON's contributions lie in cost estimation, valuation impacts and description of the scenarios in the master plan. Project manager.

2000-2007 **An environmental cost model for China.** *World Bank and SEPA.*

A project aiming at estimating aggregate environmental costs, in monetary equivalents, of current economic activity in China. The estimate will revise an existing estimate from 1997. Environmental costs are related to air and water pollution. Impacts on human health, crops, forests, materials etc. are quantified at a provincial and national level. Project manager.

2000-2005 **Feasibility study for a Cuban power plant based on sugar residues (bagasse)** *UNDP and Cuban Ministry for Sugar (MINAZ).*

A project to develop a feasibility study of a power plant using the so-called BIG-GTCC gasification technology for biomass combustion. This is the most energy efficient technology currently available. The 17 MW plant is planned for construction in Las Tunas Province of Cuba. Project manager.

2003 **Evaluation of the "Lisboa indicators" – relevance for Norway?** *Ministry of Industry and Trade.*

An evaluation of the Lisboa indicators developed by EU for benchmarking economic performance and industrial policy across countries. Their relevance for Norway is illustrated in text and examples.

2003 **External effects of maintaining a company headquarter in Norway.** *Law firms BHR and TKGL.*

A study to evaluate the claim that the location of company headquarters carry positive effects to society that are external to the company (external effects). The evaluation is based on empirical evidence from the literature. Project manager.

2003 **The wealth tax: Impacts on non-listed family firms.** *Norwegian Employers' Association and Norwegian Shipowners' Association.*

A project to discuss how the Norwegian wealth tax currently affects non-listed family firms. The project also discusses how a recent proposal to change the basis for the wealth tax affects non-listed family firms. Project manager.

2002-2003 **Advisory services on a Strategic Environmental Assessment of the Great Western Development Drive, China.** *World Bank.*

Advice and comments provided on a draft SEA-report written by the Chinese Research Academy of Environmental Science (CRAES) and Beijing Normal University. Project also included a talk at the Conference Reshaping Environmental Assessment Tools for Sustainability in Hong Kong. Project manager.

2002-2003 **Benefits of ICT investments in the Norwegian Health Sector.** *Norwegian Agency for Health and Social Issues.*

A project to discuss the benefits of ICT investments in the central Norwegian Health Sector. It discusses data availability and presents tentative quantitative estimates of benefits. Project manager.

2002 **Poverty and environment – proceedings from a workshop.** *Ministry of Foreign Affairs.*

Arranging program and taking notes from an international workshop on behalf of UNEP, sponsored by the Ministry of Foreign Affairs, to discuss the linkages between poverty and environment. Project manager.

2002 **Best in what? Benchmarking of Norwegian Industrial Policy.** *Norwegian Shipowners' Association.*

A report commenting on a recent government commission that suggested indicators for benchmarking Norwegian Industrial Policy. Report suggested streamlining Norwegian criteria with Lisboa indicators. Project manager.

2002 **User fees in the health sector in relation to national priorities for allocation of health services.** *Norwegian Agency for Health and Social Issues.*

A memo discussing how incentives implied by user fees interact with national priorities for allocating health services. Project manager.

2002 **The petroleum tax – a tax on human capital?** *The Petroleum Industry Association.*

A project discussing to what extent petroleum revenue is the return to research and development as opposed to pure rent. To the extent that petroleum revenue is a return to research and development it is also the return to the human capital creating research and development outcomes. In this perspective a tax on petroleum revenue is a tax on the return to human capital, as opposed to being a tax of pure rent. Text and empirical illustrations. Project manager.

2002 **The Norwegian wealth tax: Impacts on savings, investments and ownership.** *Norwegian Employers' Association.*

A project discussing what are the impacts of the Norwegian wealth tax in its present design. Results show that the present tax amounts to a highly non-uniform tax on capital. Project manager.

2001-2002 **Environmental challenges in China: Determinants of success and failure.** *World Bank*

A report analysing three environmental problems in China: Phase-out of lead in gasoline has been dealt with successfully; local air pollution of SO<sub>2</sub> and particulates are currently considered with some success; ground level ozone is not dealt with at all. What determines these outcomes? Input to World Development Report 2003. Project manager.

2001 **A tax system with a difference.** *Norwegian investment forum*

A study of an alternative system of capital income taxation. The system resembles a consumption tax, but with some adjustments. ECON investigated the economic efficiency properties of the system. Project manager.

2001 **How to value petroleum wealth. Ministry of Energy**

Petroleum wealth is measured as the expected present value of the revenue stream from selling petroleum. At present the risk inherent in the present value is accounted for crudely by the discount rate. We discuss alternative ways of accounting for risk, including the certainty equivalent method. Project manager.

2000-2003 **Co-benefits of climate measures in Shanxi. Ministry of Foreign Affairs/Research Council of Norway**

A project examining local environmental benefits, so-called co-benefits, of measures directed at reducing carbon emissions in Shanxi Province, China. The measures considered are energy efficiency measures, clean coal measures and clean production measures. The project is documented in several peer-reviewed articles, see next section. Project manager.

2000-2003 **CGE-evaluation of a greenhouse gas restriction for China. OECD.**

A project asking what a hypothetical greenhouse gas restriction implies for the Chinese economy as a whole. The project emphasises that a greenhouse gas restriction only brings costs, but benefits of better local air quality, which improves public health and increases agricultural yields. The analysis is based on a CGE-model analysis of the impacts of a greenhouse gas restriction on the Chinese economy. Project manager.

2000-2002 **The impact of green taxes on the poor in China. China Council.**

A book discussing to what extent green taxes or fees hurt the poor in China in a disproportional way. Econometric analysis of national cross-sectional data, rural data from Shaanxi Province and a micro dataset from Guizhou Province. See section on publications. Project manager.

2000-2001 **The treatment of risk in cost-benefit analysis of environmental projects. Ministry of Environment**

A project discussing how systematic risk should be accounted for in cost-benefit analyses of environmental projects. Empirical evidence on "beta" relevant for environmental projects sought from e.g., the relative performance of green stocks and bonds. Project manager.

2000-2001 **The design of the tax system in Norway in light of increasing international mobility. Norwegian Shipowners' Association.**

A project discussing how the fact that a) goods and b) factors are internationally mobile should influence the taxation of goods and factors in Norway. Particular emphasis is put on capital mobility and capital taxation, but labour mobility is also assessed.

2000 **Life-cycle Assessment: An economic perspective. Norwegian Research Council.**

A research report analysing how economics might shape and improve life-cycle analysis. The welfare economic background for life-cycle analysis is discussed, and the theoretical and practical relation of life-cycle analysis to economic project assessment is analysed. Project manager.

2000 **The Sea of Bohai – prefeasibility study. NORAD and NDRC China.**

A memo outlining a possible Sino-Norwegian cooperation project on a Master Plan for the Bohai Sea. The memo also considers the interest on the Chinese and Norwegian sides and the likely success ratio of a project of this type. The recommendation to NORAD and NDRC is not to go ahead with the project. Project manager.

2000 **Advice on criteria for the CDM mechanism. Ministry of Environment.**

Advice on improvements in the text on CDM to the COP-meeting, for the benefit of Norwegian suggestions to the text.

- 1999-2000 **Increase knowledge on how policy instruments can promote new renewable energy technologies.** *Research Council of Norway*
- 1999 **Positive effects of small upstream companies in the Norwegian Continental Shelf.** *Pelican*
- 1999 **Strategic Climate Change Policy Evaluation.** *Vattenfall.*
- 1999 **Assessing the cost of accidents on the Norwegian Continental Shelf.** *The Norwegian Petroleum Directorate*
- 1999 **Strategic input to a major Norwegian law firm.**
- 1998 **Assessing MACMOD – a macromodel for Tanzania.** *NORAD.*
- 1998 **Assessing a Norwegian AIJ project in China.** *Norwegian Ministry of Foreign Affairs.*
- 1998 **Evaluation of a proposal to introduce beer and softdrink cans in Norway.** *Norsk Resirk.*
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- 1987 "MSG 4 - A complete documentation of the system of equations" *Reports 87/14, Statistics Norway*. (With Erik Offerdal and Knut Thonstad)

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- 2009- Member of government commission on climate vulnerability in Norway ("klimatilpasningsutvalget")
- 2000- Referee *Norwegian Research Council*
- 1993- Referee *Ecological Economics, Energy Journal, Environment and Development Economics, Environmental and Resource Economics, Environmental Science and Technology, International Tax and Public Finance, Regional Science and Urban Economics, Resource and Energy Economics, Scandinavian Journal of Economics, Norsk Økonomisk Tidsskrift.*
- 1990- Co-editor, *Nordic Journal of Political Economy*
- 1990- Master thesis advisor, University of Oslo
- 1986- External examiner, undergraduate and graduate level, University of Oslo, University of Life Sciences
- 2007-2009 Op-ed commentator, Stavanger Aftenblad ([www.aftenbladet.no](http://www.aftenbladet.no)).
- 2006-2009 PhD thesis advisor, University of Oslo
- 2004 Referee *MIT Press*
- 1993-94 Lecturer, graduate courses in Macroeconomics, University of Oslo
- 1992-1993 Member of government commission delivering NOU 1993: 8 Bør momsens differensieres (Should the VAT be differentiated?)
- 1984-89 Teacher and Student Assistant, undergraduate level, University of Oslo
- 1988-91 Journalist and member of the editorial staff, «Natur og Miljø», the magazine of the Norwegian Society for Conservation of Nature (circulation ca. 45 000)