

# Annual Report

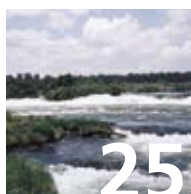
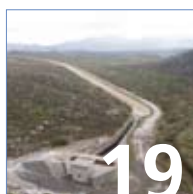
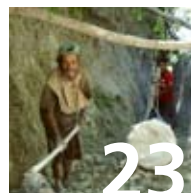
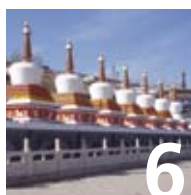
The cooperation between  
**NVE and Norad**

**2007**

# «Water and energy for a sustainable development»

## Contents

- 3 Preface
- 4 Organisation of NVE
- 5 Overview of activities and time consumption
- 6 Assignments for **Norad** and **Ministry of Foreign Affairs**
- 12 Institutional **cooperation**
- 14 Angola
- 16 Bhutan
- 17 Nepal
- 18 Philippines
- 19 South Africa
- 23 Timor-Leste
- 25 Uganda
- 26 Vietnam
- 29 Regional cooperation in Africa
- 31 Appendices



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## Preface



The Norwegian Water Resources and Energy Directorate (NVE) has been responsible for ensuring an integrated and environmentally sound management of Norway's water and energy resources for more than a hundred years. NVE employees were already assisting UN-organisations in developing countries more than 50 years ago. Since then NVE has acquired vast experience and knowledge in development assistance, especially through assignments for Norad over the past 30 years.

Throughout these years, fighting poverty has been the main goal, even if the tools and instruments have changed. One of the foundations, however, has always been institution and capacity building, and institutional cooperation in a long-term perspective, which is a prerequisite for success.

During the last few years the impact of steadily increasing use of fossil fuels on climate change has become more and more evident, and at the same time there has been an increasing awareness of the limitations of the earth's resources. Environmentally friendly energy production and consumption, and increasing use of renewable energy sources, are therefore very high up on the international political agenda today as well as in Norwegian aid strategy. At the same time there is an increasing energy crisis, especially in Africa, but also

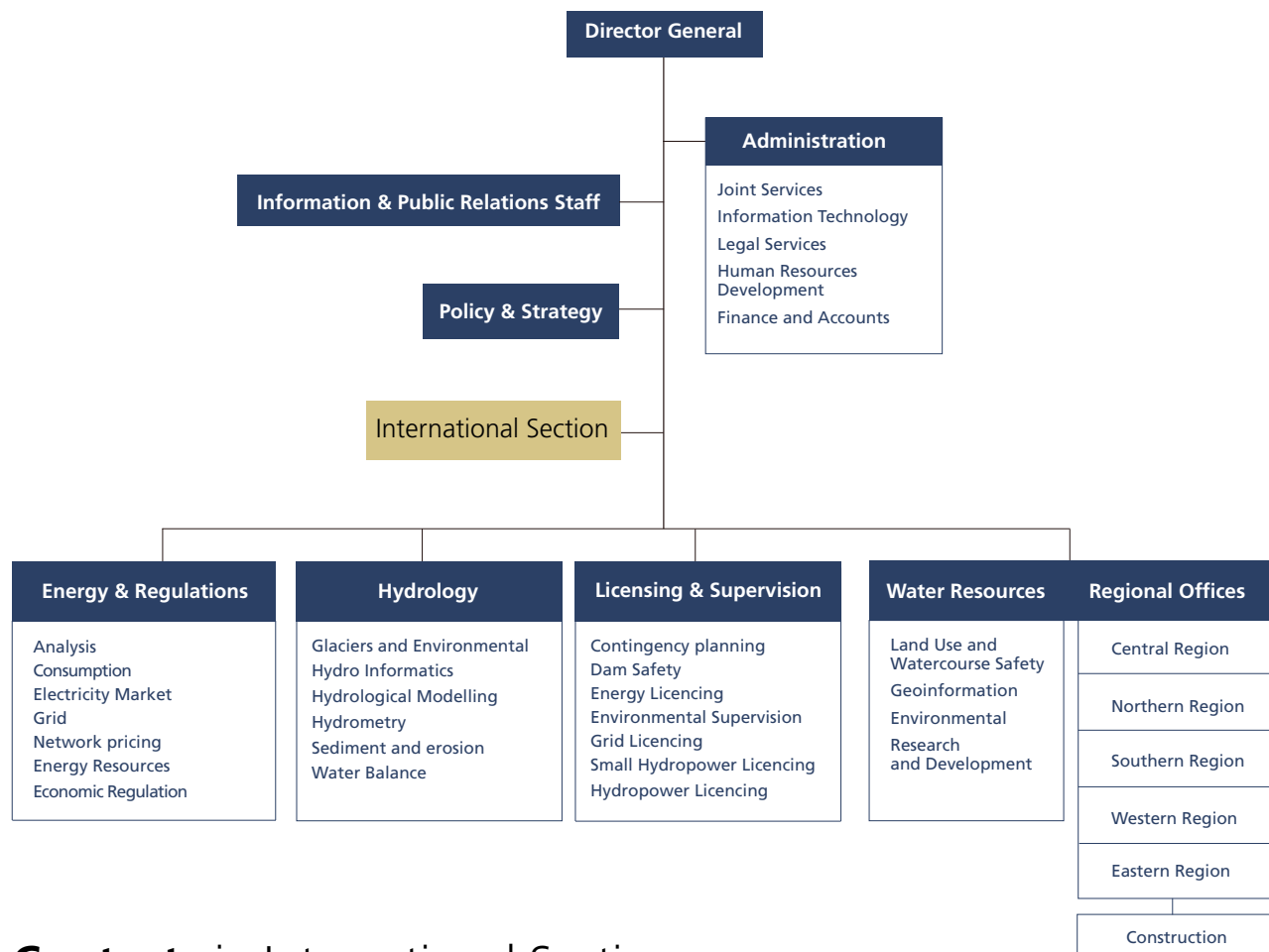
on other continents. Norad is therefore placing heavy emphasis on development assistance within the energy and infrastructure sector, at regional as well as national level. Hopefully, NVE with its experience can assist Norad in its challenge to fight the energy crisis, and in the long run, to combat poverty. In order to meet these challenges, however, assistance from other directorates and organisations, as well as from private consultants, is very important.

A handwritten signature in blue ink that reads "Agnar Aas". The signature is fluid and cursive.

Agnar Aas  
Director General

# Organisation of NVE

Established in 1921, the Norwegian Water Resources and Energy Directorate is a directorate under the Ministry of Petroleum and Energy and is responsible for the management of Norway's water and energy resources. Our mandate is to ensure an integrated and environmentally sound management of the country's water resources, to promote efficient energy markets and cost-effective energy systems and contribute to the economic utilization of energy. We are Norway's national centre of expertise for hydrology, and play a central role in national flood contingency planning. NVE also has the overall responsibility for maintaining national power supplies. NVE is based in Oslo and has five regional offices in Norway and a total of 443 employees.



## Contacts in International Section

as per 1 March 2008

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## Contributors to NVE's development assistance

NVE's development assistance is organised and coordinated through the International Section which at the start of the year 2007 consisted of 8 persons. During the year, however, the staff number was reduced to 6, including one resident adviser in Timor-Leste. The main tasks of the International Section are project preparation of energy and water resources related projects, and cost and quality control of projects and programmes during execution. The major part of the professional work is carried out by staff from the various departments and sections within NVE.

During 2007 a total of 46 persons were involved. A variation from previous years has been that administrative management staff have been more heavily involved, presenting the various administrative tools used in NVE. In addition private consultants and professionals from other directorates and research institutions were sub-contracted to assist NVE in cases where NVE either lacked competence or were temporarily short of capacity.

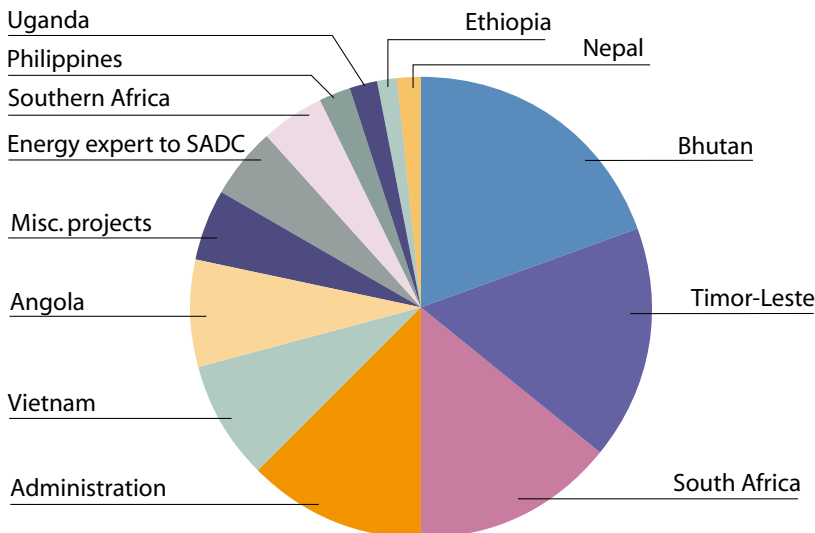


Some of NVE's employees

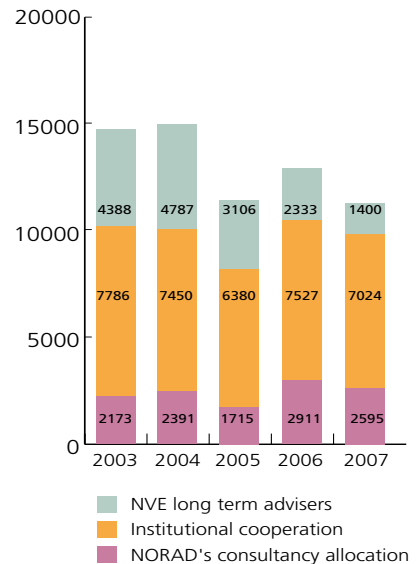
## Overview of activities and time consumption

The volume of activities recorded in 2007 was at slightly less than 8 man-years (one man-year being 1400 effective working hours), compared to 9 man-years in 2006. The most significant decrease has been in the long-term stationing abroad, as there has only been one resident adviser in 2007 (Timor-Leste). Besides this, there has also been a slight decrease both in institutional cooperation and in contributions to Norad. In 2008, however, an increase is expected, due to a resident energy adviser being assigned to the SADC-region as from January 2008. A resident adviser in Liberia will also hopefully be in place well before the end of the year, and the Timor-Leste authorities have indicated a wish to have several long-term advisers from Norway in the coming years.

Recorded hours, including resident advisers



Hours





Dam in South Africa

## Assignments for **Norad** and **Ministry of Foreign Affairs**

The Norwegian Agency for Development Cooperation (Norad) is the principal government agency for international development. Being organised as a directorate under the Ministry of Foreign Affairs (MFA), its main tasks are to provide advisory services to the Ministry, to embassies in developing countries and to multilateral development organizations. According to its strategy Norad aims at maximising the effectiveness of its work through emphasis on quality and results.

In order to support Norad, NVE and many other organisations assist Norad in its many endeavours within their specialities. Thus NVE, through the institutional cooperation contract, has assisted Norad in separate engagements within the fields of water resources and energy assessment and management. The engagements have varied from appraisals of projects and evaluation of reports, to planning and preparatory work for new projects, and monitoring of water resources.

# Rusumo Falls

## Hydroelectric & Multi-Purpose Regional Project. Expert Opinion on Kagera Basin Hydrology and Sediment Transport at Rusumo Falls

On request from Norad, NVE carried out a review of earlier hydrological and sediment transport investigations in the Kagera River Basin, and in particular in the catchment upstream of Rusumo Falls. The main objective of the review was to provide the necessary hydrological expert opinion for evaluating the hydropower potential and related sediment transport issues of the proposed project, in order to guide subsequent planned feasibility and development work by the proponents of the project.

The major part of the field work and reporting were carried out in 2006. It was decided, however, to carry out a supplementary study on land use, mainly to obtain more information on erosion within the catchment. The study was subcontracted to the GIS-section at the National University of Rwanda and was to be completed by early 2007. Due to heavy financial constraints and lack of resources at the University, the work, and especially the necessary field work to be carried out, was severely delayed. The University submitted their final report in May. After comments and discus-



Operational staff gauge upstream of Rusumo Falls

sions with the World Bank, the Final Expert Opinion on Kagera Basin Hydrology and Sediment Transport at Rusumo Falls was submitted in early September.

All work has been carried out in close collaboration and consultation with

the Nile Equatorial Lakes Subsidiary Action Program Coordination Unit, and with Norad, the World Bank and SIDA.

**Contact:** Kjell Repp

### ACHIEVEMENTS

- Confirmation of the hydropower potential at Rusumo Falls and satisfactory results on erosion and reservoir sedimentation issues
- Collaboration with the University of Rwanda, which not only provided input to the Rusumo Falls report, but also resulted in land use maps and data which will be useful as a basis for other development projects in the Kagera River Basin, such as water supply, agriculture, and infrastructure projects



# Zambia

## Desk appraisal of proposed upgrading and extension of Kafue Regional Training Centre

On behalf of Norad and the Royal Norwegian Embassy in Maputo, NVE made a desk appraisal of the proposed upgrading of the Kafue Regional Training Centre through a 6-year cooperation with Vattenfall Training Centre with a total budget of SEK 50-60 million. The Embassy had been approached regarding the possibility of funding this support in cooperation with Sida. Sida is also funding the ongoing Phase 1 of the project with SEK 7.5 million. Since NVE had previously been involved in appraisals of the training centre as well as other activities connected to it, NORAD requested NVE to make the desk appraisal.

The Kafue Regional Training Centre is today a well-functioning organisation, both administratively and professionally, and it is well documented that high quality training is provided. Financially, however, funds have not been generated to modernize the equipment. The Centre is included in the SADC project portfolio and since 1991 more than 1,500 employees from utilities in the SADC region (and some from other Sub-Saharan countries) have been trained.

There is no doubt that the centre has played a very important role in training hydropower and other technical power-related personnel in the SADC region and beyond for more than 15 years. This has contributed to increased competence and quality of these personnel. Several countries in the region are planning further development of hydropower generation.

Therefore, both in the short and long term, continued training possibilities at the centre will be a key factor for the power sector in SADC. The main conclusions of the desk appraisal were:

1. There is no need for Norad support in Phase I which is fully financed by SIDA.
2. Further support to the Kafue Regional Training Centre in addition to the present Sida support is justified and will be of benefit for the power sector in the SADC region and beyond. It is proposed that an independent Norwegian/Swedish team visits Zambia to assist in preparing a Project Document for further assistance by Norad and SIDA. Previous proposals should be scrutinized with the ultimate goal of assisting the Kafue Regional Training Centre in achieving full self-sustainability.

**Contact:** Egil Skofteland

### ACHIEVEMENT

- Analysis of the needs of the Kafue Regional Training Centre and recommendations with respect to conditions for further support by Sweden and Norway

# China

## Ministry of Water Resources and Qinghai Hydrology and Water Resources Survey Bureau

NVE and the Norwegian Water Research Institute (NIVA) have had a cooperation with the Hydrology and Water Resources Survey Bureau of the Qinghai Province in Western China and the Ministry of Water Resources, Beijing since 2003.

The main aim of the cooperation has been to develop a joint project to study the effects of climate change on integrated water resources management, and to develop a monitoring and forecast system for water resources of the Three-Rivers (the headwaters of the Yangtze River, the Yellow River and the Mekong River) Source State Nature Reserve in Qinghai Province. The majority of the work has been funded by the cooperation partners themselves, or by extra funding from the Norwegian



Field consultations

Ministry of Petroleum and Energy. In 2007, however, Norad funded parts of a project planning meeting in Xining and a Norwegian – Chinese Workshop in Beijing on “Climate Change and Possible Effects on Water Resources in Mountain Areas”, with participants from a number of Chinese and Norwegian research institutes and the Norwegian Embassy in China

**Contact:** Kjell Repp

### ACHIEVEMENTS

- Preparation of Project Document in cooperation with the Qinghai Hydrology and Water Resources Survey Bureau and NIVA
- Workshop in Beijing on “Climate Change and Possible Effects on Water Resources in Mountain Areas”, which proved to be very valuable for getting a common understanding of the research problems and for the way forward



# Southern African Development Community (SADC)

## Energy Coordinator

In order to provide a structure for an effective dialogue between SADC and its International Cooperating Partners, and to guide future co-operation, a new partnership has been developed between them through the establishment of sectoral thematic groups.

**Thematic groups** have been established for several sectors and SADC has appointed Norway as the Lead International Cooperating Partner for the energy sector. The Norwegian Embassy in Maputo will be the donor focal point for the SADC Secretariat. In order to strengthen the professional capacity of the Embassy to undertake its obligations in this respect, an Energy Expert has been recruited who will hold the position of Coordinator. The coordinator will take up office in Maputo in the beginning of 2008.

**The recruitment process** was delayed due to lack of qualified candidates. In order to assure a proper preparation of the work, the Embassy assigned a fact-finding mission to review and make recommendations on how to prepare for Norway's role as Lead International Cooperating Partner. Consultations were made with the SADC Secretariat, relevant Lead International Cooperating Partners and other stakeholders to achieve this.

The mission presented a draft Terms of Reference for the Energy Thematic Group and prepared a list of candidates to be included in networking activities.

The mission concluded that the Terms of Reference for the



### ACHIEVEMENTS

- A coordinator has been recruited and will take office in the beginning of 2008
- An Energy Thematic Group has been established and the first meeting was held in 2007

Coordinator, and its fulfilment, should be considered in a medium to long-term perspective, i.e. 5-10 years. For the first 2-4 years priority should be given to establish the mode of operation of the Energy Thematic Group and the regional networks, as well as to initiate the necessary processes to identify the status of the most promising regional projects, both in terms of progress and funding commitments. A system for systematic gathering and distribution of information on project plans and status should also be developed.

Since traditional energy sources will still dominate the energy use for the major part of the population in the region in the foreseeable future, the mission also recommended the support to the establishment of organisational

and/or institutional instruments to facilitate a coordinated and efficient development of these sources in the region.

The regional institutions already established for promoting regional integration in the power sector, e.g. Southern African Power Pool and Regional Electricity Regulators Association, were recommended to be used to the extent possible. Both because they already possess a high level of competence, and because a more extensive involvement would extend this competence further and promote regional capacity building.

**The first meeting** of the Energy Thematic Group was held in November 2007 when the report from the Fact Finding mission was presented and the recommendations supported. The methodologies of work and operational framework of the group were discussed and the meeting agreed that a revised TOR for the Energy Thematic Group should be approved at the next meeting scheduled to take place in May 2008.

**Contact:** Kristian Løkke, kloee@nve.no

# Zanzibar

## Electrification Corporation

Under an Agreement dated 4 December 2006 with the Revolutionary Government of Zanzibar, Norway is providing financial support to a preparatory phase for the electrification of Pemba Island through a submarine cable from Tanga Mainland. To facilitate the programme it was decided that the Norwegian State National Grid Company, Statnett, should provide Technical Assistance to the executing agency, Zanzibar Electrification Corporation, which is the implementing agency for the Programme.

The Technical assistance includes preparation of a Terms of Reference for a consultancy contract for preparation of specifications, and contract and tender documents for the implementation of the Programme. Furthermore, Statnett should assist the executing Agency in contract negotiations with a Norwegian consulting company for the consultancy assignment in accordance with procedures for contract negotiations under single source selection of consultants. Statnett should also support the Zanzibar Electrification Corporation in its role as Owner

during the entire programme up to the end of the guarantee period for the works supplied under the programme.

NVE was engaged by NORAD to draw up and negotiate a contract between the Zanzibar Electrification Corporation and Statnett for their work on the programme. The contract was signed in early 2007, and the programme is now in operation.

**Contact:** David A. Wright

### ACHIEVEMENTS

- Terms of Reference and Contract for Statnett's services to the programme prepared
- Contract signed and technical assistance to the programme commenced

# Ethiopia

## Ministry of Water Resources

The Karadobi multipurpose project is part of the Eastern Nile Subsidiary Action Programme within the Nile Basin Initiative. Following up on Norway's financing of a pre-feasibility study of the project under an agreement between the governments of Ethiopia and Norway signed in June 2003, it was the intention to provide financing for the feasibility study of the project. The large Karadobi project is located on the Blue Nile and, in addition to hydropower, shall be designed to accommodate other needs - in particular irrigation and flood control.



NVE entered into a memorandum of understanding with the Royal Norwegian Embassy in Addis Ababa to provide assistance in the preparation of the Terms of Reference and other project documents necessary for the

competitive bidding of the consulting services for the feasibility study. NVE completed these documents in 2007.

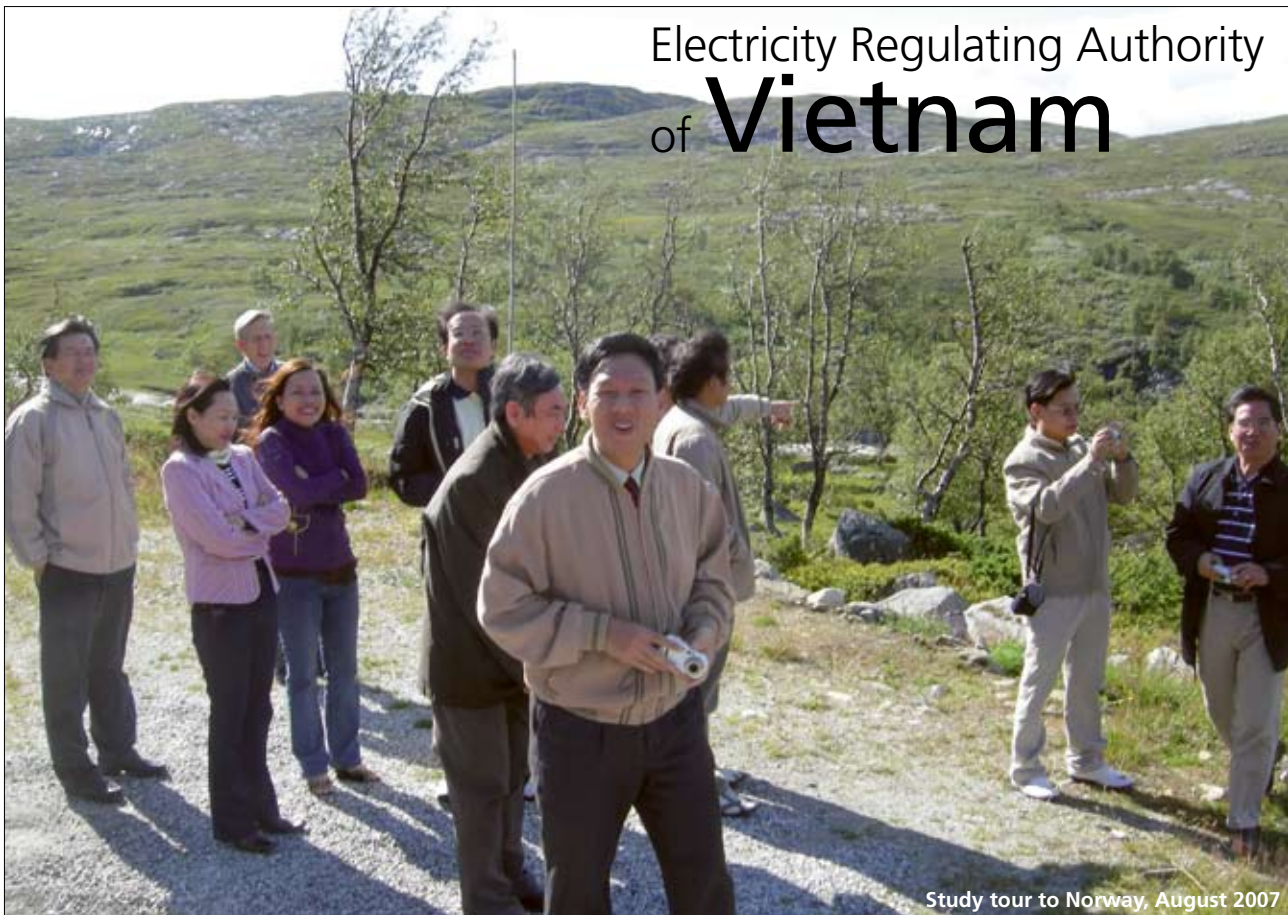
**Contact:** David A. Wright

### ACHIEVEMENT

- Terms of Reference and other documents for procurement of consulting services completed

## Course in Water Resources Management for Development

The Norad sponsored course in Water Resources Management for Development was conducted in Norway during 2006 – 2007, mainly for Norwegian consulting companies and government institutions. The topics and lecturers were evaluated by the participants. The results with regard to the content were very good, as approximately half of the participants found the course very useful, while the other half characterised it as interesting. The quality of the lecturers varied. According to the evaluation, a new course should be considered, or maybe two courses for different levels, which could be run every second year.



Study tour to Norway, August 2007

## Electricity Regulating Authority of Vietnam

The Electricity Regulating Authority of Vietnam, ERAV, is responsible for electricity development planning and licensing, electricity tariff regulation and fees, electric power market development and market competition in Vietnam. As a relatively young organisation, ERAV has many challenges to meet in a rapidly expanding electricity market in Vietnam. In order to learn from Norway's experience ERAV submitted a request to the Royal Norwegian Embassy in Hanoi for support for a study tour to Norway on power market development and power sector regulation. The request was granted, and NVE was asked by Norad to arrange and carry out the study tour.

### ACHIEVEMENTS

- Transfer of knowledge from Norway to Vietnam in the fields of power market development and power sector regulation through study tours and workshops in Norway and Vietnam
- Steps taken towards a longer term cooperation between Norway and Vietnam in these fields

The study tour team consisted of Government of Vietnam employees from the Ministry of Industry, the Electricity Regulating Authority of Vietnam and from Electricity of Vietnam. The team visited key institutions in Norway in August 2007 including the Norwegian Agency for Development Cooperation, the Ministry of Petroleum and Energy, the Ministry of Environment, Norwegian Water Resources and Energy Directorate, Statkraft, Statnett and the Nordic Power Exchange. In addition the team visited hydropower and gas powered plants in western Norway.

As a conclusion to the study tour a round table debate was held in Norad's office in Oslo in which public and private actors from the Norwegian energy sector were invited to discuss key questions for the future development of the electricity market in Vietnam.

In acknowledgement of the success of the study tour, ERAV management expressed their gratitude and pointed out that they had learned a lot from Norwegian experience in the aspects of ministerial management, energy

and power regulation, as well as Norwegian and Nordic power market operation and development. They also noted that the result of the study tour would significantly contribute to the development of the energy and power sector in Vietnam, particularly in the areas of power market development, power sector regulation, hydro power plants operation and resource management.

As a follow up of the study tour, ERAV invited experts from Norway in electricity market and hydropower to participate in a workshop for stakeholders on Vietnam power market design. Two experts from NVE and NordPool Consulting attended the workshop in Hanoi in November 2007. The workshop represented another step in the direction of a longer-term cooperation between Vietnam and Norway.

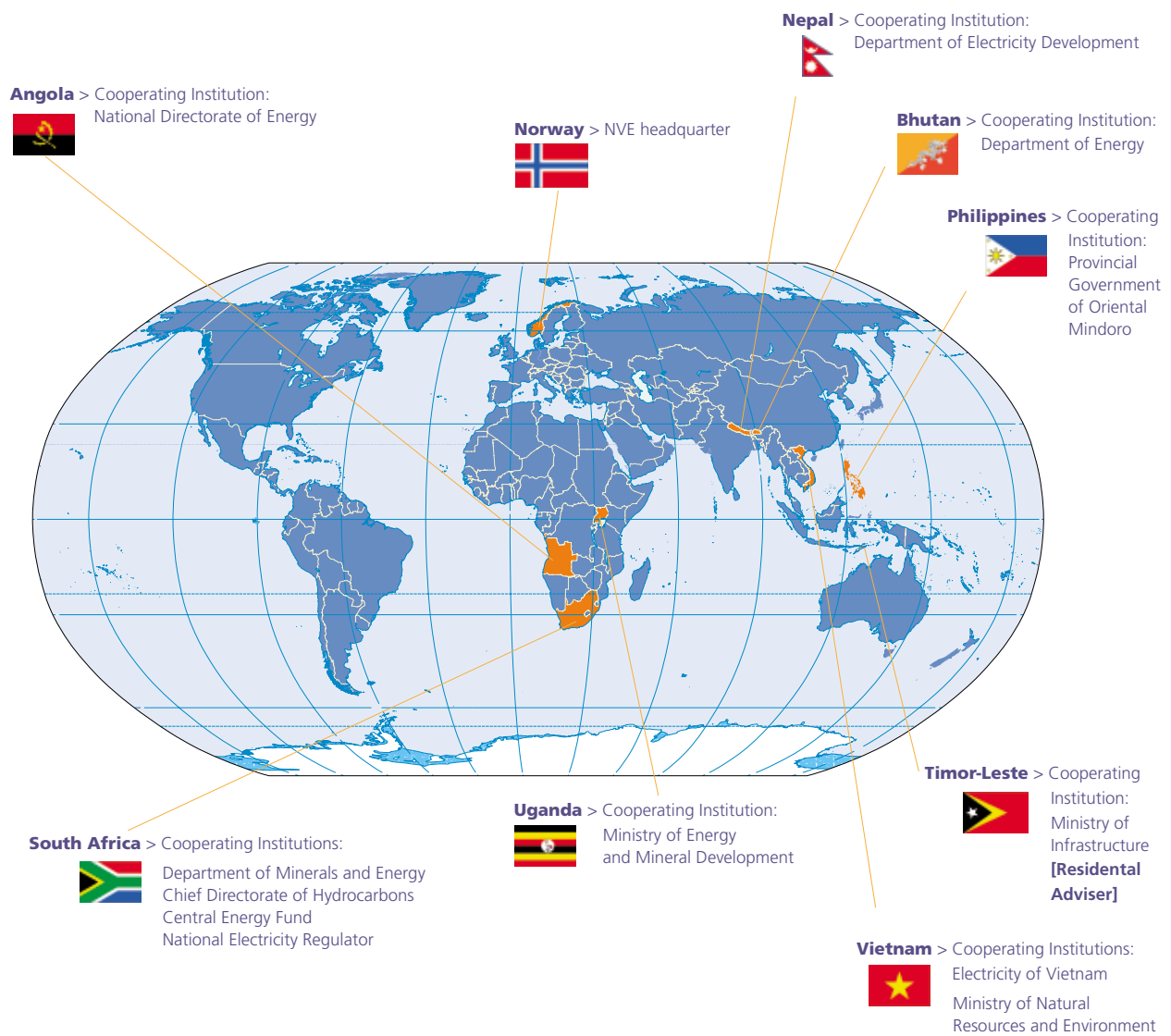
**Contact:** David A. Wright



# Institutional cooperation

Most of NVE's activities connected to development assistance are part of institutional cooperation with partner institutions in a developing country as elaborated in the following pages. Of NVE's recorded hours on development assistance in 2007, 77% (or 6 man-years) was spent on cooperation with 13 institutions in 8 countries, of which two are secretariats for regional cooperation comprising several countries. The institutional cooperation is always based on signed contracts, clearly defining objectives, scope and mode of work, time schedule, reporting, total budget and obligations of the two or more parties.

The table shows that on average 21% of the project funds are spent on activities directly linked to institutional cooperation with NVE. Besides NVE fees and reimbursable expenses, this includes training in various forms. The remaining 79% is spent on local expenses or assignments to consulting firms, either in direct contract with the cooperating institution or with NVE. What this in fact means is that, in the development cooperation sphere, NVE aims to act as a catalyst when involving resources and know-how from the private sector in achieving and complying with Norway's development cooperation policies.

Institutional **cooperation** 2008**INSTITUTIONAL COOPERATION**

The following institutional contracts have been in force during 2007:

Country	Cooperating institution	Project Period (NOK 1000)	Total budget institution	Budget for NVE co-operation (NOK 1000)
Angola	National Directorate of Energy	2000-2007	52,000	4,500
Bhutan	Department of Energy	2003-2008	15,000	8,400
Nepal	Department of Electricity Development	2004-2007	10,000	2,850
Philippines	Provincial Government of Oriental Mindoro	2006-2009	3,810	0,775
South Africa	Department of Minerals and Energy Chief Directorate of Electricity	2006-2009	*	
	Department of Minerals and Energy Chief Directorate of Hydrocarbons	2006-2009	*	
	Department of Minerals and Energy Central Energy Fund	2006-2009	*	
Timor-Leste	Ministry of Infrastructure	2003-2008	30,400	12,800
Uganda	Ministry of Energy and Mineral Development	2006-2007	2,800	2,200
Vietnam	Electricity of Vietnam	2003-2007	38,000	1,900
	Ministry of Natural Resources and Environment	2006-2009	8,850	6,155
Regional Coop.	Regional Electricity Regulators Association (Secretariate in Namibia)	2003-2006	7,500	2,200
Regional Coop.	Southern African Power Pool (Secretariate in Zimbabwe)	2004-2007	35,000	0,950
<b>TOTAL</b>			<b>203,360</b>	<b>42,730</b>

\* Total budget for South Africa is NOK 35 mill

# Angola

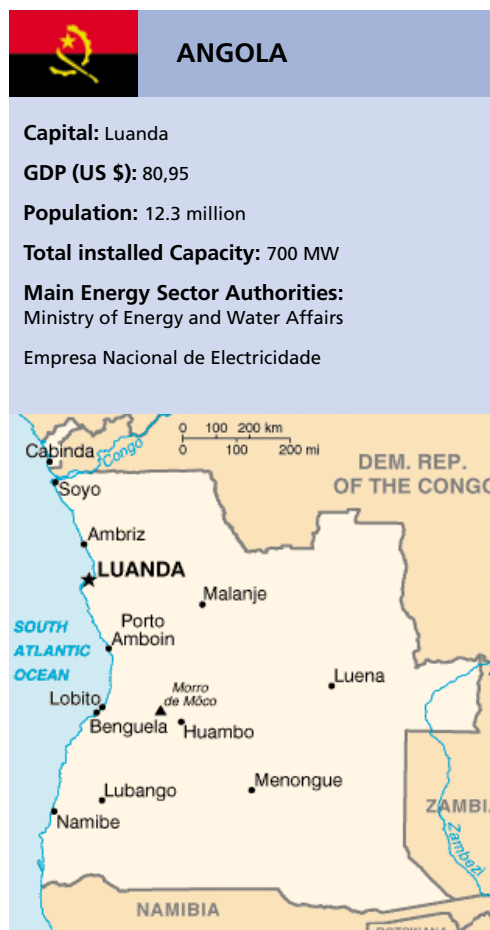
## Ministry of Energy and Water Affairs (MINEA), National Directorate of Energy (DNE)

The cooperation between MINEA and NVE which dates back to 1996 was finalised in 2007. The cooperation spanned the period from civil war into a post war period, with new challenges and increased possibilities for the future in the energy sector.

The overall goal was to promote economic development of the country through sustainable and efficient use of the nation's energy resources. The purpose was to strengthen the competence and decision making basis of MINEA and Empresa de Distribuição de Electricidade de Luanda U.E.E (EDEL) through training in technical, economic and administrative fields, and to improve the reliability of electricity supply in the country by establishing a fund for purchase of spare parts.

The main achievements are summarised on the following page.

**Contact:** Aud K. Skaugen, ask@nve.no



## ACHIEVEMENTS

- Instituto Regulador de Sector Electrico has been established as a formal institution
- Regulations for generation, distribution and supply of electricity have been issued.
- MINEA and especially DNE have developed an increased competence and basis for decision making during the cooperation. Through exposure to the energy sector administration and management in Norway, and through experts from NVE and consultants, the executives have increased their knowledge and their confidence for taking decisions for the benefit of the energy sector in Angola
- All the employees at a certain level in DNE have increased their capability of speaking and discussing with experts from other countries, since such communication is usually conducted in English. The possibilities of attending training courses and seminars in non Portuguese speaking countries have also increased
- A consultant (Norplan) was contracted to assist MINEA in implementing a Management Information System in MINEA. The capacity was strengthened by the transfer of technicians. During the project, staff has increased its competence regarding database programs. After working with the project they have also increased their know-how on the limitations and the possibilities of such Management Information Systems
- MINEA has increased its knowledge of Clean Development Mechanism (CDM) projects, as well as training possibilities for strengthening the competence of personnel in CDM responsible institutions
- EDEL has been able to improve in many areas during the project. This includes improved systems for human resources planning and follow-up; improved accounting procedures; improved commercial operations and routines for billing and collection; improved planning; improved knowledge of English and communication and improved knowledge of utility operations in other countries through and in deregulated markets through study tours abroad
- The power system (production, transmission and distribution) in Angola has suffered from war activities, lack of maintenance and overloading due to inadequate strengthening of the system compared to the growing demand. Migration to Luanda has caused an increase in population from 2.8 million to 4.5 million over the last few years. In 2000 EDEL had 94 000 customers increasing to 140 000 by 2006. The spare part project has enabled the utilities to reduce failures and to connect more than 20 000 new customers in Luanda



Queve River



# Bhutan

## Department of Energy (DoE) Phase II

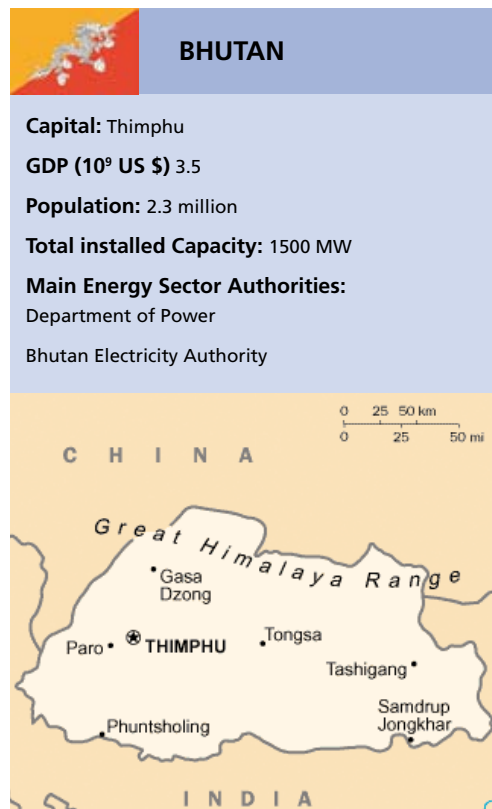
The electricity supply in Bhutan is almost entirely based on hydropower. From nature the country is endowed with huge hydropower resources and only a tiny portion of the estimated economically viable potential of 16,000 MW has been developed. Only about 30% of the population is served with electricity. One of the Royal Government of Bhutan's main goals is to supply electricity to the entire population by 2020, and the DoE is a central player in this respect.

The phase II programme of the institutional cooperation between DoE and NVE started in 2004 and was originally intended to be completed by end of 2007, but will now be extended into 2008. It carries a total budget of NOK 15.0 million. Due to the success of the programme, DoE is planning to extend the cooperation into a third phase starting in 2008 which will help it embrace Bhutan's accelerated hydropower development programme in the next five years. This is aimed at increasing the rate at which Bhutan develops its hydropower resources for export and for domestic consumption which will in turn increase "Gross National Happiness" and economic development for all Bhutanese.

The overall goal of the programme is the development of human resources and capacity building of the energy sector, thereby bringing about efficiency in the sector and providing both the DoE and the Bhutan Electricity Authority (BEA) with the necessary tools for effective and transparent monitoring of the sector. This falls within Norad's overall strategy of contributing to poverty reduction through offering Norwegian experience in

### ACHIEVEMENTS

- DoE human resources strengthened through training performed in Bhutan and abroad including at NVE headquarters and regional offices
- BEA strengthened in licensing, tariffs etc.
- Guidelines for safe operation of dams delivered and implemented
- Energy sector management information system server procured and delivered to BEA in Thimphu
- The hydro meteorological network strengthened, spare parts were procured, and DOE staff were trained in its use at NVE, Norway
- Detailed plans were made for Phase III of the cooperation and DOE submitted an application for funding to the Royal Norwegian Embassy in New Delhi



the sustainable development of natural resources. With the contributions of the institutional cooperation programme, DoE is getting on track to becoming a strong and modern institution, able to manage Bhutan's energy resources in a sustainable manner without the need for further external development assistance.

DoE is responsible for the formulation of policies, plans, programmes and guidelines related to sustainable development, efficient utilization and management of energy and hydro meteorological services in Bhutan. NVE, with its responsibility for management of Norway's water and energy resources, is a natural partner for the institutional development of the Department. Where necessary, NVE has also brought in external expertise from consultants and advisers.

### The programme has covered the following activities in 2007:

- Human resources development in DoE
- Development of Bhutan Electricity Authority
- Guidelines for water structure safety
- Development of Geographical Information System for the energy sector
- Development of management information system for the energy sector
- Strengthening of the hydro meteorological network

**Contact:** David A. Wright





Site visit to Dudh Koshi Power Plant

## Department of Electricity Development (DoED)

The agreement for institutional cooperation between the Department of Electricity Development and NVE was signed in December 2004. Norway is providing financial support for feasibility studies of five to ten small and medium sized hydropower projects. NVE is providing technical assistance to DoED in implementing these studies which will be subject to bidding by local Nepalese consulting companies.

The main objectives of the project are to encourage investments in small and medium size hydropower projects in Nepal and to increase the competence by Nepalese consultants to conduct the necessary studies.

The output of the project is the production of feasibility studies of eight hydropower projects by Nepalese consultants. The studies are divided into three packages and conducted successively. The studies are to be of a quality required for investment in and financing of small and medium sized hydropower plant.



### NEPAL

**Capital:** Kathmandu

**GDP (10<sup>9</sup> US \$):** 30.7

**Population:** 28.9 million

**Total installed Capacity:** 600 MW

**Main Energy Sector Authorities:**  
Department of Electricity Development

Nepal Electricity Authority



**Contact:** Aud K. Skaugen, ask@nve.no

### ACHIEVEMENTS

- Evaluation of the proposals and contract agreement for the second package of three hydropower projects completed. Three Nepalese consultant companies have signed the contracts to conduct feasibility studies and Environmental Impact Assessments
- The consultants have prepared three field reports and two interim reports for the projects in package one, and two inception reports for the projects in package two. Field visits and initiating of preparation of documents for the third package of two hydropower projects were also conducted by DoED in 2007
- Three DoED administration staff members have been introduced to international practices on office management by institutional training in Norway and have increased their competence and capacity in these respects

# Philippines

## Provincial Government of Oriental Mindoro

In 2003 the Provincial Government of Oriental Mindoro in the Philippines asked Norad for assistance to develop a "Flood Control Master Plan for Bucayao and Magasawang Tubig Rivers", and Norad requested NVE to assist in the preparation of the Terms of Reference for the project. The overall goal of the project is to prepare a Flood Control Master Plan which will serve as a framework for flood mitigation measures in the province.

The Terms of Reference for the consultancy work to be carried out was approved by the Provincial Governor in early 2007, after which it was invited for international competitive bidding. Five proposals were received, and the technical and financial evaluations were carried out in Oslo in June, with the assistance from the Provincial Government and the local NVE consultant in the Philippines. Sweco Grøner AS was selected as the consultant in association with local consultants. Successful contract negotiations followed immediately after the evaluation, and the consultant started the project work in October. An inception report was submitted in mid-November, and the progress has been satisfactory. It is too early to evaluate the progress of the project, but so far the milestones have been met. The Provincial Government as well as the various stakeholders seem to take a real interest in the project, and are actively participating.

**Contact:** Kjell Repp



### ACHIEVEMENTS

- Provincial Government's approval of Terms of Reference for the consultancy in late January
- Tendering process in March - April
- Evaluation of proposals and signing of contract in June
- Project work started 15th October, and submission of Inception Report on 14th November



Consultants Contract signing, June 2007

## International Cooperation in South Africa

In October 2006, NVE entered into a new contract with the Department of Minerals and Energy (DME), based upon a Memorandum of Understanding signed between the South African and Norwegian governments in 1996.

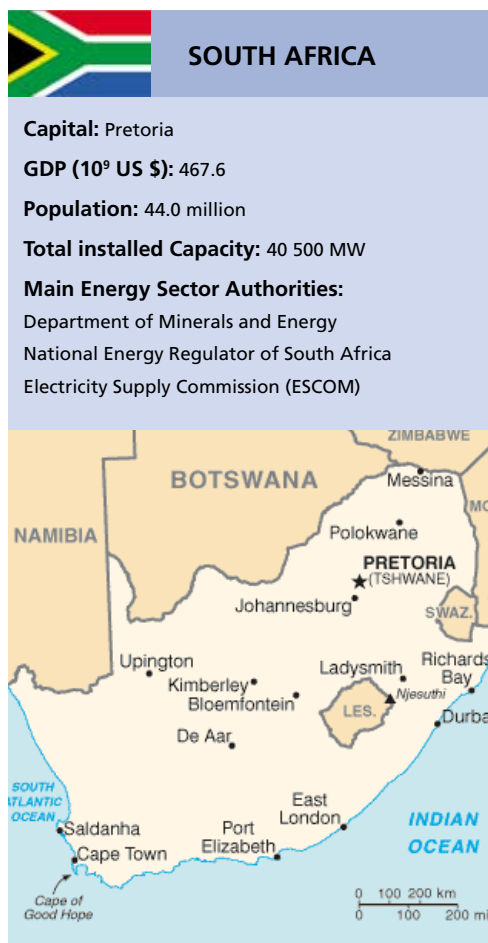
The new cooperation programme was intended to start up in 2006, partly based on the outcome of the earlier cooperation projects between DME, NVE and the Norwegian Petroleum Directorate. It includes an overall business plan and four sub-programme business plans on Energy Regulation, Electricity, Hydrocarbons and Alternative Energy. NVE is involved as the Norwegian Coordinator for all of the sub-programmes.

In order to ensure adequacy of content, the development of the sub-programmes became a more lengthy process than expected, and some of the activities has not yet started. The main reason for the delay was a restructuring of the DME. This also resulted in a restructuring and revision of the energy cooperation between Norway and the Republic of South Africa. During the Annual Meeting between the Royal Norwegian Embassy and DME in Pretoria in early June, it was decided to merge the various sub-programmes together into three main themes, or programmes:

- Energy Planning
- Regulatory Environment
- Climate Change

The first two themes mainly belong to DME, even though Energy Planning necessarily has to include all energy sources, which are partly handled by other institutions or departments. The Climate Change theme mainly belongs to the Central Energy Fund (CEF) with its subdivision the Energy Development Corporation (EDC). Some of the activities under the initial four sub-programme business plans were already started prior to the revision of the programme, and have been incorporated into the new revised programme. The revision of the entire programme, which has been based partly on restructuring of the DME and partly on visits by DME high level officials to Norway in December 2006 and in May and August 2007, has also lead to reallocation of funds. This has been agreed between the Norwegian Embassy and DME.

Progress meetings have been held on a rather irregular basis: in February (combined with a workshop); in May (combined with fieldwork



on Climate Change (EDC) and the Annual Meeting between the Regional Electricity Regulators Association (RERA); in August in Norway combined with the South African Minister of Minerals and Energy's visit; in September combined with the RERA Sub-Committee meeting and the Energy Summit; and in November combined with the RERA Annual General Meeting in Zimbabwe. In order to make the programme most cost-efficient, meetings have been combined with other projects and workshops as far as possible.

For simplicity, the activities carried out during 2007 will be described under the various institutions or departments responsible for the implementation of the activities.

## Department of Minerals and Energy (DME)

One of the goals of the project is to assist the Electricity Chief Directorate of DME in the transformation of the electricity industry in South Africa. This will be achieved by assisting in the development of policy, promoting the availability of capacity (both human and data) to manage the restructu-



Elandsdrift dam in Eastern Cape

ring of the electricity sector in support of a transparent, competitive and sustainable electricity industry. The purpose of the project is to contribute to the implementation of specific interventions towards capacity building for effective governance and regulation, equitable market liberalisation and sustainable growth and poverty alleviation.

The Hydrocarbons Chief Directorate of DME is faced with various operational needs and challenges. The goals are, however, the same: the efficient management of the energy sector to optimise the allocation of energy resources in order to achieve affordable price levels which will contribute to economic growth.

NVE assisted in two major activities during 2007, besides general coordination: The drafting of “Regulations concerning quality of supply emanating from the Electricity Regulation Act”, and “Pricing Policy”. A workshop was held at DME in February, after which NVE prepared a comprehensive report on Quality of Supply, which was submitted in June 2007. Regarding the Price Policy, DME is having the report prepared, the results of which will be discussed with NVE.

For the first time DME organised the “Energy Summit 2007” in late September, where NVE and the Ministry of Petroleum and Energy of Norway were invited (two participants from NVE and one from the Ministry).

## ACHIEVEMENTS

- Workshop on “Quality of Supply” and “Pricing Policy” in February. All participants expressed high satisfaction with the outcome of the workshop, which provided the necessary input for the continuation of the work
- Report on “Regulations concerning Quality of Supply emanating from the Electricity Regulation Act” (recommendations)
- Presentation of relevant Norwegian energy planning expertise during a high-level DME delegation visit to Norway which provided valuable information for the revision of the energy programme
- NVE and Ministry of Petroleum and Energy representatives made active contributions during the Energy Summit 2007 which enhanced knowledge among the participants

**Contact:** Kjell Repp

## Central Energy Fund (CEF)

The Sub-Programme “Business Plan for Alternative Energy Cooperation” was signed by the Central Energy Fund (Pty) Ltd. (CEF) and NVE on 22 August and 11 September, while the contract was signed respectively on 28 August and 11 September 2006.

The goal of the project is to assist CEF with capacity and policy development to promote and make operational low carbon energy options in a manner that encourages local economic growth and poverty alleviation. The purpose is to contribute to the implementation of specific interventions towards the development of the policy framework and capacity for development of alternative low carbon options.

The revision of the overall energy cooperation programme between DME and the Royal Norwegian Embassy in mid-2007 had only a minor impact on the necessary content of the Sub-Business Plan and the contract between CEF/EDC and NVE. A proposed increase in the budget was approved by DME and the Embassy, and the name of the sub-programme was changed from “Alternative Energy” to “Climate Change”.

All ongoing activities were thoroughly discussed with CEF during meetings in April and May. At the same time an assessment of small scale hydropower potential in connection with existing hydropower and irrigation schemes was carried out in the Mpumalanga, Eastern Cape, and Western Cape provinces. A private consultant, Mr Bo Barta from South Africa, participated in the field visit.

It was agreed that NVE should focus mainly on hydropower, but to some degree on wind and solar energy. Ongoing activities within bio fuel should continue with other partners.



River in Mpumalanga Province

On the Clean Development Mechanism activity there are possibilities of a formal cooperation between CEF and Carbon Neutral. It was also agreed that a small scale hydropower course and a workshop on wind energy shall be conducted in South Africa in 2008, besides a more general workshop focusing on wind, hydropower and solar energy in Norway. All new or more detailed proposals were included and approved by DME and the Embassy in the Annual Meeting and in the revised programme afterwards.

The approval of the bio fuel strategy in December has necessitated an urgent appraisal of the bio fuel projects under review in South Africa. This matter will be followed up in 2008.

**Contact:** Kjell Repp

### ACHIEVEMENTS

- Progress meetings between CEF and NVE in February, April/May, September and November. These rather frequent meetings have proved to be very important for stimulating efficient progress in the project
- Planning of a workshop on wind, solar, hydro and energy efficiency to be conducted in Norway in January 2008
- Preliminary assessment and report on some of the hydropower potentials in Mpumalanga, Western, and Eastern Cape provinces. Further studies in order to produce bankable reports for three sites have been initiated by CEF
- Completion of an agricultural pre-feasibility study with regard to the bio fuel potentials in the Pondoland Project
- Satisfactory progress in the development of the final business plan for Clean Development Mechanisms at CEF (to be completed by end of March 2008)



Water supply scheme in Gauteng Province

## National Energy Regulator of South Africa (NERSA)

The cooperation between NERSA (earlier NER) and NVE started in February 1999, based on an agreement signed in June 1997 concerning the Promotion of the Reconstruction and Development Programme of the Republic of South Africa. NER and NVE entered into a second phase of the cooperation in June 2001. The main goal was to develop a regulatory framework for the Electricity Supply Industry which will enable NER to comply with its designated role as the national electricity regulation authority. In order to reach this goal the objective of the cooperation was to provide technical assistance to NER and to build competence and capacity through exchange of experience. The cooperation was completed in March 2006.

A new agreement known as the “South African Energy Sector Policy Research and Capacity Development Programme” has been signed between South Africa and Norway. The programme includes a sub-programme with NERSA. This has not yet been signed due to some pending matters between the Royal Norwegian Embassy and NERSA. These matters were, however, resolved in late 2007, and the sub-programme as well as the contract can hopefully be signed in the very near future.

As a long time has passed since the initial preparation of the sub-programme, the activity list was revised in a meeting between NERSA and NVE in early December.

**Contact:** Kjell Repp

### ACHIEVEMENT

→ Revision of sub-programme

## Ministry of Infrastructure

Initially, NVE's cooperation partner was the Ministry of Natural Resources, Minerals and Energy Policy. After reorganisation following the elections in May/June 2007, the contract partner became the Ministry of Infrastructure.

The total amount of support provided from Norway is NOK 30.4 million over the period 2003-2008. The contract provides financial support for feasibility studies of hydropower projects (NOK 17.6 million) and institutional strengthening including training within the power sector, alternative energy, hydrology and technical training for operation and maintenance staff. The establishment of a limited hydrometeorological network is also part of the Terms of Reference for the cooperation.

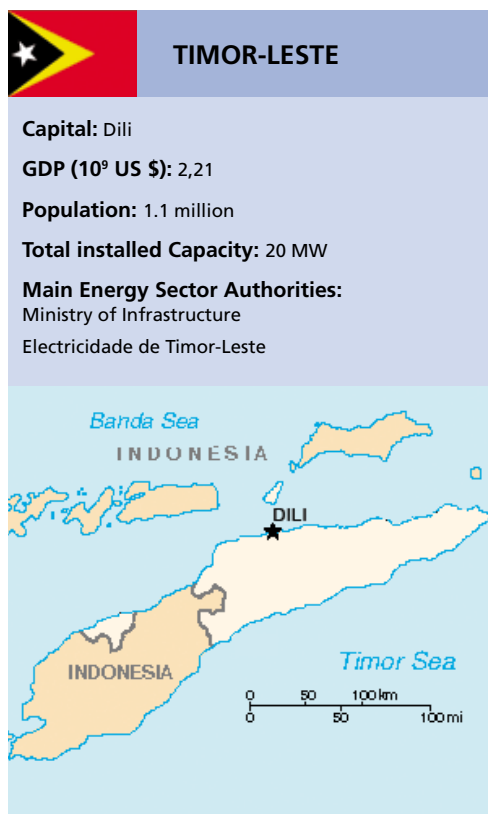
NVE entered into a contract with the Joint Venture Norconsult AS/NORPLAN AS in June 2003 regarding consultancy services related to **Iralalaru and Laclo hydropower projects and Baucau/Gariuai mini hydropower project**, including the transmission line Dili-Lospalos.

NVE has had a resident adviser working in Timor-Leste since 2003.

The main goal of the project is to develop the management of the power sector in Timor-Leste through institutional and capacity building within the Ministry and other relevant institutions. A considerable part of the funds are spent on studies and assessment of hydropower projects, training and purchase of equipment.

In 2006 the **Joint Venture Consultant** completed the first draft of the technical feasibility report for the 28 MW Iralalaru hydropower project and for the transmission line from Dili to Lospalos. The draft environmental impact analysis reports for the Iralalaru hydropower project and the transmission line were also completed. The final version is planned to be submitted in early 2008 after discussions with the Timor-Leste authorities.

New tracer tests to locate the underground water flow in the Karst area of Iralalaru have been completed. The laboratory analyses concluded there was no connection between the water from the river to be used for the hydropower project and the springs and caves around.



The Consultant has provided valuable training within hydrology, geology, land survey and transmission line planning for the local staff.

The Project has established 5 new hydrological rainfall stations and 2 new water level stations in 2007. All stations are regularly controlled and data are collected.

For the **326 kW (Baucau)/Gariuai Mini Hydropower Project** the construction work is in progress. A 4 km transmission line is constructed and the power house is nearly completed. The two dams and the penstock are 60 to 70% completed and all roads are constructed. The electromechanical equipment including the turbine, generator and transformer etc. are all manufactured and are stored at EDTL premises in Dili.

The goal was to have the mini hydropower plant in operation by 2007. Due to bad weather conditions during critical periods of construction, a delay of several months has been incurred. Commissioning will hopefully be achieved by mid 2008. Extensive training of the local workforce is taking place (more than 1400 trained), covering such topics as management/monitoring, procurement, environmental studies, and practical tasks connected to construction.

Studies on the Laclo mini hydropower project have been temporarily terminated, and the

# Timor-Leste

Consultant has been instructed to study the possibilities for developing small hydropower in the western part of the country. Two promising sites have been found, and the studies will be completed in 2008. Preparation for construction of one of the projects may start in 2008 if funds are available.

Several study tours and other training activities for employees from the Ministry and from Electricidade de Timor-Leste have taken place in 2007, both locally and abroad. Visits have been made to China, Sri Lanka and Norway.

**Contact:** Egil Skofteland



Inspection of newly laid penstock section at Gariuai mini-hydropower project (photo: Basil Rolandsen, [www.bouvet.info](http://www.bouvet.info))

## ACHIEVEMENTS

- Extensive training has been performed, both locally and abroad (Timor-Leste, China, Sri Lanka, Norway, Australia), improving the understanding of the connection between hydropower development, integrated water resources management, environment, sociology, economy and general administration
- The Consultant has completed the field investigations for the feasibility studies for Iralalaru Hydropower Project and the transmission line to Dili for both the technical and the EIA studies. Final reports are expected in early 2008
- Construction work on Gariuai Mini Hydropower Project including the 4 km transmission line has progressed well and the power plant is planned to be commissioned in mid 2008
- Two promising sites for small hydropower projects in the western part of the country have been located
- Five new rainfall gauging stations and two water level stations have been constructed and observers trained



## Ministry of Energy and Mineral Development

On December 5th 2005 Norway and Uganda signed an agreement on Strengthening the State Administration of the Upstream Petroleum Sector including a component related to the planning of a capacity programme for the State administration of the electricity sector.

**A Functional Analysis** with the objective of detecting potential gaps and/or overlaps in the distribution of tasks, powers and responsibilities amongst the institutions involved in the state administration of the electricity sector in Uganda, was prepared and presented to the Ministry of Energy and Mineral Development in July 2007.

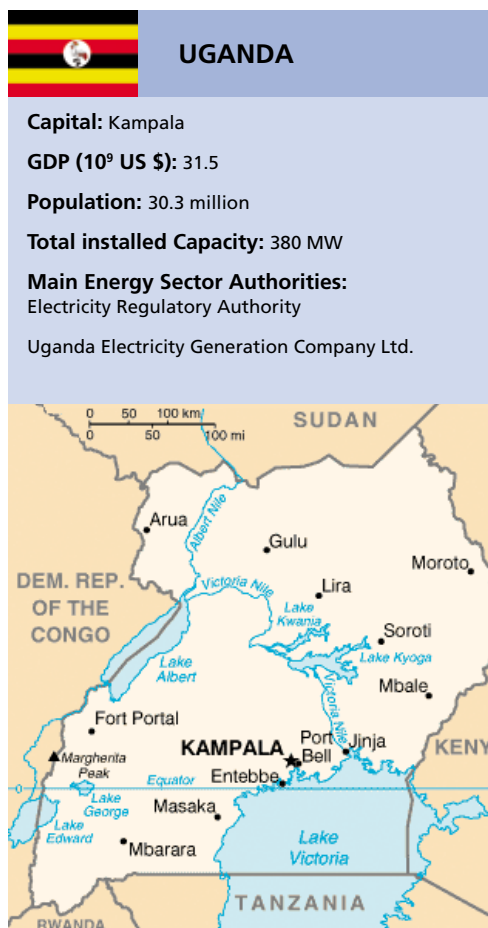
The analysis found the Ugandan power sector's legal and institutional frameworks, including distribution of powers and functions, appropriate and well adapted to the existing status of and plan for the development of the electricity sector in Uganda. Some gaps, overlaps and non-compliance with prevailing legislation do, however, exist.

The existing planning activities and prepared plans for the sector were found to be fragmentary; the coordination between the different planning activities rather limited and the basis for prioritising of projects seemed vague. It was recommended that the Uganda Electricity Transmission Company Ltd should be given more explicit responsibility for performing the actual overall planning within the power sector.

It was further recommended that **the Electricity Regulatory Authority** should retain its licensing powers which should include the implementation of tender processes relating to competitive bidding for projects.

It was also concluded that the powers and functions of the Rural Electricity Board/Rural Electricity Authority and the Electricity Regulatory Authority were to some extent overlapping or not optimally coordinated in order to achieve the best possible efficiency and use of resources.

It was recommended that the Ministry should give lower priority to the tasks of performing actual planning involving itself in the tendering processes for private projects and finally the implementation of renewable energy



### ACHIEVEMENTS

- A draft Functional Analysis for the state administration of the Electricity Sector has been prepared
- An outline of a capacity building programme for the Ministry with a potential future Norwegian support has been prepared

projects. These tasks could be taken care of more efficiently by other institutions. The Ministry should concentrate more on the important work of developing policies and undertaking the strategic planning for the sector.

Finally, the existing policy on involvement of the private sector should be continued until more experience has been obtained and the implications of introducing a Private-Public Partnership had been further assessed.

An outline of a capacity building programme was presented in the draft report based on NVE's assessments after the Functional Analysis and discussions with Ministry staff. Although comments from Uganda were not received by end of 2007, they arrived in early 2008 and will be evaluated.

**Contact:** Kristian Løkke, kloel@nve.no

# Uganda

# Vietnam

## Electricity of Vietnam (EVN)

Norway and Sweden have provided financial support to Vietnam for the development of the National Hydropower Plan (NHP) Study since 1999. Stage 1, which was completed in 2001, comprised five priority river basins. The second stage, which dealt with the remaining four major river basins and an integration of the stage 1 projects into a national plan, had a cost frame of NOK 19.0 million and SEK 12.7 million. The main Consultant was a Joint Venture of Sweco and NORPLAN.

The main objective of the two studies was to prepare preliminary plans for development of the water resources of the country, with respect not only to hydropower but also other needs - in particular flood control and irrigation. The identified projects were then prioritised and subjected to national ranking. Factors such as technical, economic, environmental and social conditions and impacts related to the projects were taken into account. Finally, the hydropower projects were considered against other forms of energy in a national energy development plan.

After receiving comments from all main actors the Consultant presented the Final Report in March 2007. The comprehensive report is structured into 13 volumes and the overall conclusions are as follows:

- The NHP Study provides a close review of some 80-100 hydropower projects on a relatively consistent basis
- Integration of Water Resources, Environmental and Social Aspects was done for the first time at river basin and national levels
- The results of the NHP Study are of a relative character and do not set standards on acceptable levels of impacts
- Small differences between Optimised Strategy and Strategies based on the ranking studies: +11 MUSD for Technical/Economic Ranking and +50 MUSD for Integrated Ranking
- Irrigation and Flood Control cannot alone justify the building of dams and reservoirs

The NHP database is an important link and instrument for access to the outputs of the NHP study. It was established during stage 1 of the NHP, and has been operated and uploaded with data and information from



the different phases of NHP Study. The system has been continuously further upgraded, refined and activated in NHP Stage 2 and can be found on the Internet: [www.evn.com.vn/NHP](http://www.evn.com.vn/NHP)

Based on extra funds provided by Norad, NVE participated in and reported from a stakeholders' meeting in Phnom Penh in January 2007 on the environmental impact assessment on the Cambodian part of Srepok River due to hydropower development in Vietnam. Since only a small 16 MW plant had been in operation in Vietnam, the claimed negative impacts experienced in recent years along Srepok River in Cambodia can not have been caused by new hydropower development in Vietnam, but must have other explanations - possibly climate changes.



The final Annual Meeting between Vietnam, Norway and Sweden was held in Hanoi on 2nd November 2007. All parties explained great satisfaction with the final result of the NHP Study. NVE's last task in the institutional cooperation with EVN is to assist EVN in preparing the final report to Norad and Sida according to the Agreement.

**Contact:** Egil Skofteland

#### ACHIEVEMENTS

- Successful project closure through various assistance to EVN on final reporting to donors
- Reporting from the stakeholders' meeting in Phnom Penh on the Draft Environmental Impact Assessment Report for the Cambodian part of Srepok River due to Hydropower Development in Vietnam. The main conclusion was that the claimed negative impacts experienced in recent years along the Srepok River in Cambodia cannot have been caused by new hydropower development in Vietnam
- Database of projects for further development



Micro enterprise in Hanoi

## Ministry of Natural Resources and Environment (MONRE)

The Country Agreement between Vietnam and Norway was signed on 19 September 2006, and MONRE and NVE negotiated and signed a contract on 20 October 2006. The project is scheduled to last for three years until the end of 2009.

The main goal of the project is to establish licensing routines for hydropower projects which involve various authorities and stakeholders. The legal framework already exists but will be amended during the project. Training of involved staff in licensing and related skills is also an important activity within the project. A handbook for hydropower licensing will be developed, and a standard framework for license conditions and rules of operation is also included in the scope of work.

At the beginning of 2007 the project was updated and slightly adjusted according to the inception report findings. Revised budget and work plans were approved by the Royal Norwegian Embassy in Hanoi. MONRE also established a fully equipped office for the project.

Hydropower licensing involves several ministries and agencies in Vietnam, and the licensing process in Vietnam was not coordinated. The first year of the project has brought the involved authorities together in several workshop activities. Their responsibilities and tasks according to Vietnamese legislation were presented and discussed in the workshops. The Norwegian licensing system and practice has also been presented as a reference for ideas. It seems that this



initial contact between ministries has already led to changes towards better coordination in the licensing procedures. The workshops have provided input to the first draft of the hydropower licensing guidelines.

The workshops also included a training aspect. The number of participants at the workshops counted between 30 and 40, including staff from MONRE, relevant ministries, authorities at provincial level and Electricity of Vietnam. Through presentations from the Vietnamese participants and from NVE, and through group work and discussions, the participants have increased their skills to develop licensing routines and procedures, and to deal with and evaluate license applications.

A study tour to Norway was organised in August 2007. Four participants from MONRE

and two from provincial level attended. The focus was on rules of operation, determination of environmental flows in hydropower licensing, renewal of licenses and revision of license conditions. Although the actual situation and conflicts related to hydropower may be different in Vietnam, they are in a similar position to grant licenses to many existing reservoirs and power stations. The program included presentations at NVE and a round trip visiting hydropower developments across south-east Norway.

Two candidates from MONRE attended the International Centre for Hydropower course in hydropower planning and management in Trondheim, Norway and found it highly useful.

**Contact:** Knut Gakkestad, kga@nve.no

## ACHIEVEMENTS

- Better coordination between the various authorities as a result of participation in four workshops
- Improved skills in developing licensing routines and procedures due to the above workshops. The participants have gained better knowledge on how to deal with and evaluate license applications
- First draft hydropower licensing guidelines under preparation
- Increased knowledge in human resources development and licensing aspects from participation in study trip to Norway organised by NVE
- Increased basic knowledge on hydropower development for two candidates who attended International Centre for Hydropower course in Trondheim, Norway

# Regional Cooperation in Africa

## Support to the Southern African Power Pool (Sapp)

The regional Southern African Power Pool, SAPP, has been established by 12 Southern African countries in order to provide a forum for developing a harmonised, robust, safe, efficient, reliable and stable interconnected electrical system in the region.

SAPP embarked on the transformation from a cooperative pool into a competitive pool in 2004. The process has been supported financially by Norway, and NVE is engaged by SAPP to provide advisory services related to this process. NordPool Consulting is providing consultancy services whilst NordPool delivers the trading platform and appropriate supply services.

NordPool completed the implementation of the trading platform at the SAPP-CC in Harare in March 2007 and market trials have been completed. The platform has not been opened officially as this awaits the resolving of some governance issues within SAPP. A review of the status and a way forward will be decided on in March 2008.

Training of traders in the power companies has so far taken place in South Africa and Mozambique. Road shows had been held in all countries except Tanzania by the end of 2007. The Tanzania road show will take place in February 2008.

A report on mechanisms (pricing, responsibilities etc) to settle imbalance between contracted and actually metered volume for the market has been prepared during 2007, financed through the Norwegian support. The recommendations in the report have been approved in principle by the SAPP and the implementation awaits the opening of the market.

### ACHIEVEMENTS

- The Trading Platform has been implemented and a final decision on the official opening date will be made in March 2008
- Market trials completed and training activities initiated and expected to be completed during 2008
- New principles for a balancing mechanism developed and approved
- New principles on pricing of transmission and ancillary services developed and approved

A Swedish financed study on transmission pricing and provision of ancillary services was completed in 2007. The principles of pricing recommended have been approved by SAPP, and the implementation schedule of the principles is to be agreed upon during the 1st quarter of 2008. It is likely that the new fees would be phased in over a period of five years.

SAPP has requested Norway and Sweden for joint financial support after market opening amounting to approximately NOK 22.5 million. The support will cover market monitoring and evaluation, procurement of a mini energy management system, a review of SAPP Documentation, capacity building in pool management & operations, support to training of SAPP members to make existing project studies bankable and the development of the Regulatory Framework for regional trade.

**Contact:** Kristian Løkke, klo@nve.no

## Regional Electricity Regulators Association (RERA)

RERA is an association of regulators in the SADC region. Currently there are eight members; South Africa, Namibia, Zambia, Malawi, Lesotho, Angola, Tanzania (from 2006), and Zimbabwe (from 2006), while Swaziland and Mozambique are considering membership. The objective of RERA is to develop the Electricity Supply Industry in the region through enhanced regional integration and trade, and to harmonise and develop a regulatory framework. The contract for RERA – NVE cooperation was signed in February 2004.

The main goal of the project is to develop a self-sustainable organisation which, through good and professional coordination, can assist its members in the development of a harmonised regulatory and legal framework.

The RERA secretariat is based in Windhoek, Namibia, assisting three sub-committees on: Capacity Building & Information Sharing; Legal, Economic/Financial Regulation; and Technical Regulation. Up to 2007, NVE provided the secretariat for two of the sub-committees, the Legal, and the Economic/Financial Regulation, and is assisting and playing an advisory role to the secretariat in Windhoek and to the Executive Committee.

The activity level during 2007 was partly limited due to restricted funds available, being the final year of the project. Positive signals from the Norwegian and Swedish governments indicated, however, that funding for another 3-year period could be made available. A review of the already approved Strategic Plan 2007 – 2009 for

RERA, carried out by ECON during March–May, provided the necessary basis for Norway and Sweden to decide on future financing. Amounts of 9 and 12 million NOK respectively from the two countries for the period 2008 – 2010 were funded. In addition RERA will also receive support from the USAID Trade Hub and the World Bank.

In accordance with one of the main goals of RERA, namely developing a harmonized regulatory and legal framework in Southern Africa, RERA has placed great emphasis on cooperation with other regional organisations, and today RERA has excellent working relations with the African Union, the Southern Africa Development Cooperation Secretariat, the Southern Africa Power Pool, and the African Forum for Utility Regulators. In addition, RERA is also considering cooperation with the Renewable Energy and Energy Efficiency Partnership.

NVE has participated in several RERA meetings during 2007:

- Planning and progress meeting with the Secretary of RERA in Swakopmund, February
- Annual Meeting between RERA and the Royal Norwegian Embassy in Pretoria, May
- Executive Committee meeting in Pretoria in September
- Annual General Meeting at Victoria Falls, November

**Contact:** Kjell Repp

### ACHIEVEMENTS

- Approval of the Strategic Plan 2007 - 2009
- Various reports and position papers have been produced by the sub-committees, mainly for use by the members. This includes the "Draft Position Paper on Best Practices, Gaps and Recommendation" and the "Draft Report on Technical Norms, Codes, Standards and Practices/Initiatives"
- Consideration of the draft copy of "Draft Power Institute for Eastern and Southern Africa (PIESA) 1048 Standard on Quality of Supply"
- The Secretariat has also provided and shared much of information and international news with the members of RERA by e-mail or during the various meetings and workshops within the working groups and the Executive Committee

# Appendices



Photo: Basil Rolandsen, www.bouvet.info

Appendix 1

## Total invoiced Norad/Ministry of Foreign Affairs 2007

Proj.no	Activity	NVE hours	Fee charged (NOK)	NVE expenses (NOK)	Consultants (NOK)	TOTAL (NOK)
32001-A	General assistance	820.5	581 407.50			581 407.50
32001-B	Assistance to the Energy Sector in Tanzania	17.0	11 730.00			11 730.00
32046	Visits to NVE	101.0	70 680.00			70 680.00
32060	China. Workshop . climate and water resources	104.0	71 760.00	87 789.59	198 635.89	358 185.48
32061	Participation in international conferences/meetings			27 223.00		27 223.00
32067	Bhutan. Rural Energy/Project Document	140.0	96 600.00			96 600.00
32068	Course in integrated water management for development	81.0	55 890.00	-7 646.50		48 243.50
32069	Rusumo Falls. Hydrology	19.0	13 110.00			13 110.00
32074/76	Energy expert to SADC (Royal Norw.Emb./ Mozambique)	533.0	394 940.00	516 276.80	98 647.17	1 009 863.97
32075	Zanzibar. Sea cable	84.0	57 960.00			57 960.00
32077	Vietnam. Srepok	70.0	48 300.00	51 325.00		99 625.00
32078	Kafue Gorge Regional Training Centre	114.0	82 620.00	13 082.00		95 702.00
32079	Electricity Authority of Vietnam. Visit to NVE	303.0	225 157.50		25 000.00	250 157.50
32079b	Electricity Authority of Vietnam. Visit to NVE (Royal Norwegian Embassy. Vietnam)			205 733.50		205 733.50
32081	Vietnam Power Market Design Worksh. ( Royal Norwegian Embassy Vietnam)	54.0	40 230.00	41 965.26**	88 210.00**	170 405.26
32554	Ethiopia. Karadobi Feas. Study (Royal Norwegian Embassy. Ethiopia)	213.0*	146 970.00	68 713.40		215 683.40
	<b>TOTAL</b>	<b>2 653.5</b>	<b>1 897 355.00</b>	<b>1 004 462.05</b>	<b>410 493.06</b>	<b>3 312 310.11</b>

\* 58 hours relate to 2006

\*\* NOK 96 503.26 relates to activity in 2007 which was invoiced in 2008

## Total invoiced - institutional cooperation 2007

Proj.no	Activity	NVE hours	Fee charged (NOK)	NVE adviser	NVE expenses (NOK)	Engaged Consultants (NOK)	TOTAL (NOK)
32501	Angola. National Directorate of Energy	173.0	123 055.00		3 454.78	100 000.00	226 509.78
32518	Vietnam. Electricity of Vietnam	203.0	146 340.00		31 950.31		178 290.31
32537	Regional Cooperation. Regional Electricity Regulators' Association	353.0	250 830.00		91 458.82	233 635.38	575 924.20
32538	Timor Leste. Ministry of Infrastructure	388.0	280 315.00	1 011 415.84	151 105.68		1 442 836.52
32541	Bhutan. Directorate of Energy	1222.0	865 235.00		436 369.38	364 807.00	1 666 411.38
32542	Regional Cooperation. Southern African Power Pool (SAPP)	185.0	131 335.00		46 263.97		177 598.97
32543	Nepal. Department of Electricity Development	917.5	659 997.50		224 571.39		884 568.89
32547	South Africa. National Electricity Regulator	194.0*	141 230.00		35 732.01		176 962.01
32548	South Africa. Department of Mineral and Energy. Electricity Sub-programme	832.0	588 215.00		334 506.03	3 036.00	925 757.03
32549	Uganda. Ministry of Energy and Mineral Development	224.0	155 330.00		57 030.34	201 917.60	414 277.94
32550	The Philippines. Provincial Government of Oriental Mindoro	219.0	152 100.00		48 466.60	752 536.34	953 102.94
32551	Vietnam. Ministry of Natural Resources and Environment	1521.5	1 092 432.50		391 107.76		1 483 540.26
32552	South Africa. Department of Mineral and Energy (CEF) Alternative Energy Sub-programme	462.5	324 680.00		130 506.76		455 186.76
32553	South Africa. Department of Mineral and Energy. Hydrocarbons Sub-programme	130.0	93 660.00		20 146.36	146 019.78	259 826.14
	<b>TOTAL</b>	<b>7024.5</b>	<b>5 004 755.00</b>	<b>1 011 415.84</b>	<b>2 002 670.19</b>	<b>1 801 952.10</b>	<b>9 820 793.13</b>

\* 60 hours relate to 2006



## NVE's participation in international research and cooperation with international institutions

### Energy

#### International Energy Agency (IEA)

Wind Energy: Member of Executive Committee for the Implementing Agreement in the research and development of wind turbine systems. Participate in Annex for wind and hydro systems and Annex for wind system integration.

#### IEA Hydropower technologies:

Participate in Annex for small hydro

#### The Council of European Energy Regulators (CEER)

The overall aim of the Council of European Energy Regulators (CEER) is to facilitate the creation of a single competitive, efficient and sustainable internal market for gas and electricity in Europe.

#### The European Regulators' Group for Electricity and Gas (ERGEG)

ERGEG is an advisory group of independent national regulatory authorities to assist the European Commission in consolidating the Internal Market for electricity and gas.

#### The Nordic Energy Regulators (NordREG)

NordREG is a cooperative organization for Nordic regulatory authorities in the energy field. Their mission is to actively promote legal and institutional framework and conditions necessary for developing the Nordic and European electricity markets.

#### Nordic Project on Distributed Energy for Remote Areas:

The objective of the project is to identify renewable technologies and new energy technologies suitable for remote areas in Finland, Sweden, Denmark, Norway, Iceland, Greenland.

#### Climate and Energy: International project.

The project comprises several institutions representing Nordic and Baltic countries.

#### The International Council on Large Electric Systems (CIGRÉ):

Exchanges experiences on transmission and generation of electric power. NVE participates in the study committee on System Environmental Performance.

#### NATO; Industrial Planning Committee (IPC):

Ad Hoc Working Group on the Protection of Energy-Related Critical Infrastructure (AHWG), subgroup electricity. The aim of the work group is to examine the electricity infrastructure and resulting vulnerabilities, and to discuss potential preventive and/or consequence management measures, and develop a catalogue of best practices for the protection of electricity-related critical infrastructure.

#### Nordisk beredskapsforum (NordBER):

The objective of the forum is to conduct a dialogue between the involved parties concerning contingency planning and crisis management in the power sector. NordBER deals with issues which are not managed by TSO cooperation through Nordel. The forum consists of the Nordic energy authorities, TSOs and other relevant parties from the Nordic countries.

#### EU; The European Committee for Standardization (CEN):

Has created a working group on "Protection and Security of the Citizen" as a monitoring and coordination platform for stakeholders. Nine expert groups have identified needs, one of them is the expert group "Critical Infrastructure – Energy Supply". The CENELEC Joint Expert Group Critical Infrastructure - Energy Supply has identified needs and possibilities for standardisation activities for security and emergency preparedness within energy supply.

#### NordVind

Wind power working group appointed by the Government Officials Committee for Energy under the Nordic Council of Ministers. Collecting and communicating national experiences from practice and procedures as well as results from R&D projects to create a Nordic "best practice" for wind power development.

#### International Commission on Large Dams (ICOLD).

NVE has the secretary function for the national dam committee (NNCOLD). NVE also has representatives in the following ICOLD technical committees: Committee of Governance of Dam Projects; Committee on Dam Safety; European Working Group on Legislation.

#### European Governments Dam Safety Network

Forum for sharing experience on issues relevant to dam safety between national authorities.

## Water Resources

### Swedish Meteorological and Hydrological Institute, SMHI and NVE

#### Reference Information Specifications for Europe (RISE),

Funded by the 6th Framework Programme Participants: SMHI, Swedish mapping Authorities, Norwegian mapping authorities, NVE. Developing guidelines for the creation of geospatial data implementation specifications, with a focus on hydrography, elevation models and land-use data themes.

#### CHIN GIS workgroup Participants:

The Danish National Environmental Research Institute (DMU), SMHI, Finnish Environment Institute (SYKE), Icelandic National Energy Authority (OS) and NVE. Workshop in Silkeborg, DK focused on basic geographical information systems related to surface waters (rivers, lakes and catchments areas).

#### Cooperation with EU/ EEA:

Stakeholders Forum related to a European Flood Action Programme. Norway has one representative; from NVE. This forum was during 2007 replaced by a Working Group F (WG F), dealing with the theme Flood risk management as part of the working structure for the Common Implementation Strategy (CIS) for the Water Framework Directive (WFD).

The objectives of WG F are:

- support the implementation of the EU Floods Directive (adopted in 2007)
  - ensure a platform for coordination with the WFD.
  - ensure links with other CIS activities
  - provide a platform for information exchange.
- As part of this Norway together with the Netherlands organised a workshop in Oslo Jan 31 - Feb 1, 2007 on the relation between flood risk management and land use planning.

#### China:

- (1) Bilateral cooperation in hydrology between Bureau of Hydrology (main office in Beijing), MWR (Ministry of Water Resources) and Hydrology Department, NVE.
- (2) Workshop, Beijing 21. - 22. March 2007 "Climate Change and Possible Effects on Water Resources in Mountain Areas"
- (3) Cooperation between NVE and Haihe Water Conservancy Commission concerning ground-water monitoring and water management practices

#### EU: Participation and vice chair in COST

**731.** Long term research cooperation dealing with uncertainty in meteorological- and hydrological forecasting. NVE contributes to the EU

WATCH project together with partners from other Nordic and Baltic hydrological services (Climate and energy related research)

**UNESCO/IHP:** Represent NE-FRIEND cooperation (Comprising institutions from NL, UK, Poland, Czech Republic, Slovakia, Austria, France and more), long term professional cooperation in hydrology.

**WMO:** National representation in international forums under WMO on operational hydrology (Hydrology Department).

**IAHS/ICSW:** International cooperation in hydrology, 2007-2010.

#### UK – Centre of Ecology and Hydrology:

Long-term cooperation with CEH in hydrology.

#### Montenegro Hydrometeorological Institute, Podgorica:

Preparation of Masterplan for Hydrological network and data acquisition in Montenegro.

#### The Republic of Serbia:

Design and optimisation of the national hydrological network in Serbia.





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Energy Directorate

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