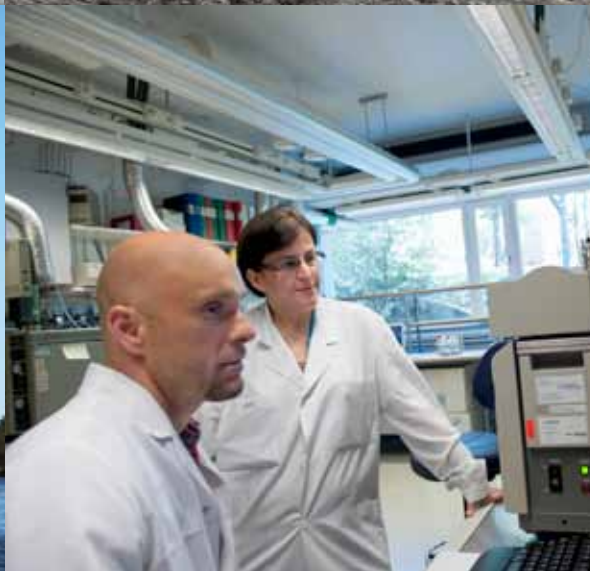


# Annual Report 2010



## THE YEAR IN BRIEF

- Net sales in 2010 totalled SEK 194 million (2009: SEK 204 million) and a loss of SEK 3.3 million was reported (compared with a profit of SEK 3.8 million last year). The reported loss was due to the allocation of funds to cover the calculated net effect of non-tax-deductible value-added text in the years 2005-2008. Basic financial performance remains good and in line with 2009.
- The number of employees in the Stockholm, Gothenburg and Beijing offices as of 31 December 2010 was 193 (179).
- In January, Vinnova allocated SEK 4.7 million to the Centre for Environmental Assessment of Products and Material Systems (CPM), in which IVL is a participant, for a new project on environmental innovation. The project will include the development of a tool for calculating the environmental impact and efficiency of transport systems.
- Per Löfgren was appointed CEO of BASTAonline AB, an IVL subsidiary owned in partnership with the Swedish Construction Federation, in succession to Lars Jarnhammar, who has retired. Per Löfgren joined IVL from consultants Vega, where he worked on operational development.
- The oil spill from the failed Deepwater Horizon oil drilling platform in the Gulf of Mexico resulted in an increased level of activity for the oil spill group at IVL. Among other things, group head Jonas Fejes acted for an extended period as IVL's spokesman to the media on the disaster, the cleanup operation and the environmental consequences of the spill.
- Held in cooperation with the magazine MiljöRapporten, IVL's periodic State of the Environment (Tillståndet i miljön) and Sustainable transport seminars attracted record attendances in 2010. Both events were booked out.
- A notable report by IVL and Lund University concluded that chemical decontamination agents are ineffective against mould toxins. None of the agents or methods studied was completely successful in arresting mould growth or eliminating the toxins formed in the materials.
- Research into chemicals in goods has been expanded, including a second stage of the Chemitecs research programme.
- International cooperation with eastern Europe on air pollution issues, which IVL had already initiated with Russia, was expanded in 2010 with the commencement of new projects in Ukraine and Belarus.
- Annika Helker Lundström, CEO of Swedish Wind-energy, was elected as chair of the IVL board on 2 June in succession to Kjell Jansson, who resigned the position after 13 years.
- IVL took part in the special programme hosted by Stockholm Business Region at World Expo 2010 in Shanghai, signing agreements on continued cooperation with three Chinese cities on Stockholm Business Day.
- IVL announced significantly increased levels of ground-level ozone for the first time since 2006. In July, the levels measured in parts of southern and southeastern Sweden exceeded the limit of 180 µg/m<sup>3</sup> specified by the EU as the figure at which the public must be informed.
- The Swedish Environmental Emissions Database (SMED), in which IVL is a partner with Statistics Sweden (SCB), the Swedish University of Agricultural Sciences (SLU) and the Swedish Meteorological and Hydrological Institute (SMHI), recorded ten years of joint activities in 2010. The consortium was formed to compile the climate and other environmental protection reported internationally by Sweden.
- In September, IVL was one of the partners that signed a letter of intent with the Skolkovo Foundation to build a technology park with a high innovation and technology profile on the outskirts of Moscow. Under the terms of the document, IVL will be the scientific partner, with particular responsibility for environmental technology and sustainable building.
- In 2010, IVL and the Swedish Export Council initiated a water production and wastewater treatment training programme in Iraq as part of the reconstruction of the nation's infrastructure.
- The findings of the RE-PATH research project, which is part-funded by airport authority Swedavia, attracted widespread interest in November and December 2010, when elevated levels of PFOS (Perfluorooctane sulphonate) were measured in watercourses and aquatic life in the vicinity of Stockholm-Arlanda and Gothenburg-Landvetter airports.



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# THIS IS IVL Swedish Environmental Research Institute

## SWEDEN'S FIRST AND OLDEST ENVIRONMENTAL RESEARCH INSTITUTE

Founded jointly by the Swedish government and Swedish business in 1966, IVL is now a limited company owned by SIVL (Foundation of the Swedish Environmental Research Institute). SIVL's purpose is to promote the conditions for environmental research and, through its ownership, guarantee IVL an independent status.

Since its inception, IVL has played an important societal role as a bridgebuilder between the research community, the business sector and public agencies, and plays a vital role as a neutral arena in which these stakeholders can come together.

## MISSION AND VALUES

IVL Swedish Environmental Research Institute undertakes applied research and contract assignments with the aim of promoting ecological, economic and socially sustainable growth within business and society at large.

IVL's values are founded on credibility, totality and foresight.

### VISION:

- We are the leading player in Sweden, and an important player in Europe and the world, in providing innovative, competitive and customer-driven solutions to the environmental and sustainability issues of both today and tomorrow.
- We are an internationally attractive workplace and a contributor of unique expertise in strong alliances with other world-leading research environments and companies.
- We are the obvious meeting place and a significant bridge-builder between universities and other third-level institu-



tions, the business community, public agencies and political decision-makers in the community.

- We are shaping the future of the institute through our credibility and independence.

## BOTH RESEARCH AND CONTRACT ASSIGNMENTS

Research and development programmes form the basis of IVL's activities. The company's research is financed partly by joint funding from the Swedish government and the Swedish business sector, and partly through grant aid furnished by national research bodies, research foundations and the EU.

Contract assignments include both short-term consultancy, and more comprehensive national and international research and development contracts.

## KNOWLEDGE COMMUNICATION

Apart from its series of published reports and articles in scientific journals, IVL disseminates knowledge through

lectures and participation in seminars. In addition, it holds its own courses and seminars under the banner of IVL Knowledge for professionals in the environment and sustainable development area.

#### NETWORKS AND COOPERATION

IVL is an active partner in a series of research networks, such as the European Network of Environmental Research Organisations (ENERO), EurAqua, a network of fresh water research bodies, and NORMAN, a network of reference laboratories and research organisations working on the screening of new, environmentally hazardous chemicals.

IVL also enjoys close cooperation with universities and institutes of technology. These include Lund University in the area of sustainable building, and a number of programmes conducted jointly with Chalmers University of Technology, Gothenburg (CTH) in the transportation field, and within the framework of the Centre for Environmental Assessment of Products and Material Systems (CPM).

#### LABORATORIES AND TEST FACILITIES

IVL Analysis performs advanced chemical analyses in its own accredited laboratories, while new technologies for more resource-efficient production are developed in the experimental laboratory.

The interior environment laboratory is equipped with the resources and equipment necessary for the advanced analysis of emissions, particulates, asbestos and a number of different microorganisms, notably mould.

Together with the Royal Institute of Technology, Stockholm (KTH), IVL also owns and operates Hammarby Sjöstad-  
verk, a unique pilot and test facility for advanced wastewater treatment technology.



#### ENVIRONMENT AND QUALITY

IVL deals with environmental and quality management, as well as work environment issues, within the framework of an integrated management system, which has been awarded environmental certification under ISO 14001 and quality certification under ISO 9001:2000. Goals are established and monitored in accordance with a specified management system procedure.

#### ORGANISATION

IVL has been partly reorganised since 2010. The new structure includes four production units, an administrative unit, and units for research, business development and marketing, in addition to staff functions for finance, human resources, IT and communication.

All units work together within the six thematic areas that also represent IVL's market offer. These are:

- Climate and energy
- Air and transport
- Resource-efficient products and waste
- Sustainable building
- Sustainable production
- Water

The activities of IVL Swedish Environmental Research Institute continue to develop positively. In the last three years, we have expanded and deepened our expertise, and our workforce has grown by 20 percent. Although turnover for 2010 was slightly down on the year before, profitability remained good in line with 2009.

## FOREWORD

# Positive development maintained

Organisational restructuring was carried out at the beginning of the year with the aim of increasing the number of projects and customers, strengthening our competence and improving internal cooperation.

Three challenges recur constantly in our contract and research project work for companies, public agencies and the community at large, regardless of which country or continent is concerned:

- How are we to achieve efficient and sustainable utilisation of our natural resources, including water and critical raw materials?
- How are we to achieve efficient and sustainable energy production and usage?
- How are we to prevent and manage the consequences of climate change?

These issues also form part of the Grand Societal Challenges identified by the EU. The integration of air quality, environmental protection, climate and health issues in various research projects and assignments is a fourth, additional challenge that is clearly related to our activities.

The development of activities within our national and international networks was continued in 2010. IVL was one of the leaders of the project entitled Climate-adapted urban structure: Future scenarios for Frihamnen, which was undertaken within the framework of the Mistra Urban Futures programme and produced three scenarios for the future planning and development of the Frihamnen area of Gothenburg.

In June, IVL and Stockholm Business Region co-hosted the Stockholm Business Day at World Expo 2010 in Shanghai. During the event, IVL signed agreements with three Chinese cities on continued cooperation in the development of environmental solutions, while SEC, IVL's Chinese joint-venture company, also concluded new agreements with a number of Swedish companies.

IVL heads a joint programme on air pollution issues in Russia. This was expanded in 2010 with the commencement of new projects in Ukraine and Belarus. In September, IVL was one of the partners that signed a letter of intent with the Skolkovo Foundation to build a technology park with a high innovation profile on the outskirts of Moscow.

### MAJOR SUCCESS IN EU RESEARCH

Climate and environmental issues continue to be high on the EU agenda despite the economic problems of a number of member states. IVL has successfully coordinated several EU programmes and projects, and has gained a reputation as a major Swedish research organisation. At present, the company is participating as coordinator or partner in 31 EU projects. IVL's success in the EU research area enables it to provide Swedish companies with an opportunity of participating in the projects, which is particularly advantageous to small and medium-sized enterprises lacking the resources to take part on their own. IVL's participation in EU projects also helps Sweden to obtain a 'return' on the funds that it pays to the EU and are subsequently made available through the EU's framework programmes and other calls.



In over forty years of operation, IVL has worked consistently to identify environmental problems, develop appropriate solutions and monitor the results of corrective action taken. The last 30 years offers many examples of comprehensive improvements to which IVL has contributed. One of these is the acidification problem scenario. In Europe, emissions of sulphur dioxide have been reduced by approximately 80 percent since 1980. In Sweden, a reduction of over 95 percent was achieved during the same period. In the mid-1980s, IVL implemented a long-term programme to monitor precipitation and soil conditions in southern Sweden, an initiative that was soon extended to the entire country. Just

‘We will remain in the forefront in terms of research and contract assignments’

five years ago, when the European Commission unveiled its atmospheric protection strategy, its proposals were based on the research carried out by IVL in collaboration with other European partners.

#### **NO QUICK FIX**

Any description of the state of the environment is multi-faceted. Unfortunately, the current environmental debate is full

of simplifications, often fuelling the belief that a ‘quick fix’ in the form of just a few measures will be enough to solve our major environmental problems. However, the reality is complex and, as with all complex systems, a toolbox containing many tools is needed to combine a few fast and relatively simple measures with long-term, sustainable solutions. The question of how and where to apply improvements that will afford the best results is an important starting point for IVL’s activities.

Insight and awareness regarding today’s environmental problems are – and always have been – high in Sweden and among Swedes generally. There are, and always will be, those who refuse to accept that problems exist, who are sceptical of the results of scientific research, or who choose to ignore the challenges that exist in the environmental field. Thankfully, however, their numbers are small.

At the same time, I believe that the current debate in Sweden is creating far too many problems. Although debate and analysis are obviously necessary, I would like to see more of the applied approach and the types of action-driven programmes that characterise activities at IVL. So far, we may not have been particularly prominent in the debate; however, this is due to the fact that throughout our 40 years or more of activity, we have chosen instead to devote our time and energies to the development of practical solutions designed to benefit our customers in business, the public sector and society at large.

#### **STILL IN THE FOREFRONT**

I have worked professionally for almost 30 years, having joined Pharmacia in Uppsala on graduation. The Swedish pharmaceuticals industry was quick to develop a high insight and awareness of the environmental problems that existed and needed to be solved. At that time, in the early 1980s, the focus was largely on emissions of organic substances to atmosphere. Over the years, internationally as well as in Sweden, I saw the focus shift as new research findings emerged and various environmentally focused measures began to yield results. IVL’s activities have also changed over the years, and we will remain in the forefront

in terms of research and contract assignments in order to contribute to the development and competitiveness of Swedish industry. We will constantly develop our expertise, our services and our modus operandi to provide our customers with access to our complete offer and remain the country’s leading research institute. Given continued high profitability and, hopefully, financial support in the form of some kind of strategic competence development funding, we will continue to contribute to ecological, economic and societally sustainable growth within Swedish business and society.

*Tord Svedberg*  
PRESIDENT & CEO

# Research and development the basis of our activities

**R**esearch and development account for just half of IVL's total activities, with research undertaken as part of common projects co-financed by the Swedish government and Swedish business as a key element.

EU-financed research and grant-aided research are also important in the context of IVL's activities. In addition, we carry out research assignments directly on behalf of external customers, which may be individual companies or entire industries.

## **GRANT-AIDED RESEARCH**

Most of the funding for our grant-aided research is provided by the Swedish Environmental Protection Agency and the Swedish Foundation for Strategic Environmental Research (MISTRA). However, grant aid is also sought and received from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas), Vinnova and other sources.

Thanks to its outstanding research, and to its capacity to coordinate and integrate various research aspects, IVL is frequently appointed to lead major research programmes. Examples include the MISTRA programmes, Clipore and Entwined, that deal respectively with climate policy, and trade and environment. Other programmes led by IVL include Sustainable waste management, Chemitecs (a study of the emission of organic substances from goods), the Swedish Clean Air Research Programme (SCARP), and Climate Change and Environmental Objectives (CLEO) – all of which are financed by the Swedish EPA.



## **COLLABORATION WITH UNIVERSITIES AND INSTITUTES OF TECHNOLOGY**

Projects carried out jointly with universities and institutes of technology are important to IVL's research as a means of keeping abreast of developments and remaining in the forefront of academic research. IVL also holds three adjunct professorships at KTH, CTH and the University of Gothenburg, as well as a VinnMer fellowship at CTH within the framework of the Chalmers Energy Initiative.

IVL has an important role to play in the academic world by acting as a link between basic and applied research. We can help the institutions in question to perform their 'third function' of disseminating knowledge and ensuring that their research is beneficial to society.

## **COMPREHENSIVE INVOLVEMENT IN EU RESEARCH PROGRAMMES**

IVL was involved in over 30 different EU projects in 2010. Our participation in EU research programmes is extremely wide, and we are working on everything from basic environmental issues, such as the emission, dispersion and effects of pollutants, climate, sustainable building and environmental engineering, to the development of tools, indicators and models for environmental and resource evaluation of products and processes.

IVL has established excellent contacts with many leading researchers in European universities and research institutes



## JOHN MUNTHE VICE PRESIDENT, RESEARCH



over many years of involvement in EU research. We are experienced in collaboration, and we have the capacity to identify the advantages offered by various joint projects, synthesising research findings and generating new ideas.

In many cases, EU-financed research also permits the participation of partners from business. In this situation, IVL can offer Swedish companies an opportunity of taking part in international research and development projects.

### **UNIQUE OPPORTUNITY FOR SWEDISH COMPANIES**

Our co-financed research programmes offer Swedish companies and industries a unique opportunity of carrying out research projects at IVL with funding provided equally by the Swedish government and Swedish business.

The programmes are conducted within the framework of the thematic areas whose content is determined by SIVL. These are Climate and energy, Air and transport, Resource-efficient products and waste, Sustainable building, Sustainable production, and Water.

Activities within these areas are governed by thematic committees composed of government and business representatives. The committees meet three times annually in workshops designed to identify future research requirements.

This dialogue enables the most important of the requirements to be monitored in a systematic manner.

State funding for co-financed research carried out at IVL is administered by the Swedish EPA and Formas. Totalling SEK 30 million in 2010, this funding will be increased to SEK 34 million in 2011 – testimony to the quality of the research.

### **CONDITIONS FOR CO-FINANCED PROJECTS**

A co-financed research and development project must be based on an environmental problem or possess environmentally relevant development potential. The project must be structured and formulated by discussion between financing stakeholders from business and IVL. As common factors, research projects must be of general societal interest, and must incorporate significant elements of research and development. Last, but not least, they must fall within the framework of the operational plan for IVL research adopted by SIVL. The findings of all co-financed projects are made public.

Participation in co-financed research projects is open to all private companies and organisations.

### **FOCUS ON HOLISTIC SOLUTIONS AND RESOURCE EFFICIENCY**

IVL will continue to develop its research activities in the future, adapting to a more globalised world with limited natural resources and focusing even more on research directed towards holistic solutions, sustainability and resource efficiency rather than individual environmental problems. Scientific quality combined with applicability and relevance to societal development will be keywords in the future also.

IVL analyses the environmental effects on ecosystems of natural resource and chemicals utilisation. Focusing on the development of concrete solutions to both urgent and long-term environmental effects, the work ranges from field trials, studies and synthesis to the modelling of future scenarios. The emphasis is on methods development and the identification of new, potential environmental toxins.

## Analysing the effects of using natural resources

**T**he sphere of activities includes both the analysis of effects on ecosystems, humans and organisms, and study of the environmental impact of using renewable and non-renewable natural resources.

### CHEMICAL ANALYSES

We also perform purely organic chemical analyses, particularly of materials on the EU list of priority substances and new chemicals. Although most assignments in this area are commissioned by agencies such as the Swedish EPA, Swedish Forest Agency and Swedish Energy Agency, the client list also includes the energy, mining, chemicals, building and insurance industries.

In addition, several of our researchers provide Swedish and EU agencies with expertise in carrying out studies and negotiations.

### PURPOSE-DESIGNED CHEMICALS SCREENING

The screening methods that we employ are purpose-designed. Methods development is used regularly to identify the presence of a specific substance in the environment and, with the aid of mathematical modelling, to determine where and in what quantities it may be present. We also calculate the level of emissions from products and goods to determine their total environmental impact.

Various other routine analyses of air, water, sediment and blood samples (for example, from birds and fish) are also carried out in our own accredited laboratories.

### ACTION PROPOSALS

We develop action plans, take samples, perform leaching tests and analyses, and propose solutions.



Photo: Tomas Viktor

These activities are carried out, for example, when a tanker overturns, a company purchases an industrial site or an industry wishes to clean up previous soil contamination. IVL also provides assistance with operating licence applications and environmental impact assessments.

### STUDY OF PFOS LEVELS AT AIRPORTS

The five-year RE-PATH research project is designed to study and clarify the occurrence, dispersion, and risks to humans and the environment of PFOS (Perfluorooctane sulphonate) at the major Swedish airports of Stockholm-Arlanda and Gothenburg-Landvetter, and to examine possible solutions to the problem.

Analyses carried out in 2010 indicated increased levels of PFOS in watercourses and aquatic life at both locations. PFOS is a highly biodegradable-resistant and bio-accumulative substance. In conjunction with the project, both airports have installed treatment facilities to remove PFOS from ground water.

### ENVIRONMENTAL IMPACT ASSESSMENT OF QUARRY

In summer 2010, the Swedish Supreme Court ruled against an appeal opposing the opening of a new limestone quarry

**ANNA JÖBORN**  
**DIRECTOR, NATURAL RESOURCES &  
ENVIRONMENTAL EFFECTS**



at Bunge in northern Gotland, ending a five-year licence application process in which IVL was responsible for the environmental impact assessment.

The Bunge pit is located in an extensive area of unique natural features. Quarrying in the area was opposed by the Swedish EPA and Gotland County Council, while the industry itself and the Geological Survey of Sweden (SGU) argued that the Nordic steel industry is dependent on the raw material. IVL directed comprehensive studies to answer the critical question of how the quarry would impact the surrounding wetlands and pinewoods in the limestone region, with their conservation-worthy flora and fauna.

**EFFECTS OF DITCH CLEANING ON WATER ECOSYSTEM**

During the 20th century, new ditches were constructed on a wide scale in Sweden to increase timber production in the forests. However, ditches grow over again if not maintained, leading to renewed waterlogging, impaired vitality and loss of production. The DiVa research project was initiated by IVL and forest owner Sveaskog in 2007 to gain increased knowledge of the effects of ditch cleaning.

The preliminary findings indicate that traditional cleaning methods cause 96 percent of the benthic fauna to disappear within two months. However, only a few individuals are affected if sediment traps are constructed and uncleaned ditch branches are left upstream. Although the effects on the water chemistry have not yet been evaluated, preliminary indications are that the effects are minor.

**COMBATING HAZARDOUS SUBSTANCES IN BALTIC**

The purpose of the three-year Control of hazardous substances in the Baltic Sea region (COHIBA) project is to support the implementation of the Baltic Sea Action Plan (BSAP) in

respect of hazardous substances by developing joint programmes among the Baltic nations. The project covers eleven substances or groups of substances that have been identified as being of particular importance to the Baltic.

As leader of the working package known as Identification of sources, and estimation of their loading and impact on the Baltic Sea, IVL is coordinating the work of partners from eight Baltic nations. COHIBA will continue until 2012. As part of the project, IVL has also carried out screening of the hazardous substances present in Swedish wastewaters, surface waters and leachate from landfill sites to identify their sources, and has contributed to the development of recommendations for cost-effective action programmes.



*Photo: Erik Lantblom*

# System perspective key to achieving best solutions

Improved resource efficiency and environmental adaptation of products, processes and services are key to the long-term competitiveness and sustainability of Swedish business. These are also priority areas for IVL, which is working on the relevant issues together with business and public agencies. We are assisting production companies and municipal authorities with expertise, custom-designed environmental engineering solutions and recommendations, as well as supporting small companies in export markets.

**W**e support businesses and other organisations in their sustainable development activities by helping them to implement effective environmental management, social responsibility and a sustainable work environment. A system perspective, combined with customised environmental technology in industrial processes, is used to identify the measures that are most cost-effective from a life-cycle perspective and at plant level.

## **ANALYSING TOTAL ENVIRONMENTAL IMPACT OF PRODUCTS**

Offering internationally recognised expertise in life-cycle analysis, IVL is often contracted to develop life-cycle analyses, climate declarations and environmental product declarations (EPDs) of various types – such as Carbon footprint and Water footprint – that provide a credible description of the environmental profile and impact of a product. IVL also develops methods of calculating and evaluating parameters such as greenhouse gas emissions, the environmental impact of chemicals usage, land use and the utilisation of natural resources. Active participation by IVL experts in the development of global ISO standards, as well as involvement in other standardisation activities in various industrial sectors, ensures that the company uses the latest, internationally recognised methods.

## **OPTIMISATION OF TECHNICAL PROCESSES**

Together with industry, IVL carries out modelling and process optimisation designed to reduce energy usage and environmental impact while achieving high product quality, employing a system philosophy in which different technologies are interlinked to achieve the best possible solution. Part of our work is devoted to separation techniques and



Photo: Elin Eriksson

closed processes in which we attempt to reduce energy, chemicals and water usage.

## **REDUCING OCCUPATIONAL INJURIES AND IMPROVING THE WORK ENVIRONMENT**

Long-term, sustainable business calls for social responsibility and a good work environment. To promote a sustainable work environment, IVL is working to develop and disseminate effective methods and measures that will improve conditions in industries affected by common problems that can be difficult to solve. Examples include exposure to welding fumes, sharp injuries in the hospital and health care sector, and the development of effective forms of cooperation with occupational health services. IVL's areas of expertise include the integration of work environment activities in



## ELIN ERIKSSON

### DIRECTOR, SUSTAINABLE ORGANISATIONS, PRODUCTS & PROCESSES

operational management and the development of effective work environment measures that also yield business benefits, as well as equality and social responsibility.

#### **CARBON FOOTPRINT OF COPY PAPER FROM SUMATRA**

On behalf of the Indonesian company, Asia Pacific Resources International Limited (APRIL), IVL has developed a methodology for calculating the carbon footprint of market pulp and copy paper, showing the emission and take-up of carbon dioxide and other greenhouse gases. Based on ISO standards and the European Confederation of Paper Industries (CEPI) Carbon Footprint manual, IVL has developed and published a method of calculating greenhouse gas emissions from timber plantations and forests, pulp and paper production, transport, recycling and waste management. APRIL uses carbon footprint information in communications with its customers and with the Indonesian government, which is demanding lower emissions from facilities such as timber plantations and the paper industry.

#### **SOFTWARE SERVICES FOR ENERGY EFFICIENCY IN THE CAR INDUSTRY**

The DEMI project (Product and Process Design for AmI Supported Energy Efficient Manufacturing Installations) is developing five different software services for analysing, simulating and testing various energy efficiency options. The development of laboratory-scale prototypes has been concluded and work on the initial prototype is under way. The project employs service-oriented architecture. These innovative services will be implemented, integrated and tested by three companies working with three widely differing types of process – the moulding of plastic car parts for Volkswagen in Germany, temperature treatment of steel



Photo: Torbjörn Larsson

products for Estanda in Estonia and the design of compressed air systems.

IVL uses the latest programming tools to perform distributed calculations in what is known as cloud computing.

#### **HAMMARBY SJÖSTADSVERK – DEVELOPING CLIMATE-SMART SOLUTIONS**

Together with Swedish Water Development (SVU), IVL is studying the formation and dispersion of greenhouse gases from wastewater treatment. The project will initially survey the emissions at various stages in the chain from wastewater to the deposition of sludge on agricultural land. In parallel, the project is designed to compare a number of alternative treatment methods and propose methods of reducing greenhouse gas emissions. Finally, we will use LCA techniques to monitor the total environmental impact of the various treatment methods. The project will add new knowledge regarding greenhouse gas emissions from wastewater and sludge handling processes, and will provide effective support for making decisions on how to minimise the emissions in question by a suitable combination of processes and operating parameters.

The Air Pollution & Abatement Strategies unit works on air pollution issues, and on air quality in Sweden and abroad. An important part of our work relates to Sweden's international emissions reporting. In this area, IVL is responsible for all calculations, data compilation and official reports within the framework of the Swedish Environmental Emissions Database (SMED).

## Managing Sweden's international emissions reporting

**W**e also assist companies, trade associations, public agencies, municipalities, county councils, air pollution bodies and others to inventory their emissions and identify emission sources.

### **AIR QUALITY PROGRAMMES**

IVL develops measurement strategies, performs measurements and evaluates results as part of its work on monitoring air quality in the urban and rural atmosphere. We are also working to develop methods of measuring air quality.

In 2010, the company noted a growing international demand for diffusion samplers, and for services involving particulate measurement. Surveys of particulate emissions from marine vessels have also been carried out both as contract assignments and research projects.

### **TOOLS FOR CALCULATING ENVIRONMENTAL IMPACT OF TRANSPORT**

Several co-financed research projects were carried out in 2010 to develop new tools for calculating the environmental impact of goods and passenger transport.

A systematic and holistic approach to the analysis of emissions, fuel consumption, energy usage and other external costs generated by transport offers sales personnel and purchasers of transport services help in the task of adapting their logistics chains to environmental demands.

### **UNIQUE COMPETENCE IN MERCURY ANALYSIS**

In addition to inorganic analyses of air and water samples, IVL carries out trace analyses of methyl and total mercury,



an area in which we have long had a particular expertise that is unique in the world.

Working within an EU research programme initiated in 2010 to study the global dispersion of mercury in the atmosphere, IVL is responsible for measurement programmes at three stations forming part of a global network, and for coordination with existing regional and national measurement networks in various parts of the world.

### **IMPROVED AIR POLLUTION SITUATION**

Based on measurements carried out mainly by IVL on behalf of the Swedish EPA, the report entitled National envi-



## **KARIN SJÖBERG**

### **DIRECTOR, AIR POLLUTION & ABATEMENT STRATEGIES**

ronmental monitoring – air: Data to 2009 inclusive provides an overall picture of background air pollution in Sweden.

In general, the findings indicate that there has been a significant improvement in the situation, both in terms of airborne levels and deposition of most of the pollutants that have been monitored over the last 10-30 years.

The levels of most of the substances are substantially lower than the limiting and target values specified for each. However, the trend has varied somewhat depending on the particular pollutant and the geographical location within the country.

#### **HEALTH RISKS OF EMISSIONS FROM ETHANOL CARS**

The health risks associated with emissions from ethanol and petrol-driven cars were studied as part of a project undertaken in collaboration with Umeå University, the Swedish Transport Administration and Saab. Dispersion calculations were made based on scenarios for different fuels in the year 2020 and the health effects envisaged in the Swedish region of Västra Götaland were compared.

In terms of health effects, the scenario based on the use of ethanol in all cars indicated 1.6 fewer premature deaths annually compared with operation on petrol. The difference is due to the emission of different types of organic substances by different fuels, and to certain differences in particulate and nitrogen oxide emissions.

#### **EXPANDED COLLABORATION IN EASTERN EUROPE**

The improvement of air quality in Europe as a whole requires the countries of eastern Europe to raise their level



*Photo: Per Westergård*

of participation in international environmental protection programmes. Thanks to their recently awakened interest in international collaboration, IVL now has an excellent opportunity of taking the first steps to bring these countries on board. During the year, current joint projects with Russia, Ukraine and Belarus were further developed with the aim of increasing credibility, analytical capacity and national motivation in relation to national and international air pollution issues. IVL is also collaborating with other international experts within the framework of these projects, which are funded by the Swedish EPA and Nordic Council of Ministers.

Sustainability issues have gained increasing prominence as part of societal development in recent years. In 2010, for example, the certification of urban areas has been debated intensively by business interests, especially within the building and property sector.



Photo: Ivana Kildsgaard

## Working on all aspects of sustainability

**S**ustainability, together with the overriding issues of resources and energy, is a very live issue in the area of Climate & Sustainable Cities. We work on system issues relating to the sustainability aspects of economic, environmental and social responsibility, applying our expertise to products, buildings, regions, waste management and energy systems.

### **FROM ENVIRONMENTALLY COMPATIBLE BUILDING MATERIALS TO SUSTAINABLE URBAN PLANNING**

IVL works on various aspects of sustainable building. This may range from the specification of environmentally compatible materials, various building components, building services and ventilation systems to the indoor environment and complete urban development programmes. Environmental studies, environmental strategy development, energy calculations and life-cycle analysis are among the activities undertaken. In the area of the indoor environment, we carry out measurement programmes, examine potential improvement measures and propose action plans.

As an example in the area of environmental certification of buildings, IVL is currently working to adapt the BREEAM and LEED environmental classification systems to Swedish standards and Swedish legislation. This means that it will be easier for Swedish companies to apply these systems, which will also include aspects that we consider important in a sustainable building, such as requirements governing the chemical content of building materials.

### **ENERGY AND WASTE ISSUES AT SYSTEM LEVEL**

In the area of waste, the primary focus is on waste prevention. Among other things, IVL is helping private and

municipal waste companies to develop various waste management solutions and to analyse the impact of these on the environment.

In the energy field, we analyse different energy systems, and compare heating methods from the environmental and resource usage aspects. Electric power, district heating and bioenergy are areas of special expertise, and IVL is helping companies, trade associations and public agencies to analyse various energy options from the environmental and climate standpoint.

### **INTERFACE BETWEEN POLITICS, BUSINESS AND ENVIRONMENT**

Climate activities are concerned with the manner in which political decisions taken at local, regional and global level influence the climate, directly and indirectly. For example, we can calculate where in the economy emission reductions will have the greatest benefit. In addition, we can guide companies through the jungle of agreements and regulations, and help them to understand how the decisions in question can affect their operations.

Projects in this area vary widely in scope, from analysis of how emissions trading rights affect local investment to studies of how different countries interact in international climate negotiations.

### **ECOPARKS OFFER MAJOR ENVIRONMENTAL BENEFITS**

IVL has carried out a study at the Alelyckan ecopark in Gothenburg, to which people are encouraged to bring used materials for recycling. Life-cycle analysis was applied to





## ANNA JARNEHAMMAR

### DIRECTOR, CLIMATE & SUSTAINABLE CITIES

compare activities at the facility with a conventional recycling centre in terms of waste volumes, energy, the greenhouse effect, eutrophication and acidification.

The study indicated that Alelyckan eliminates 360 tonnes of waste annually, with a reduction in carbon dioxide equivalent to the amount produced by 430 cars driven 15,000 kilometres each. The conversion of all Swedish recycling centres into ecoparks would eliminate carbon dioxide equivalent to the amount from approximately 100,000 cars.

#### PLANNING FOR CLIMATE CHANGE

As part of the Climate-adapted urban structure pilot project led by IVL and the City of Gothenburg within the framework of Mistra Urban Futures, IVL is examining how different climate adaptation strategies can be used in conjunction with the planning and development of the Frihamnen area in Gothenburg. The focus is on how construction can be adapted to a rising sea level and how the different strategies affect the sustainable development of the area; in other words, what the economic, social and ecological consequences will be. The results will be used as a basis for the climate adaptation strategies and plans adopted not only by the City of Gothenburg, but by other cities also.

IVL has also carried out a climate and vulnerability analysis for the Swedish Municipality of Botkyrka to determine where and how climate change between now and 2100 will affect the community's building activities and infrastructural development. The findings will be used by the municipality as a basis for overall planning in the future.



Photo: Anna Karlsson, DHI

#### DEVELOPMENT OF NEW CONTROL INSTRUMENTS IN THE CLIMATE AREA

Financed by MISTRA and led by IVL, Clipore is an international multidisciplinary research programme involving universities, think tanks and NGOs in Sweden, Norway, India and the USA. The focus is on international policy development relating to new control instruments in the climate area. The second stage of the programme will conclude in 2011 after seven years of successful research.

#### POLICY AND ECONOMICS

Coordinated by IVL, Entwined (Environment and Trade in a World of Interdependence) is a MISTRA-funded research programme focusing on the interaction between international environmental policy and global trade. The purpose of the programme is to identify the areas in which public and private environmental strategies work and where they are less effective in tackling the problems.

A significant number of climate, energy and environmental problems call for global solutions. As a result, international activities has always been a natural part of IVL's work. In many cases, our role nowadays is to act as coordinating partner in the international research and development arena (read more about IVL's EU-financed research on page 8).

## INTERNATIONAL ACTIVITIES

# Eastward expansion

**T**he EU area is now regarded as IVL's home market, and we maintain a special focus on the Baltic Sea and the nations bordering it. Otherwise, IVL's international activities are concentrated on China, where we have had a presence for over 25 years, contributing significantly to exports of Swedish environmental technology during that time. IVL has had its own office in Beijing since January 2010. We collaborate both with the TAES research institute in Tianjin, and with Chinese central agencies and ministries, as well as authorities in several major cities. Cooperation with CRAES (Chinese Research Academy of Environmental Science) and ITTN (International Technology Transfer Network) was expanded in 2010.

In 2010, IVL participated in a public authority project to develop preventive measures to protect drinking water sources, while a continuation project to remediate the eutrophication of Lake Wuliangshuai, which was previously mapped by IVL, has also been initiated. Measures to reverse the lake's condition are now to be implemented at a cost of approximately SEK 8.6 billion.

In the area of environmental technology, a number of demonstration projects are under way in Wuhai, Wuhan and Tianjin. The Binhai Water Group has installed Predect technology for on-line bacterial analysis. Biogas attracted major interest during the year and IVL is now involved in several projects in this area.

Nitrogen reduction is a priority of the 12th five-year plan and IVL is working actively to share Swedish experience in



Photo: Jonas Röttorp

the area, including the application of Swedish environmental technology solutions. Seminars on the subject have been arranged in Wuhan, Tianjin, Beijing and Shanghai.

Together with Stockholm Business Region, IVL organised a full-day seminar at World Expo 2010 in Shanghai on 11 June. Under the theme of Stockholm Business Day, the event showcased Swedish solutions in sustainable urban development, waste to energy, renewable energy sources, such as biogas, future transport solutions and resource-efficient industrial water solutions.

### INDIA

Apart from China, IVL has concentrated its international activities on India, where we have been collaborating successfully with the Confederation of Indian Industries, Jawaharlal Nehru Technology University and the EPTRI environmental institute for several years. Activities in India



are concerned mainly with cleaner production. In addition, IVL is conducting a project on behalf of the European Chamber of Commerce in Brussels with the aim of increasing cooperation between India and Europe, primarily in environmental technology, energy, transport and bioengineering. Together with Swedish environmental technology companies, we took part in three different shows during the year. IVL also participated in the development of a plan for greater in-depth research cooperation between India, the EU and Sweden.

#### **RUSSIA AND EECCA**

IVL is also involved in a number of activities in Russia and the EECCA (Eastern Europe, Caucasus and Central Asia) countries. In Russia, the focus is on sustainable urban development. A major environmental protection project is also under way in Russia with the aim of involving Russia, Belarus and Ukraine in international activities within the framework of the Convention on Long-Range Transboundary Air Pollution (CLRTAP).

#### **IVL AIDS RECONSTRUCTION OF IRAQ**

In 2010, IVL and the Swedish Export Council initiated a water production and wastewater treatment training programme in Iraq as part of the reconstruction of the nation's infrastructure. Launched as part of the SymbioCity concept, the initiative for the project was taken by Sweden's Minister for Trade, Ewa Björling, and Minister for International Development Cooperation, Gunilla Carlsson. Entitled The development of municipal water supply and sanitation in Iraq, the first part of the programme opened with two



*Photo: Ivana Kildgaard*

seminars in Baghdad and Basra attended by high-ranking political officials. This was followed by training sessions in Sweden in sustainable water and sanitation solutions, and meetings with Swedish companies in the sector.

#### **COMPETENCE DEVELOPMENT IN SHANGHAI**

Together with Tongji University in China and the EU Chamber of Commerce in Shanghai, IVL is conducting the Train the Trainers project to develop competence in the building sector in the Shanghai region. Carried out within the framework of the EU's Switch Asia programme, the aim of the project is to disseminate knowledge of energy-efficient building in China. Over a thousand small and medium-sized building companies are taking part. Other aims of the project are to compare experience of energy-efficient building policies, and to develop policy improvement proposals that will influence both the Chinese government and EU legislators to adopt a more energy-efficient approach.

To operate successful research and development programmes, we are completely dependent on our ability to attract skilled, creative and engaged employees. IVL offers a creative and informal working environment with ample opportunities for development coupled with a high level of individual responsibility. The company accommodates a large number of specialisations that interact to generate knowhow and solutions that benefit society in its efforts to achieve sustainability.

## OUR PEOPLE Continuing to grow

**A** lengthy process of developing common core values for IVL was concluded in 2010. Involving all personnel, this was summed up as follows:

*IVL's values are founded on credibility, totality and foresight. As engaged employees, we are proud of carrying out work that is of benefit both to society and our customers.*

### AIMING TO GROW

IVL aims to maintain its steady growth in terms of employee numbers and combined expertise, and this was achieved during the period from 2008 to 2010. At the end of 2008 staff numbers at the company's offices in Stockholm, Gothenburg and Beijing totalled 179, increasing to 193 by the end of 2010,

The gender balance among the workforce is relatively well balanced, with 52 percent men and 48 percent women. However, a regional difference exists in that 60 percent of the employees in Gothenburg are women compared with 40 percent in Stockholm.

By far the greater proportion of IVL personnel (92 percent) hold an academic qualification and 28 percent a research qualification.

### COMPETENCE DEVELOPMENT

Our approach to competence development is expressed by the 70-20-10 model, which means that on-the-job training accounts for 70 percent of professional development, training by more experienced colleagues for 20 percent and formal training activities for the remaining 10 percent.

A target of two days training per employee per year has been established to highlight the significance of competence development. Based on defined activities, the actual figure in 2010 was 1.4 days per employee. Special project leader training in a number of stages has been developed and is now implemented on a regular basis. Training is carried out both by IVL itself and with the assistance of outside specialists in the area.

An in-house programme has been initiated to clarify career and development opportunities. In time, this will be developed into a competence planning support tool for employees and the company's operations.

### WORK ENVIRONMENT AND HEALTH

IVL's work environment activities are conducted on the basis of yearly plans and delegated responsibilities. The company is a member of an occupational health service that provides our employees with work environment expertise as well as medical care.

IVL promotes the wellbeing and health of its employees by contributing financial support for cultural and sporting activities, and by providing financially assisted training.

### EMPLOYEE SATISFACTION SURVEY

IVL has been carrying out employee satisfaction surveys since 2008. These are designed to measure trust, pride and comradeship at both organisational and unit level, and to enable employees to identify both what is good and what is capable of improvement.

The results are used as a basis for action plans. The employee satisfaction index (ESI) is calculated from the ratings awarded by employees to the statement "Overall, I would regard this as a good workplace" in the survey. The ESI has risen by ten percent since 2008, reflecting the consistent improvements achieved in this area.

### EQUALITY AND PARITY OF TREATMENT

IVL implements an overall policy and plan to ensure equality and parity of treatment. Developed by a representative group, this is implemented in the form of a yearly plan. Executive management, managers and employees must all work to ensure that our activities and corporate culture are characterised by a diversity perspective and by parity of treatment, contributing to IVL's credibility as an adviser on sustainability issues.



*Fredrik Persson, 35  
MSc in engineering chemistry from  
Umeå University.*

**“I’m coordinating** the S’wash research programme to develop the washing machine of tomorrow. And I’m also working on a project with transport company Geodis Wilson to carry out sensitivity analysis of the Lindex clothing company’s transport chain from Asia to Sweden. This will help the company to understand the system and, therefore, make the right decisions. I contribute to the project calculations and help to interpret the results. Apart from that, I prepare applications and try to match our project concepts with various calls. And I also liaise with new customers regarding potential joint projects.”



*Ivana Kildsgaard, 37  
Graduated from University of  
Belgrade with degree in architecture,  
majoring in bioclimatic architecture  
design. MSc in built environment  
analysis from Royal Institute of  
Technology, Stockholm. Doctorate in  
energy-efficient building from Faculty  
of Engineering at Lund University.*

**“Right now,** I’m finishing a major research project entitled The timber house of the future – energy-efficient with a good interior environment that is part of my doctoral thesis. I’m also involved in the international Switch Asia project, Train the Trainers, in which we are developing training materials for constructing sound, energy-efficient buildings. As part of the project, we will be training people in China who, in turn, will train others in how to build in an energy-efficient manner. I’m also working on a number of EU projects in which I’m arranging workshops and dialogue meetings with interest groups, as well as a number of smaller projects within the building industry.”



*Magnus Karlsson, 39  
Naval reserve officer. MSc in  
aquatic and environmental  
engineering from Uppsala  
University. Recently awarded  
doctorate in earth sciences.*

**“I work on** applied environmental research and used my IVL projects in my doctoral thesis. These deal with various environmental problems in the Baltic Sea, mainly eutrophication and environmental toxins. SEABED is studying phosphorus leakage in Swedish and Finnish coastal waters, while WEBAP is concerned with the development of a wave-powered pump for oxygenating the seabed waters of the Baltic. I am also involved in a number of consultancy assignments developing bases for environmental impact assessments. This will entail a great deal of field work combined with mathematical modelling and report preparation. The field work includes sampling of water, sediment and fish life.”



*Karin Persson, 46  
MSc in chemical engineering  
from Chalmers University of  
Technology, Gothenburg.*

**“My main job** is project manager for the Urban Measurement Network, in which we are measuring and monitoring air quality in the urban environment. I’m also head of the Air Quality group. Much of my work deals with monitoring strategies and action programmes for county councils, local authorities and environmental protection associations, and I have quite a number of air quality assignments from the Swedish EPA.”

# Directors' Report

The board and CEO of IVL Swedish Environmental Research Institute Ltd. hereby submit their report and statement of accounts for the operating year 1 January 2010 to 31 December 2010.

Owned jointly by the Swedish government and Swedish industry, IVL Swedish Environmental Research Institute Ltd. (IVL) undertakes research projects and contract assignments in the environmental field. Established in 1966, the company employed a total of 193 people in Stockholm, Gothenburg and Beijing as of 31 December 2010. IVL has been a limited company since 1982 and reported net sales of SEK 194 million in 2010.

## *New organisation*

IVL's new organisation became effective on 1 February 2010. The operation is structured into the four operational units of Climate & Sustainable Cities, Air Pollution & Abatement Strategies, Natural Resources & Environmental Effects, and Sustainable Organisations, Products & Processes. Business Development & Marketing, and Research are two units that work laterally across the organisation. All units interact in a matrix organisation within the previously established thematic areas of Climate and energy, Air and transport, Resource-efficient products and waste, Sustainable building, Sustainable production and Water. During the year, Business Development & Marketing carried out project manager training to develop existing competence and to strengthen experience feedback between various IVL projects. The Research unit has established a research council composed of representatives from all units, whose mission is to develop and continuously update a long-term plan for IVL's research activities.

## *Mission and vision*

Revised and made more concise during the year, IVL's mission and vision statements now read as follows:

### **MISSION**

IVL Swedish Environmental Research Institute undertakes applied research and contract assignments to promote ecological, economic and socially sustainable growth within business and society at large.

### **VISION**

We are the leading player in Sweden, and an important player in Europe and the world, offering innovative, competitive and customer-driven solutions to both present and future environmental and sustainability issues.

We are an internationally attractive workplace and a contributor of unique expertise in strong alliances with other world-leading research environments and companies.

We are the obvious meeting place and a significant bridgebuilder between universities and other third-level institutions, the business community, public agencies and political decision-makers in the community.

We are shaping the future of the institute through our credibility and independence.

## **Business climate and future development**

Urbanisation and population density are increasing globally, while water shortages are becoming more severe and waste quantities are growing, as is the pressure on the world's other resources. Faith in political solutions to environmental and climate problems was

damaged by the failure to conclude a binding climate agreement in Copenhagen in December 2009. Developments now are governed much more by initiatives by individual countries, and by discussions between the EU, USA and China. Most attention is on China, whose economy continues to expand rapidly, while the downturn that hampered western economies until 2010 appears to have eased. The major challenge now is to manage the current economic growth, and achieve sustainable energy and raw materials usage.

With its strong focus on energy and resource efficiency, and its foundation in both multidisciplinary sciences and system analysis, IVL provides research and market offers that accord well with the present-day needs of business and society as a whole.

The emphasis within the EU is on research that supports sustainable development. This takes the form of a number of different research programmes, such as those financed by Life+, EU regional structural funds, and the Framework Programme for Competitiveness and Innovation (CIP), of which Intelligent Energy Europe is a research element. Energy, together with environment and climate, are among the priority areas of the EU Seventh Framework Programme for research, which provides total funding of just over SEK 50 billion. IVL is currently participating in about 30 EU projects, and is represented in all of the EU's environmental and energy-related research programmes.

## *Basic funding*

IVL and other research institutes are playing a decisive and recognised role in increasing the competitiveness of Swedish industry, and that business benefits from the research conducted by the universities and other third-level institutions. Most research institutes are guaranteed basic funding for expansion and maintaining their expertise through state funding. For reasons that are obscure, IVL is not one of those.

Despite this, IVL's profitability remains high. However, the company will need the same type of basic funding as that enjoyed by other institutes if it is to remain in the forefront of environmental research in the longer term, contributing to the development of Swedish industry.

## **Key events during the year**

### *New board chair*

At the AGM in June, Kjell Jansson retired after 13 years as chairman of the board of IVL Swedish Environmental Research Institute. His successor is Annika Helker Lundström, CEO of the trade association, Svensk Vindenergi, former CEO of the Swedish Recycling Industries' Association and a former cabinet office official.

### *VAT issue resolved*

The judgement of the Administrative Court of Appeal concerning the value-added tax issue that IVL has been contesting with the Swedish Tax Board (SKV) since 2004 was announced in December 2010. IVL has consistently maintained that its grant-aided activities cannot be regarded in isolation, but are an integral part of the company's activities. As such, the company should be entitled to relief in respect of tax paid on costs attributable to its grant-aided activities. However, in its judgement, the Administrative Court of Appeal concurred with the view of SKV that IVL should not be allowed the relief claimed.

The effect of the judgement is that the payment to IVL of government or business subventions or grants of specific amounts will

impact the company's financial performance since it will not be entitled to relief in respect of the tax paid on the associated costs. In respect of the year dealt with in the case (2002), IVL allocated and booked the disputed amount of tax in its 2008 accounts. From 2009 on, the company has adjusted its accounts to accommodate SKV, booking an amount of SEK 2,706 thousand as a non-recoverable VAT expense in 2009. The corresponding amount for 2010 is SEK 3,040 thousand.

The judgement is also retroactively effective for 5 years. For the years 2005 to 2008, the total net cost is estimated as SEK 7,674 thousand. This amount has been set aside in the figures for 2010 and reported under the heading of other external costs in the profit and loss account. This allocation is not tax-deductible in 2010, increasing the tax bill by SEK 2,018 thousand. The amount of tax due in 2011 will be lower when SKV has assessed the amount of retroactive tax due.

#### **Continued focus on China – World Expo 2010**

IVL's activities in China have increased in scope in several areas, as a result the company recently opened its own office in Beijing. IVL was previously represented only by the joint-venture company, SEC (Sino-Swedish Environmental Technology Development Co. Ltd.), in Tianjin.

Together with Stockholm Business Region, IVL arranged a busy all-day seminar at World Expo 2010 in Shanghai on 11 June. Under the theme of Stockholm Business Day, the event presented Swedish solutions in sustainable urban development, waste to energy, renewable energy sources, such as biogas, future transport solutions and resource-efficient industrial water solutions. Five contracts were signed between Swedish and Chinese companies.

#### **Current IVL activities in China**

Examples include a major EU project in Shanghai in which IVL's role is to provide Tongji University with research-related support for competence development in the building industry. In the water area, a project is under way to develop preventive measures, including warning systems, to protect drinking water sources. A continuation project has also been initiated to remediate the eutrophication of Lake Wuliangsuohai, which already been mapped by IVL, and measures to reverse the lake's condition are now to be implemented at a cost of approximately SEK 8.6 billion. In the area of environmental technology, a number of demonstration projects are under way in Wuhai, Wuhan and Tianjin. Biogas has attracted major interest during the year and IVL is now involved in several projects in the area.

#### **Communications, course and seminar activities**

Communications resources were strengthened in 2010 and were also assigned a new organisational affiliation, under which communications, as well as course and seminar activities, are now administered by Business Development & Marketing. Among other things, this means that the level of integration of communications issues in operational development is now higher.

Communications have become an increasingly important element, both in general terms and as part of research programmes, as a means of spreading information about IVL's activities. In this context, courses and seminars organised by IVL Knowledge are playing a vital role. Collaboration with the independent magazine MiljöRapporten in courses and seminars for people working professionally on environmental and sustainability issues was initiated in 2009. In addition to a number of

courses, the annual seminars on State of the Environment (Tillståndet i miljön) and Sustainable transport – which attracted record attendances of 200 and 230 respectively in fully-booked venues – were held in 2010 within the framework of this collaboration.

The services of IVL Knowledge are used by both internal and external customers to organise courses and seminars. Since its establishment in 2005, IVL Knowledge has organised about 80 such events attended by over 3,000 people.

#### **Commercialisation of R&D**

Commercialisation of the research conducted by IVL can help to communicate environmental and resource-saving technologies more quickly to companies. In the new IVL organisation, responsibility for commercialisation and incubation activities has been assigned to the new Business Development & Marketing unit to ensure professional management.

The task of establishing a new activity in the form of a company under the working title of EEQ has been shelved for the present since market conditions are not considered sufficiently promising to pursue this development at this time.

BASTAonline AB became a limited company in 2007, and is presently owned by IVL (60 %) and the Swedish Construction Federation (40 %). The company administers and develops the BASTA system of evaluating and phasing out particularly hazardous substances in building materials, and had a turnover of SEK 2.2 (1.7) million in 2010.

In 2010, Per Löfgren became CEO of BASTAonline AB in succession to Lars Jarnhammar, who has retired. During the year, the company initiated collaboration with Svensk Byggtjänst (Swedish Building Services) under which BASTA registration details are entered in Byggekatalogen.se, the Swedish on-line building products catalogue. Inclusion in this well-known catalogue, which enjoys wide circulation in the building sector, ensures that information regarding BASTA registration is disseminated in an effective manner. BASTA has also agreed to interlink the BASTA system functionally with Chemwebb, the Swedish Transport Administration's database for specifying chemical substances. This will ensure that information regarding BASTA-registered products will be more widely available, especially in the construction industry.

#### **Collaboration with universities and institutes of technology**

IVL's strategy includes the establishment and development of close cooperation with the business sector, international research bodies, and universities and institutes of technology. As part of this, IVL has also formalised its cooperation with the Royal Institute of Technology, Stockholm (KTH), Chalmers University of Technology, Gothenburg (CTH), and the Faculty of Engineering at Lund University (LTH).

In 2010, IVL and Chalmers opened discussions on dedicated cooperation in transport research, with funding from the Swedish government's strategic research programme. The purpose is to develop an infrastructure for long-term competence development, and research in the transport and logistics area. IVL's primary role is to develop a database and a support function for long-term data processing, and to initiate and pursue transport research in collaboration with CTH.

At present, three IVL employees hold adjunct professorships at KTH, CTH and the University of Gothenburg, while a fourth holds a VinnMer fellowship at CTH under the auspices of the Chalmers Energy Initiative.

## CHU

IVL's cooperation with KTH has been conducted within the framework of the joint Centre for Sustainable Development (CHU). Between 2006 and 2009, a total of 16 preliminary studies was initiated or completed in the profile areas of Sustainable building, Resource-efficient production and products, and Water. In 2010, work was concentrated on the development of new forms of cooperation, with a higher focus on fewer programme areas and the development of activities at Hammarby Sjöstadswerk.

## Hammarby Sjöstadswerk

IVL and KTH are joint owners of the Hammarby Sjöstadswerk R&D facility, which is a national resource for the development of wastewater treatment technology, and will acquire an international profile in the course of time. The facility is used both by IVL and KTH for their own research, and by outside stakeholders for testing new treatment technologies on effluents of various types. During the year, IVL continued to use the facility to conduct three major projects in increased biogas extraction, reduced energy usage and the treatment of pharmaceutical residues. Notable among new activities in 2010 were an EU-financed project undertaken together with the Municipality of Oskarshamn, and a national project to study and reduce emissions of greenhouse gases from wastewater treatment and sludge handling operations.

About fifteen wastewater treatment companies form a cluster group that is working to improve public and industrial water treatment technology. With funding from the Swedish Water & Wastewater Association (SWWA) and municipal authorities in the Mälardalen region, a centre for public water treatment has been established in partnership with KTH, Uppsala University, the Swedish University of Agricultural Sciences (SLU) and Mälardalen University. In 2010, the facility also hosted a large number of visitor groups from all over the world for demonstrations of Swedish knowhow and technology.

## CPM

IVL operates the Centre for Environmental Assessment of Product and Material Systems (CPM) in collaboration with CTH. A sixth project stage began in 2010 with higher involvement on the part of IVL. This received a flying start when Vinnova allocated SEK 4.7 million for a three-year project to develop tools for calculating the environmental impact and efficiency of transport systems. Managed by IVL, the project will involve collaboration between IVL and Chalmers researchers and major Swedish industrial concerns.

## Mistra Urban Futures

Mistra Urban Futures – an international centre for sustainable urban development – was inaugurated in Gothenburg in January 2010. In addition to IVL, the partners in the consortium include Chalmers University of Technology (CTH), University of Gothenburg, City of Gothenburg, Gothenburg Regional Association of Local Authorities (GR), Västra Götaland Region and Västra Götaland County Administrative Board. Financed by MISTRA, together with the Swedish International Development Cooperation Agency (SIDA) and the consortium members, the centre's total assets are expected to amount to approximately SEK 20 million during the 2010-2011 development phase and almost SEK 50 million per annum thereafter.

During the centre's first year of operation, IVL has been leading two of the five pilot projects undertaken within the framework of Mistra Urban Futures. These are Climate-adapted urban structure: Future scenarios for Frihamnen in partnership with the City of

Gothenburg, and Business-driven sustainable development, a pilot project carried out together with the School of Business, Economics and Law at the University of Gothenburg.

## Other cooperation and important networks

Part of IVL's role is to act as a bridgebuilder between the research and business communities, and to create arenas for interaction between different players in society. This is one of the reasons why IVL is leading or participating in networks and other cooperative ventures of various types, some of which are featured above. Others include:

**SGBC (SWEDEN GREEN BUILDING COUNCIL)** is a non-profit organisation that is open to all companies and organisations in the Swedish building and property sector that wish to develop and influence sustainability activities in their field. Together with companies and organisations including Skanska, NCC, Fastighetsägarna and Akademiska Hus, IVL is a founder member of SGBC and is represented on its board.

**THE STOCKHOLM ENVIRONMENTAL TECHNOLOGY CENTRE (SMTCC)** business network was initiated by IVL and is administered by it. SMTCC connects visitors, stakeholders, projects, technologies, companies and researchers in the environmental technology field in the Stockholm/Mälardalen region.

**THE SWEDISH ENVIRONMENTAL EMISSIONS DATABASE (SMED)** is a consortium formed in 2001 by IVL, Statistics Sweden (SCB), the Swedish Meteorological and Hydrological Institute (SMHI) and the Swedish University of Agricultural Sciences (SLU) to compile and develop Swedish competence in emission statistics relating to action programmes in the areas of air and water pollution, waste, and hazardous substances and chemicals. SMED has been supplying all of the data for Sweden's international reporting in these areas since 2006.

**THE SWEDISH NETWORK FOR TRANSPORT AND ENVIRONMENT (NTM)**. As a member of the network, IVL has worked in formal collaboration with NTM since 2009. The aim is to strengthen cooperation by placing IVL's expertise at the disposal of NTM's members and working groups.

**ENERO (EUROPEAN NETWORK OF ENVIRONMENTAL RESEARCH ORGANISATIONS)** is a grouping of European research institutes under the umbrella of the European Research Area (ERA). IVL is an active member and chaired ENERO in 2009.

**NORMAN** is a network of reference laboratories and research organisations involved in the screening of new, environmentally hazardous chemicals. Established in 2005 with support from the EU's Sixth Framework Programme, NORMAN is now a permanent network financed by its membership. IVL has been a 'founding member' since 2009.

**EURAQUA** is the European Network of Freshwater Research Organisations. IVL is the Swedish representative.

## Ratio of research projects to contracts

Revenue from fees during the year was divided between research projects and contracts in the ratio of 56 % to 44 % (compared with 53 % and 47 % respectively in 2009). In this context, research projects are projects funded jointly by the Swedish government and Swedish industry through the Foundation of the Swedish Environmental Research Institute (SIVL), as well as activities financed by grants from public research agencies, research institutes, the EU and similar bodies. Co-financed activities accounted for 19 % (16 %) of fee-based revenue and grant-aided activities for 37 % (37 %).

IVL's research is an integral part of the company's operations and is a prerequisite to its facility for undertaking assignments using leading-edge expertise.



Contracts undertaken by IVL include both short-term consultancy and analytical assignments, as well as more comprehensive national and international contracts of a research and development nature.

### **Assignments**

In 2010, IVL, in collaboration with the Swedish Export Council, was assigned by the Swedish government to assist with the reconstruction of the basic infrastructure in Iraq, and to help in expanding trade between the two countries. In concrete terms, this took the form of training programmes, working visits and meetings with companies. In the first stage, the focus was on building up a sustainable water production and wastewater treatment sector, the approach being to bring Iraqi decision-makers, engineers and researchers together with Swedish companies in the environmental and engineering fields.

In addition to contracts from business, IVL undertakes major assignments for the Swedish EPA. Among other things, the company is responsible for data collection as part of the national and international environmental monitoring programmes in atmospheric and precipitation chemistry, air quality in population centres, environmental toxin levels and metals in biological materials. IVL also maintains a screening database of environmental toxins and metals.

### **Current EU projects**

A large number of projects funded by the EU research framework programme was approved and initiated in 2010, together with projects financed through other EU organs, such as EU structural funds. The latter category includes RECO Baltic 21 Tech, which deals with sustainable waste management in the Baltic nations, and WEBAP, a project studying the feasibility of using wave power to oxygenate the seabed waters of the Baltic Sea.

Examples of research projects financed by the EU Seventh Framework Programme that were approved or initiated in 2010 include IRCOW, which is designed to achieve efficient material recovery from construction and demolition waste, Transphorm, which deals with the impact on health effects of transport-related air pollution, and GMOS (Global Mercury Observation System).

IVL is carrying out two major projects as part of the EU's Switch Asia aid programme. One of these, Train the Trainers, is designed to expand knowledge transfer in energy-efficient building between the EU and China.

At present, IVL is participating as coordinator or partner in over 30 EU projects, while applications have been submitted for about 20 more potential new projects.

### **Other current research programmes**

For the last couple of years, IVL has been leading four major research programmes financed by the Swedish EPA. These are SCARP (Swedish Clean Air Research Programme), Chemitecs (a study of the emission of organic substances from goods), Sustainable Waste Management and CLEO (Climate Change and Environmental Objectives), whose purpose is to study how future climate change will influence the prospect of achieving Swedish environmental goals.

AFA Insurance is financing several IVL projects dealing with work environment issues. In 2010, approval was granted for two major projects, one to study measures to reduce the problems associated with machining operations, and the other to develop concrete guidelines for reducing the number of sharp injuries in the hospital and health care sector.

IVL is leading two major research programmes – Clipore and Entwined – financed by the Swedish Foundation for Strategic Environmental Research (MISTRA). The aim of Clipore – which is now coming to a conclusion after six years – has been to promote the development of a more effective national and international climate policy. The purpose of Entwined, which will run until 2013, is to study the interaction between international environmental policies and global trade, with the focus on cross-boundary problems.

### **Co-financed research**

In 2010, the Foundation of the Swedish Environmental Research Institute (SIVL), as owner of the company and principal of IVL's co-financed activities, continued to develop the new forms of working and decision-making adopted in 2006. SIVL also took a decision to evaluate the operation on an ongoing basis and two of the six thematic areas were audited during the year (four areas were audited previously in 2008 and 2009).

Funding of SEK 30 million for co-financed research was available to SIVL in 2010 through the Swedish government's grants to the Swedish EPA and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas). Total funding for co-financed research consists of SEK 14 (13) million from Formas, SEK 15 (15) million from the Swedish EPA, SEK 17.2 (14.3) million from the Swedish business sector and SEK 12.9 (14.3) million from the EU. Additional finance of SEK 1 (2) million is provided by Formas for scientific publications.

Funding of SEK 34 million for co-financed research will be available to SIVL in 2011.

### **External audits**

An external audit of IVL's R&D activities in the thematic areas of Sustainable production and Sustainable building was carried out in autumn 2010. The audit was carried out in accordance with the criteria laid by the board; in other words, it was based primarily on beneficial considerations by evaluating how the research complies with generally accepted scientific criteria and on how the results have been communicated. The activities received a generally high rating from the inspectors and both audit groups identified IVL's ambitious aims in multidisciplinary research, LCA and system analysis as being a major strength. The groups also emphasised that IVL "should seek to retain its existing model of funding from the Swedish EPA and Formas since this ensures relevance. However, it should, if possible, be complemented by basic funding that guarantees a scientific basis, which is fundamental to the legitimacy and creativity of the operation".

### **Examples of co-financed research**

The following are examples of co-financed research projects approved and/or commenced in 2010 in the various thematic areas:

**CLIMATE AND ENERGY:** Climate and environmental strategies for concrete products 2010; Allocation and primary energy factors for waste and residual heat; Time aspect of biofuels.

**AIR AND TRANSPORT:** Management of system boundary definitions and allocations for international methods of calculating the environmental and climate impact of goods and passenger transport; Marine-related particle emissions; Particle emissions from buses.

**WATER:** Case studies of the impact of charges similar to the Swedish NOx charge for emissions of N and P to water; Anionic tensides in sediments in inner archipelagic waters; Simulation of remediation measures in Östhammar Fjord; Measures to combat soil acidification.

**RESOURCE-EFFICIENT PRODUCTS AND WASTE:** Road traffic infrastructure – a study including LCA and LCC; Environmental information from a customer perspective – a study of medical devices; Knowledge centre for renewable fuels – F3 FossilFreeFuels; Rockdrain – evaluation of tunnel drainage; Weight-based waste tariff – where does waste go?

**SUSTAINABLE BUILDING:** Common sectoral methods of implementing cost-effective LCA calculations with case studies; Dispersion models for calculating allergens; Evaluation of district heating in market-driven environmental assessment systems; Common data communications format for life-cycle information; Ecological adaptation of postwar building

**SUSTAINABLE PRODUCTION:** Optimisation of conditioned emulsions in rolling and machining operations; Reduced emissions of greenhouse gases from Swedish wastewater treatment and sludge spreading operations; Measures to reduce occupational injuries among women in industry; Measures to reduce exposure to carbon nanotubes in production.

### Environmental and quality management

IVL deals with environmental and quality issues within the framework of an integrated management system. The system, and its application by IVL, are certified under ISO environmental and quality management standards. Certification is reviewed annually and the system is re-certified periodically by an accredited inspection agency. IVL has achieved the latest levels, SS-EN ISO 14001:2004 (environmental management) and SS-EN ISO 9001:2008 (quality management).

Most of the company's work relating to sampling, field measurement and analysis is accredited and inspected regularly by SWEDAC (the national Swedish accreditation authority) in accordance with SS-EN ISO 17025.

Environmental and quality activities are governed by the company's environmental and quality policies, which are implemented in the form of both overall and specific goals. Customer advisory services and company travel are by far the most significant contributors to IVL's environmental footprint.

A new method of evaluating the environmental impact of major assignments (worth over SEK 500,000) was developed in 2009 and is currently being refined to reflect more clearly the positive environmental effects achieved on behalf of customers.

Use of the company's videoconferencing facilities continues to increase the number of meetings and discussions that are held without the need for travel, while the number of international video meetings is also growing successively. Compared with 2009, the environmental footprint of air travel by company personnel has been reduced by 19 %, with domestic air travel accounting for 9 %. However, domestic air travel where rail is an alternative increased somewhat (by 4 %), due mainly to rail travel problems caused by the severe winter.

IVL's quality activities have a customer relations focus. For this reason, activities are monitored continuously to ensure that customers are satisfied with the company's services. A survey is held annually to determine customer perceptions of IVL in terms, for example, of customer care, competence, on-time performance and cost benefit. The customer satisfaction index in 2010 was 3.8 (2009: 4.2).

#### *Greener IT with more efficient server systems*

Virtualisation of IVL's server environment was initiated in 2009 as a move to improve system reliability. A smaller number of physical computers not only lowers maintenance costs, but reduces total

energy usage, of which climate conditioning of the server rooms represents a significant proportion. The measures implemented in 2009 yielded a substantial energy saving of 57,000 kWh. Although further virtualisation was implemented in 2010, the resultant savings in energy were offset by an expansion of essential data storage systems.

In general, IVL seeks to minimise the overall environmental impact of its activities without compromising function or reliability. This also applies to IT, in which measures other than virtualisation include environmentally compatible processing and sorting of packaging, influencing suppliers and products at the purchasing stage, assessing suppliers on a regular basis, using state-of-the-art videoconferencing systems to increase the number of travel-free meetings, and adopting flexible working by means of remote control and communications hook-ups.

In a further move to establish a more efficient and uniform – if not necessarily greener – computer environment, the main IT platform was changed from a Novell environment to a Microsoft Windows environment in 2010.

### Net sales, net income and capital structure

#### *Group*

The group's net sales for the financial year totalled SEK 193,986 (2009: 204,452) thousand, yielding a net loss after financial items of SEK 3,233 (+5,401) thousand. The net loss after taxes was SEK 4,566 (3,764) thousand. The return on adjusted equity was negative (8.1 %), as was the return on capital employed (3.9 %). The loss reported by the group was due to the provision of SEK 7,674 thousand for value-added tax payable by the parent company.

Compared with the parent company, the considerably poorer after-tax results achieved by the group was due to the fact that changes in untaxed reserves are not credited to its profit and loss account, with the exception of a certain tax effect that reduces the group's tax liability.

The group's total assets fell to SEK 125,562 (143,125) thousand and its total equity capital to SEK 45,527 (50,079) thousand. Cash flow was negative at SEK 38,729 (+23,510) thousand.

Capital investment in inventories and equipment totalled SEK 3,296 (5,603) thousand. The equity/assets ratio improved to 36.3 (35.0) %.

#### *Parent company*

IVL's net sales for the financial year totalled SEK 193,022 (203,939) thousand, yielding a net loss after financial items of SEK 1,822 (+1,706) thousand. The net profit after taxes was SEK 125 (389) thousand.

The net loss after financial items is due to the allocation of SEK 7,674 thousand to meet the estimated net effect of non-deductible value-added tax for the years 2005-2008. Since no assessment of the amount due was received from the Swedish Tax Board (SKV) in 2010, this provision is not tax-deductible, resulting in higher tax expenses. The provision of a corresponding amount will have a positive effect on the company's tax expenses in 2011.

Total assets amounted to SEK 125,084 (143,004) thousand and total equity capital to SEK 30,642 (30,517) thousand. Adjusted equity capital was estimated at SEK 34,081 (37,576) thousand. Cash flow was negative at SEK 39,029 (+24,131) thousand. The return on adjusted equity was negative (3.4 %) as was the return on capital employed (1.3 %).

Capital investment in inventories and equipment totalled SEK 3,296 (5,595) thousand. The adjusted equity/assets ratio fell to 25 (26.3) %.

## Parent company employees

### Structure and personnel turnover

During the year, the number of employees averaged 176 (171), of whom 52 (51) % were men and 48 (49) % women. Of the workforce, 28 (27) % hold postgraduate degrees, while 64 (63) % hold masters degrees in engineering or other academic qualifications.

During the year, 8 (11) permanent employees left the company for other positions, while 2 (7) employees retired on pension. New recruitment totalled 20 persons in areas including sustainable building and the interior environment, energy systems, sustainable waste management, and administration.

### Equality and parity of treatment

IVL implements an overall policy and plan to ensure equality and parity of treatment. Developed by a representative group, this is implemented in the form of a yearly plan. Executive management, managers and employees must all work to ensure that our activities and corporate culture are characterised by a diversity perspective and by parity of treatment, contributing to IVL's credibility as an adviser on sustainability issues.

### Chargeability rate

The chargeability rate for the period was 66.1 (67.7) %. Chargeability rate is defined as the proportion of total attendance time that is invoiced to the customer. The remaining (in-house) time is devoted to marketing, training, technical maintenance, management and administration.

### Absences and holidays

During the year, total absences, including holidays, accounted for 23.5 (21.7) % of normal working time. Sick leave accounted for 1.9 (2.0) % and holiday time for 8.6 (9.3) %. Leave of absence accounted for 10.4 (7.5) %, of which 8.7 (6.6) % was parental leave. Normal working time is defined as working time including holiday time and overtime worked, less absences due to sick leave, sickness of a child, parental leave or other leave of absence, as well as compensatory leave. The same basis is used to calculate the average number of paid-up years in Note 5 Personnel costs.

### Special report on sick leave for period 1 January – 31 December 2010

Under the Swedish Annual Accounts Act, annual reports are required to contain information on employee sick leave. The figures must be stated as a percentage of the employees' total normal working time, and must also include details of continuous sick leave totalling 60 days or more (defined as long-term sick leave), figures for men and women, and sick leave in different age groups. In the following summary, sick leave is shown as a percentage of normal working time, less leave of absence and parental leave. The method of calculation is, therefore, different to that used above for absences and holidays.

Group	TOTAL SICK LEAVE as percentage of normal working time		LONG-TERM SICK LEAVE as percentage of normal working time	
	2010	2009	2010	2009
All employees	2.0	2.1	0.2	0.3
Women	1.9	2.2	0.2	0.4
Men	2.1	2.1	0.2	0.1
29 years or younger	1.9	2.0	0	0
30-49 years	2.0	2.4	0.2	0.3
50 years or older	2.1	1.7	0.3	0.3

### Other personnel information

Personnel turnover, %	2010	2009
Number of employees to resign as percentage of average work- force for year	4.5	6.4
– including pension	5.78	10.5

Age distribution, %	2010	2009
Age		
20–29	11	11
30–39	37	35
40–49	24	24
50–59	17	18
60–69	11	12

Average age: 42 (43) years

Key financial indicators per employee (figures in SEK thousand)	2010	2009
Sales, excl. expenses	974	1 168
Salaries	618	622
Net profit/loss after financial items	–10	10

Length of service, %	2010	2009
Length of service, years		
< 2 years	21	27
2–10 years	42	38
> 10 years	37	35
Average length of service: 10 (11) years		

Qualifications, %	2010	2009
PhD	24	22
Other research qualification	4	5
Graduate engineer	32	28
Other academic qualification	32	35
Technical high school qualification	8	10

# Summary of business and financial ratios

(figures in SEK thousand)

	GROUP					PARENT COMPANY				
	2010	2009	2008	2007	2006	2010	2009	2008	2007	2006
<b>Sales and profit/loss</b>										
Invoiced fees and expenses	193,986	204,542	196,261	162,561	175,170	193,022	203,939	195,483	162,347	175,071
Operating profit after depreciation	-3,322	5,338	5,539	1,292	572	-1,965	1,496	5,623	1,123	-1,105
Operating profit after financial items	-3,233	5,401	6,183	2,217	870	-1,822	1,706	6,253	2,047	-808
Profit margin	Neg.	2.6	3.2	1.4	0.5	Neg.	0.8	3.2	1.3	Neg.
<b>Capital structure</b>										
Fixed assets	14,233	16,636	16,936	15,149	15,008	14,837	17,225	17,514	15,732	15,519
Current assets	111,329	126,489	120,232	83,016	85,332	110,247	125,779	119,124	82,539	85,015
Equity	45,527	50,079	46,020	41,684	40,197	30,642	30,517	30,128	28,094	26,401
Untaxed reserves						4,666	9,578	8,602	5,556	6,032
Current liabilities	73,857	84,204	82,181	51,128	54,703	88,892	101,031	95,035	64,621	68,101
Provisions	6,178	8,842	8,967	5,353	5,440	884	1,878	2,873	-	-
Total assets	125,562	143,125	137,168	98,165	100,340	125,084	143,004	136,638	98,271	100,534
Adjusted equity						34,081	37,576	36,321	32,094	30,744
Equity, annual funds	47,803	48,050	43,852	40,941	40,027	35,828	36,949	34,208	31,419	31,143
Capital employed, annual funds	134,344	140,147	117,667	99,253	97,395	134,044	139,821	117,455	99,403	97,557
Equity/assets ratio, %	36.3	35.0	33.6	42.5	40.1	27.2	26.3	26.6	32.7	30.6
Current ratio	1.51	1.50	1.46	1.62	1.56	1.24	1.24	1.25	1.28	1.25
<b>Profitability</b>										
Return on adjusted equity, %	Neg.	8.1	10.2	3.9	1.6	Neg	3.4	13.2	4.7	Neg.
Return on capital employed, %	Neg.	3.9	5.1	2.3	1.1	Neg	1.3	6.0	2.1	Neg.
<b>Other</b>										
Capital expenditure	3,296	5,603	1,961	3,671	3,538	3,296	5,595	1,947	3,671	3,538
Invoiced sales per employee, incl. expenses	1,090	1,175	1,182	1,022	1,062	1,097	1,193	1,192	1,028	1,068
Invoiced sales per employee, fees and analyses	969	1,151	1,119	944	915	974	1,168	1,128	948	919
Chargeability rate, %	66.1	67.7	65.0	64.6	65.8	66.1	67.7	65.0	64.6	65.8
Number of employees	178	174	166	159	165	176	171	164	158	164
Personnel costs per employee	613	611	606	587	546	618	622	612	592	549

#### Adjusted equity

Total equity, plus untaxed reserves, less deduction of standard tax at 26.3 %.

#### Number of employees

The number of employees for the year expressed in terms of full-time positions. The actual number of employees is higher due to part-time working and the fact that some employees work only part of the year.

#### Chargeability rate

Time charged to client as a proportion of total work attendance.

#### Profit margin

Net profit after financial items as a percentage of net sales.

#### Current ratio

Current assets divided by current liabilities.

#### Return on capital employed

Profit after net financial items plus interest expenses in relation to average balance sheet total.

#### Equity/assets ratio

Adjusted equity in relation to balance sheet total.

#### Return on equity

Profit after net financial items and deduction of standard tax at 26.3 (28) % in relation to average adjusted equity.

# Proposed appropriation of profits (figures in SEK)

The following funds are available to the Annual General Meeting:

Profit carried forward	22,117,261
Profit for year	<u>125,103</u>
Total	22,242,364

The board and CEO propose that the total profit be distributed as follows:

To be carried forward	<u>22,242,364</u>
Total	22,242,364

See the income statement, balance sheet, cash flow statement, and notes to the financial statements and accounts for information on the results reported by the parent company and the group for the financial year, as well as the general financial position as of 31 December 2010. All figures are in SEK thousand.

# Income statement (figures in SEK thousand)

		GROUP		PARENT COMPANY	
		2010	2009	2010	2009
<b>Operating income</b>					
Net sales	Note 1	193,986	204,452	193,022	203,939
Change in work in progress	Note 2	4,849	-5,190	6,330	-8,926
Other operating income	Note 3	417	226	415	222
		<b>199,252</b>	<b>199,488</b>	<b>199,767</b>	<b>195,235</b>
<b>Operating expenses</b>					
Expenses		-36,159	-38,086	-36,159	-38,086
Other external expenses	Note 4	-41,995	-42,040	-41,399	-41,780
Personnel costs	Note 5	-111,881	-109,248	-111,650	-109,112
Depreciation of tangible and intangible fixed assets	Note 6	-4,865	-4,776	-4,850	-4,761
Other operating expenses	Note 7	-7,674	-	-7,674	-
		<b>-202,574</b>	<b>194,150</b>	<b>-201,732</b>	<b>-193,739</b>
		<b>-3,322</b>	<b>5,338</b>	<b>-1,965</b>	<b>1,496</b>
<b>Operating profit/loss</b>					
<b>Earnings from financial investments</b>					
Interest income	Note 8	188	219	185	212
Dividends from group companies				57	148
Interest expenses		-99	-156	-99	-150
		<b>-3,233</b>	<b>5,401</b>	<b>-1,822</b>	<b>1,706</b>
<b>Profit/loss after financial items</b>					
Appropriations	Note 9			4,912	-975
Tax on profit for year	Note 10	-1,333	-1,637	-2,965	-342
<b>NET PROFIT/LOSS</b>		<b>-4,566</b>	<b>3,764</b>	<b>125</b>	<b>389</b>

# Balance sheet (figures in SEK thousand)

		GROUP		PARENT COMPANY	
		2010	2009	2010	2009
<b>ASSETS</b>					
<b>Fixed assets</b>					
Intangible fixed assets	Note 11	1,342	2,004	1,342	2,004
Tangible fixed assets	Note 12	12,886	13,793	12,849	13,741
Financial assets	Note 13	5	839	646	1,480
<b>Total fixed assets</b>		<b>14,233</b>	<b>16,636</b>	<b>14,837</b>	<b>17,225</b>
<b>Current assets</b>					
<b>Current receivables</b>					
Accounts receivable, trade		47,649	32,816	47,619	32,748
Receivables from group companies		24,050	14,772	24,050	14,819
Income taxes recoverable		1,906	2,964	1,939	2,968
Other receivables		1,482	1,407	1,371	1,374
Prepaid expenses and accrued income	Note 14	5,249	4,870	5,249	4,870
<b>Total current receivables</b>		<b>80,336</b>	<b>56,829</b>	<b>80,228</b>	<b>56,779</b>
<b>Cash and bank balances</b>		<b>30,993</b>	<b>69,660</b>	<b>30,019</b>	<b>69,000</b>
<b>Total current assets</b>		<b>111,329</b>	<b>126,489</b>	<b>110,247</b>	<b>125,779</b>
<b>TOTAL ASSETS</b>		<b>125,562</b>	<b>143,125</b>	<b>125,084</b>	<b>143,004</b>
<b>Equity and liabilities</b>					
<b>Equity</b>					
Note 15					
<b>Restricted equity</b>					
Share capital (7,000 shares)		7,000	7,000	7,000	7,000
Restricted reserves		16,241	20,921	1,400	1,400
<b>Total restricted equity</b>		<b>23,241</b>	<b>27,921</b>	<b>8,400</b>	<b>8,400</b>
<b>Non-restricted equity</b>					
Non-restricted reserves		26,852	18,394	22,117	21,728
Profit/loss for year		-4,566	3,764	125	389
<b>Total non-restricted equity</b>		<b>22,286</b>	<b>22,158</b>	<b>22,242</b>	<b>22,117</b>
<b>TOTAL EQUITY</b>		<b>45,527</b>	<b>50,079</b>	<b>30,642</b>	<b>30,517</b>
<b>Provisions</b>	Note 16	<b>6,178</b>	<b>8,842</b>	<b>884</b>	<b>1,878</b>
<b>Untaxed reserves</b>	Note 9			<b>4,666</b>	<b>9,578</b>
<b>Current liabilities</b>					
Advance payments for work in progress	Note 2	29,709	49,636	45,111	66,519
Accounts payable, trade		16,107	10,271	15,958	10,273
Other liabilities		9,251	12,711	9,251	12,711
Accrued expenses and deferred income	Note 17	18,790	11,586	18,572	11,528
<b>Total current liabilities</b>		<b>73,857</b>	<b>84,204</b>	<b>88,892</b>	<b>101,031</b>
<b>TOTAL EQUITY AND LIABILITIES</b>		<b>125,562</b>	<b>143,125</b>	<b>125,084</b>	<b>143,004</b>
<b>MEMORANDUM ITEMS</b>					
Pledged assets	Note 18	5,958	6,991	5,958	6,991

## Cash flow statement (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	2010	2009	2010	2009
<b><i>Operating activities</i></b>				
Profit/loss after financial items	-3,233	5,401	-1,822	1,706
Adjustment for non-cash items	9,026	-75	10,521	-931
Income tax paid	-275	-3,792	-1,936	-2,537
<b>Cash flow from operating activities before changes in working capital</b>	<b>5,518</b>	<b>1,534</b>	<b>6,763</b>	<b>-1,762</b>
<b><i>Cash flow from changes in working capital</i></b>				
Increase/decrease in receivables	-24,186	20,246	-24,099	20,212
Increase/decrease in accounts payable, trade	5,836	-3,380	5,685	-3,173
Decrease in other liabilities	-3,460	-1,851	-3,460	-1,851
Increase/decrease in advance payments for work in progress	-19,927	11,441	-21,408	15,177
<b>Cash flow from operating activities</b>	<b>-36,219</b>	<b>27,990</b>	<b>-36,519</b>	<b>28,603</b>
<b><i>Investment activities</i></b>				
Purchase of property, plant and equipment	-3,296	-5,603	-3,296	-5,595
Change in financial assets	786	1,123	786	1,123
<b>Cash flow from investment activities</b>	<b>-2,510</b>	<b>-4,480</b>	<b>-2,510</b>	<b>-4,472</b>
<b><i>Financing activities</i></b>				
<b>Cash flow from financing activities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Cash flow for year</b>	<b>-38,729</b>	<b>23,510</b>	<b>-39,029</b>	<b>24,131</b>
<b>Opening cash and bank balances</b>	<b>69,660</b>	<b>45,852</b>	<b>69,000</b>	<b>44,868</b>
<b>Exchange rate difference in cash and cash equivalents</b>	<b>62</b>	<b>298</b>	<b>48</b>	<b>1</b>
<b>Closing cash and bank balances</b>	<b>30,993</b>	<b>69,660</b>	<b>30,019</b>	<b>69,000</b>



# Comments and notes to the accounts

## Parent company and ownership structure

IVL is a wholly-owned subsidiary of the Foundation of the Swedish Environmental Research Institute (SIVL), corporate identity number 802006-2611, whose head office is located in Stockholm. On conversion of the former Swedish Institute for Water and Air Pollution Research (IVL) into a limited company in 1982, the original share capital was allocated in equal proportions to the foundation by agreement between the Swedish government and the Swedish business sector. The aim of the foundation is to promote the long-term conditions required for environmental research and, through its ownership, guarantee the independent status of IVL. The foundation is responsible for the funds allocated by the Swedish government and the Swedish business sector for co-financed environmental research carried out by IVL. The foundation has a representative board of directors, half of whose members are appointed by the Swedish government and half by Swedish business. The chairman of the board is appointed by the government.

## Financing

The company's operations are financed by current cash flow and by an unused bank overdraft facility of SEK 5 million.

## Accounting and valuation principles

The accounts comply with the provisions of the Swedish Annual Accounts Act, the general rules of the Swedish Accounting Standards Board and the applicable recommendations of the Swedish Financial Accounting Standards Council. The accounting principles are unchanged from the previous year.

## Consolidated accounts

The consolidated accounts have been prepared in accordance with Recommendation RR 14, Joint Ventures, of the Swedish Financial Accounting Standards Council. Consolidation of the associated companies, Sino-Swedish (Tianjin) Environmental Technology Development Co. Ltd. and BASTAonline AB (in which IVL has a 60 % holding), has been carried out using the proportional method.

The annual accounts of the associated company have been converted using the current method, which means that the balance sheet assets and liabilities have been converted at closing day rates. The income statement has been converted at the average rate for the year. Conversion differences do not affect the consolidated accounts, but are allocated directly to equity.

The untaxed reserves shown in the consolidated accounts are divided into restricted equity, equivalent to 73.7 % of the Group's untaxed reserves, and deferred tax liability, equivalent to 26.3 % of untaxed reserves. In the consolidated accounts, the tax reserve element of uninvoiced research and consultancy assignments has been valued at the quoted price, and allocated in corresponding manner to equity and deferred tax (in accordance with the accounting principle described under 'Work in progress' below).

## Associated companies

Associated company shareholdings are not reported in the consolidated accounts in view of their relatively modest levels (also see Note 12).

## Work in progress, parent company

Work in progress is defined as uninvoiced research and consultancy services carried out on a current-account or a fixed-price basis.

Under Swedish taxation law, fixed-price contracts shall be valued at the lower of the accrued direct and indirect costs, less any advance payments received from clients, providing scope for the creation of a reserve in respect of work in progress.

Fixed-price work in progress is valued at the lower of the production cost and invoicing value. The production cost has been calculated using a prudent valuation; in other words, by applying a value above a minimum permissible fiscal value and below a maximum value, in accordance with good accounting practice.

Work in progress on a current-account basis is valued at the invoicing value.

In grant-aided projects in which IVL is a contract partner of the research financier and disburses project funds to other project participants, the funds in question are not reported as sales revenue, but are entered directly in the balance sheet under 'Advance payments for work in progress'. This means that the funds received and then disbursed to partners are reduced by an amount corresponding to invoicing and outlay costs.

# Notes

## Note 1 NET SALES (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	2010	2009	2010	2009
<i>Net sales are divided between:</i>				
Invoiced fees and analyses	172,454	200,255	171,490	199,742
Invoiced expenses	21,532	4,197	21,532	4,197
<b>Total net sales</b>	<b>193,986</b>	<b>204,452</b>	<b>193,022</b>	<b>203,939</b>

Of the net sales for the year, 25.7 (20.3) % consists of amounts invoiced to the parent company as remuneration for co-financed research performed by the company on a contract basis.

## Note 2 ADVANCE PAYMENTS FOR WORK IN PROGRESS (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
Assignment costs	457,404	487,861	442,002	470,978
Invoiced in advance	-487,113	-537,497	-487,113	-537,497
<b>Book value</b>	<b>29,709</b>	<b>49,636</b>	<b>45,111</b>	<b>66,519</b>
Change reported in income statement	-4,849	5,190	-6,330	8,926
balance statement	-15,078	6,251	-15,078	6,251
<b>Total change for year</b>	<b>-19,927</b>	<b>11,441</b>	<b>-21,408</b>	<b>15,177</b>

## Note 3 OTHER OPERATING INCOME (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	2010	2009	2010	2009
Other	417	226	415	222
<b>Total other income</b>	<b>417</b>	<b>226</b>	<b>415</b>	<b>222</b>

## Note 4 OTHER EXTERNAL COSTS (FIGURES IN SEK THOUSAND)

### GROUP AND PARENT COMPANY

The item includes audit fees of SEK 336 (216) thousand paid to the company's auditor and SEK 2 (0) thousand to other group auditors.

Charges for financial leasing agreements in 2009 amounted to SEK 14 611(15 322) thousand. The charges shown include rental contracts for premises, company cars, computers and certain office equipment. Leasing charges for these agreements in future years are allocated as follows:

	2011	2012	2013	2014	2015
Leasing charges, other	2,045	1,209			
Premises	12,300	12,500	12,700	12,900	13,100
<b>Total</b>	<b>14,345</b>	<b>13,709</b>	<b>12,700</b>	<b>12,900</b>	<b>13,100</b>

## Note 5 PERSONNEL COSTS

Salaries and other remuneration (figures in SEK thousand)

Parent company	2010		2009	
	Salaries and other remuneration	Payroll overheads (of which pension costs)	Salaries and other remuneration	Payroll overheads (of which pension costs)
Board and CEO	2,007	1,329	2,044	1,280
		(562)		(604)
Other employees	71,184	34,584	70,387	33,549
		(10,062)		(9,199)
<b>Total</b>	<b>73,191</b>	<b>35,913</b>	<b>72,431</b>	<b>34,829</b>
		(10,624)		(9,803)

### Group

The group also pays the salaries of the CEO of the joint-venture company, amounting to SEK 95 (97) thousand, and other permanent employees amounting to SEK 135 (39) thousand.

The average number of employees<sup>1)</sup> for the year was as follows:

Parent company	2010			2009		
	Men	Women	Total	Men	Women	Total
Stockholm	58	38	96	57	40	98
Göteborg	31	46	77	29	44	73
Beijing	2	1	3		1	1
<b>Total</b>	<b>91</b>	<b>85</b>	<b>176</b>	<b>86</b>	<b>85</b>	<b>171</b>

<sup>1)</sup> defined as full-time, salaried employees

Number of employees in company management group (of which executive management):

	2010	2009
Men	5 (5)	11 (6)
Women	6 (0)	6 (0)

### Group

The group has 2 (2) additional employees, including one man in an executive management position.

## Management

### Parent company

In accordance with the decision of Annual General Meeting, a total of SEK 319 (357) thousand was paid in fees to members of the board. Of this amount, the chairman of the board received SEK 55 (55) thousand.

The position of CEO of the parent company is subject to a period of notice of 12 months by the company, as well as a severance payment equivalent to 12 times the incumbent's fixed monthly salary. Should the position or responsibilities of the CEO be altered as a result of significant changes in the company's operations, or by a change in ownership structure affecting the majority of company shares, the CEO shall be entitled to resign subject to notice of six months and to receive a severance payment equivalent to 18 times his or her fixed monthly salary.

The CEO shall be entitled to a pension from the age of 62. The CEO's pension is of the defined contribution type and an amount equivalent to 35 % of salary for the particular year, including the benefit of a company car, is allocated annually for this purpose. If the pension is taken after age 62, old-age pension contributions shall be paid in full as though the CEO had continued to work until age 65.

### Group

The CEO of the joint venture company is employed on a full-time basis for one year from 1 July 2010. Other than a statutory pension, no pension entitlement applies.

## Note 6 DEPRECIATION OF TANGIBLE AND INTANGIBLE FIXED ASSETS (FIGURES IN SEK THOUSAND)

### Group and parent company

Depreciation according to plan of fixtures and equipment is applied annually at a rate of 10 to 20 % of the acquisition value, from the date of acquisition by the parent company during the year.

Depreciation according to plan of fixtures and equipment is applied on the basis of the remaining economic life of the asset, in accordance with a valuation developed for the international joint venture.

Depreciation according to plan of capitalised expenditure for software development is applied annually at a rate of 20 to 33.3 % of the acquisition value, from the date of completion during the year.

Depreciation of business goodwill is applied at 20 % of the acquisition value. The need for depreciation is assessed on the basis of the current value of future surpluses.

## Note 7 OTHER OPERATING EXPENSES GROUP AND PARENT COMPANY

The amount of SEK 7,674 (0) thousand is the estimated and allocated net cost of non-deductible value-added tax for the years 2005 to 2008. Since no assessment was received from SKV in 2010, the amount is a non-deductible item that also increases the company's tax expenses by 26.3 % of the amount.

## Note 8 INTEREST INCOME AND EXPENSES GROUP AND PARENT COMPANY

The item includes accrued bank interest of SEK 168 (203) thousand. Of the interest expenses for the parent company, SEK 32 (28) thousand relates to group companies.

## Note 9 APPROPRIATIONS AND UNTAXED RESERVES (FIGURES IN SEK THOUSAND)

	PARENT COMPANY	
	31 Dec 2010	31 Dec 2009
<b>Opening untaxed reserves</b>	9,578	8,603
Accumulated depreciation above plan	-1,242	560
Change in tax allocation reserve	-3,670	415
<b>Total appropriations</b>	-4,912	975
<b>Closing untaxed reserves</b>	4,666	9,578
<b>of which deferred tax at 26.3 %</b>	1,227	2,519

## Note 10 TAX ON PROFIT FOR YEAR (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	2010	2009	2010	2009
<b>Estimate of effective tax rate</b>				
<b>Profit/loss before tax</b>	-3,233	5,401	3,090	731
Tax at current tax rate of 26.3 %	-850	1,420	813	192
Non-taxable income	-46	-2	-46	-41
Non-deductible expenses	2,174	189	2,174	189
Tax from previous year	-1	-	-1	2
Current tax expenses, international	50	54	25	-
Deferred tax	6	-24	-	-
<b>Effective tax</b>	1,333	1,637	2,965	342
<b>Effective tax rate, %</b>	-	30.0	95.9	47.0

## Note 11 INTANGIBLE FIXED ASSETS (FIGURES IN SEK THOUSAND)

	DEVELOPMENT COSTS		GOODWILL	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
<b>Opening acquisition value</b>	1,277	1,277	1,800	1,800
Acquisitions for year	-	-	-	-
<b>Closing accumulated acquisition value</b>	1,277	1,277	1,800	1,800
Opening depreciation	-503	-201	-570	-210
Depreciation for year	-302	-302	-360	-360
<b>Closing accumulated depreciation</b>	-805	-503	-930	-570
<b>Closing residual value according to plan</b>	472	774	870	1,230

## Note 12 TANGIBLE FIXED ASSETS (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
Opening acquisition value	79,176	73,587	78,994	73,399
Purchases for year	3,296	5,603	3,296	5,595
Exchange rate differential/scrapped equipment	-	-14	-	-
Closing accumulated acquisition value	82,472	79,176	82,290	78,994
Opening depreciation	-65,383	-61,279	-65,253	-61,154
Exchange rate differential/scrapped equipment	-	10	-	-
Depreciation for year	-4,203	-4,114	-4,188	-4,099
Closing accumulated depreciation	-69,586	-65,383	69,441	-65,253
Closing residual value according to plan	12,886	13,793	12,849	13,741

## Note 13 FINANCIAL ASSETS

### Shares and holdings

Company	GROUP			PARENT COMPANY	
	Number	Holding, %	Booked	Nominal	Booked
IVL Swedish Environmental Research Institute foundation for staff training	1		5	5	5
BASTAonline AB	600	60	-	60	60
Sino-Swedish (Tianjin) Environmental Technology Development Co. Ltd	1	50	-	581	581
<b>Total</b>			5	646	646

### Associated companies

United Competence Sweden Ltd., corporate identity number 556622-8663, is headquartered in Gothenburg. The shares in the company were disposed of at a loss of SEK 8,000 in 2010.

### Endowment insurance

	GROUP		PARENT COMPANY	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
Opening book value	794	1,917	794	1,917
Acquisition value				
Change in value	164	73	164	73
Current portion	-958	-1,196	-958	-1,196
Closing book value	-	794	-	794

## Note 14 PREPAID EXPENSES AND ACCRUED INCOME (FIGURES IN SEK THOUSAND) GROUP AND PARENT COMPANY

Totalling SEK 5,249 (4,870) thousand, this item consists of prepaid rentals for offices and premises amounting to SEK 3,088 (2,994) thousand, and other prepaid expenses amounting to SEK 2,161 (1,876) thousand.

## Note 15 EQUITY (FIGURES IN SEK THOUSAND)

Group	Share capital	Statutory reserves	Non-restricted reserves	Profit/loss for year	Total
Opening balance	7,000	20,921	18,394	3,764	50,079
Appropriation per AGM			3,764	-3,764	0
Transfer between restricted and non-restricted equity		-4,671	4,671		0
Translation difference		-9	23		14
Profit/loss for year				-4,566	-4,566
Closing balance	7,000	16,241	26,852	-4,566	45,527

	Share capital	Statutory reserves	Profit/loss brought forward	Profit/loss for year	Total
Opening balance	7,000	1,400	21,728	389	30,517
Appropriation per AGM			389	-389	0
Profit/loss for year				125	125
Closing balance	7,000	1,400	22,117	125	30,642

## Note 16 PROVISIONS (FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
Deferred tax	5,294	6,964	-	-
Pension provisions	884	1,878	884	1,878
Year-end total	6,178	8,842	884	1,878

**Note 17** ACCRUED EXPENSES AND DEFERRED INCOME  
(FIGURES IN SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2010	31 Dec 2009	31 Dec 2010	31 Dec 2009
Holiday and overtime liabilities	5,573	5,214	5,573	5,214
Accrued payroll overheads	4,306	2,301	4,306	2,301
Other accrued expenses	1,237	1,757	1,019	1,699
Provision for VAT arrears, 2005-2008	7,674	–	7,674	–
<b>Year-end total</b>	<b>18,790</b>	<b>9,272</b>	<b>18,572</b>	<b>9,214</b>

**Note 18** PLEDGED ASSETS AND CONTINGENT LIABILITIES (FIGURES IN SEK THOUSAND) GROUP AND PARENT COMPANY

	31 Dec 2010	31 Dec 2009
<b>Pledged assets</b>		
Floating charges	5,000	5,000
Pledged endowment insurance	958	1,991
<b>Total</b>	<b>5,958</b>	<b>6,991</b>

Stockholm, 25 May 2011

Annika Helker Lundström  
*Chairperson of the Board*

Lars-Göran Bergquist

Peter Nygårds

Christer Forsgren

Camilla Hällinder Ehrencrona  
*Staff representative*

Gunilla Saltin

Kerstin Cederlöf

Birgitta Palmberger

Kurt Palmgren

Mark Sanctuary  
*Staff representative*

Tord Svedberg  
*CEO*

Our auditor's report was submitted on 9 June 2011.  
Rödl & Partner Nordic AB

Ulf H Davéus  
*Authorised Public Accountant*

# Auditor's report

To the Annual General Meeting of IVL Swedish Environmental Research Institute Ltd.  
Corporate identity number 556116-2446:

We have audited the annual accounts, consolidated accounts and accounting records of IVL Swedish Environmental Research Institute Ltd., as well as the administration of the company by the board and CEO, for the financial year 2010. The board and CEO are responsible for the accounts and administration of the company, and for ensuring that the annual accounts are prepared in compliance with the Swedish Annual Accounts Act. Our responsibility is to express an opinion on the annual accounts and administration of the company on the basis of our audit.

The audit was conducted in accordance with accepted auditing practice in Sweden. This means that we have planned and performed the audit to ensure, with high, although not absolute certainty, that the annual accounts are free of material inaccuracies. An audit includes the examination of a selection of the account documents in respect of the amounts and other information given in the accounts. An audit also includes the assessment of the accounting principles used and their application by the board of directors and CEO, as well as an assessment of the significant estimates made by them in preparing the annual accounts and consolidated accounts, in addition to evaluation of the overall information presented in the annual report. As a basis for our opinion concerning discharge from liability, we have examined significant decisions, actions taken and the circumstances of the company in order to determine the liability for damages to the company, if any, of any board member or the CEO. We have also examined whether any board member or the CEO has, in any other way, acted in contravention of the Swedish Companies Act, the Swedish Annual Accounts Act or the company's articles of association. We believe that our audit provides a reasonable basis for our opinions as set out below.

The annual accounts and consolidated accounts have been prepared in accordance with the Swedish Annual Accounts Act, and give a truthful view of the company's financial performance and position in accordance with accepted accounting practice in Sweden. The directors' report is consistent with the other parts of the annual report.

We recommend that the Annual General Meeting confirm the income statements and balance sheets of the parent company and the group, allocate the profit of the parent company in accordance with the proposal made in the annual accounts, and discharge the members of the board of directors and the CEO from liability for the financial year.

Stockholm, 9 June 2011  
Rödl & Partner Nordic AB

Ulf H Davéus  
*Authorised Public Accountant*

# Corporate governance

Corporate governance in IVL Swedish Environmental Research Institute is founded on Swedish law and best practice, taking account of the Swedish Code of Corporate Governance. The code is not implemented fully since it is directed mainly at publicly quoted companies and companies with spread ownership.

## **Owners**

IVL Swedish Environmental Research Institute has been wholly owned by the Foundation of the Swedish Environmental Research Institute (SIVL) since 2004. On conversion of the former Swedish Institute for Water and Air Pollution Research (IVL) into a limited company in 1982, the original share capital was allocated in equal proportions to the foundation by agreement between the Swedish government and the Swedish business sector.

The aim of the foundation is to promote the long-term conditions required for environmental research and, through its ownership, guarantee the independent status of IVL. The foundation is responsible for the funds allocated by the Swedish government and the Swedish business sector for co-financed environmental research carried out by IVL.

The foundation has a representative board of directors, of whom the chairman and six members are appointed by the Swedish government and seven members by Swedish business. The chairman of the board has a casting vote.

## **Annual General Meeting**

The Annual General Meeting of IVL is usually held at the end of May. Members are notified of the AGM by post. The owner, SIVL, is represented at the AGM by its chairman.

Annika Helker Lundström was appointed chairperson of the board of IVL, in succession to Kjell Jansson, at the AGM held in June 2010. Other board members were re-elected.

## **Nomination procedure**

SIVL is the sole owner of IVL and proposes members to the board of IVL, partly by inviting nominations from business interests for four ordinary members and one deputy member, and partly by inviting nominations from government for the position of chairman, together with three government-appointed ordinary members and one deputy member.

The board of IVL shall comprise at least four and no more than eight ordinary members, together with at least one and no more than two deputy members. In addition, the staff shall be entitled to appoint two ordinary and two deputy members.

The members of the board of IVL are presented on page 41.

## **Board activities in 2010**

The board is responsible, under the Swedish Companies Act and its articles of association, for the organisation and administration of the company. Every year, the board draws up rules of procedure together with a working instruction for the CEO governing the allocation of work between the board and the CEO.

In 2010, under the rules of procedure, the board held four ordinary meetings in addition to the June post-election meeting. As usual, the ordinary board meetings were held in conjunction with the announcement of the company's interim or annual results.

In addition, an extra board meeting was held in September to discuss IVL's long-term strategy and research orientation.

Among other things, the June AGM adopted new rules of procedure for the board and a working instruction for the CEO. Topics discussed at the December meeting included the company's budget for 2011, its goals and vision document, as well as business development and communication.

## **Remuneration committee**

Under the rules of procedure for the board of IVL Swedish Environmental Research Institute, the board is charged with appointing a remuneration committee to deal with issues relating to employment and salary conditions. The committee proposes salaries, other forms of remuneration and other conditions of employment for the CEO, which are then ratified by the board. The corresponding conditions for other members of the company's executive management are proposed by the CEO and ratified by the remuneration committee. The company does not operate an incentive scheme.

## **Board remuneration**

The remuneration of the chairman and board members was determined by the 2010 AGM, which approved the payment of SEK 55 (55) thousand to the chair and a total of SEK 319 (357) thousand to the board members. Staff representatives on the board do not receive remuneration.

## **External audit**

The task of the auditors is, on behalf of the owners, to carry out an independent audit of the administration of the chair of the board and the CEO, as well as the annual accounts and financial statements.

Rödl & Partner, with Ulf Davéus as chief auditor, were appointed as auditors for the period up to the 2014 AGM. An authorised public accountant, Ulf Davéus has been responsible for IVL's financial audits since 1994.

## **Company management**

The CEO is responsible for the ongoing administration of the company in accordance with the guidelines and other instructions of the board. The CEO's working instruction was adopted on 2 June 2010 in conjunction with the board's post-election meeting.

The company's executive management group is comprised of the CEO, two executive vice presidents, the CFO and the Vice President, Research. The management group includes four unit heads, with the Director of Human Resources, Information Director, and Director of Quality and Environment as adjunct members.

Tord Svedberg, born 1958, MSc in chemistry from KTH, 1983, has been CEO of IVL Swedish Environmental Research Institute since 2008. Prior to that, he held various top management positions at

Pharmacia (1984-1990), Astra (1990-1999) and AstraZeneca (1990-2007), including head of manufacturing in Sweden and member of group management. Member of the Royal Swedish Academy of Engineering Sciences, and member of the boards of Unimedica AB (since 2008) and Galilaeus Oy (since 2010).

Mats Ridner, born 1955, BSc in economics, Stockholm School of Economics, has been CFO since 1994.

Åke Iverfeldt, born 1954, doctorate in chemistry from Gothenburg University, 1986, is executive vice president and head of the Business Development & Marketing unit. Has been with the company since 1985 with the exception of a break from 1992 to 1993, when he worked as a section head at Stockholm County Council.

Östen Ekengren, born 1952, MSc in chemistry from KTH, 1978, is executive vice president and head of the Business Development & Marketing unit. Joined the company in 1978.

John Munthe, born 1960, doctorate in chemistry from Gothenburg University, 1992, has been Vice President, Research since 2010. Joined the company in 1992 and has been a department head since 1994.

The unit heads, CFO and Vice President, Research report to the CEO.

The executive management group is supported by finance, HR, communication and business development staff functions, as well as quality and environmental management systems.

### **Internal controls**

IVL's operational and management system forms the basis of the company's internal control procedures, and also comprises the company's integrated quality and environmental management systems, which are certified under ISO 9001 and ISO 14 001 respectively. The management system is focused on the core activity of 'offering/selling and carrying out research and contract assignments in the environmental sector', and includes guideline documents, routines and tools relating to all company processes. Internal control of financial reporting is provided by the control environment, including the organisation, decision paths, authorities and responsibilities that are documented and communicated in guideline documents. All guideline documents, routines and tools are available on the company intranet.

Every year, the board draws up rules of procedure that govern the allocation of responsibilities between the board and the CEO, as well as financial reporting to the board. The board is provided with financial reports at every meeting. These contain outturn and budget figures for the period, including comparison with the corresponding period the previous year, as well as details of orders in hand, investments and a number of key performance indicators.

### **Risk analysis and management**

The management system also includes procedures and a methodology for annual risk analyses relating to everything from financial risks and conditions, IT security, business climate factors and customer relations to competence losses and risks associated with image and brand. Risk analyses are accompanied by action plans. The management system is subject to a biannual internal audit, and to continuous monitoring by an independent quality and environmental inspector.



# Board of directors



**ANNIKA HELKER LUNDSTRÖM**  
CHAIRPERSON  
Member since 2010  
CEO, Swedish Windenergy



**LARS-GÖRAN BERGQUIST**  
Member since 2000  
Chair of SIVL



**KERSTIN CEDERLÖF**  
Member since 2004  
Director, Swedish  
Environmental  
Protection Agency



**PETER NYGÅRDS**  
Member since 2008  
Director, Swedbank



**BIRGITTA PALMBERGER**  
Member since 2005  
Department head  
Swedish Energy Agency



**CHRISTER FORSGREN**  
Member since 2008  
Director, Stena Metall



**KURT PALMGREN**  
Member since 2003  
Director



**GUNILLA SALTIN**  
Member since 2010  
CEO, Södra Cell



**CAMILLA HÄLLINDER  
EHRENKRONA**  
Member since 2005  
Staff representative



**MARK SANCTUARY**  
Member since 2008  
Staff representative

## Deputy members

LARS EKECRANTZ, MINISTRY OF THE ENVIRONMENT  
JOHAN STRANDBERG, STAFF REPRESENTATIVE  
HÅKAN STRIPPLE, STAFF REPRESENTATIVE

# Management



*The executive management group as of 1 February 2010:*

*Standing, from left: Eva Bingel, Östen Ekengren, Karin Sjöberg, Elin Eriksson, Britt Björnsput, Tord Svedberg and Åke Iverfeldt.  
Seated, from left: John Munthe, Anna Jarnehammar, Anna Jöborn and Mats Ridner.*

## **Executive management group**

**TORD SVEDBERG** – President & CEO

**ÖSTEN EKENGREN** – Executive Vice President, Business Development & Marketing

**ÅKE IVERFELDT** – Executive Vice President, Business Development & Marketing

**MATS RIDNER** – CFO

**JOHN MUNTHE** – Vice President, Research

**ELIN ERIKSSON** – Director, Sustainable Organisations, Products & Processes

**ANNA JARNEHAMMAR** – Director, Climate & Sustainable Cities

**ANNA JÖBORN** – Director, Natural Resources & Environmental Effects

**KARIN SJÖBERG** – Director, Air Pollution & Abatement Strategies

## *Adjunct members*

**EVA BINGEL** – Information Director

**BRITT BJÖRNSPUT** – Director, Human Resources

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**Stockholm**

PO Box 210 60  
SE-100 31 Stockholm  
Sweden  
Visiting address:  
Valhallavägen 81  
Tel. +46 8 598 563 00  
Fax +46 8 598 563 90

**Gothenburg**

PO Box 5302  
SE-400 14 Gothenburg  
Sweden  
Visiting address:  
Aschebergsgatan 44  
Tel. +46 31 725 62 00  
Fax +46 31 725 62 90

**Malmö**

Nordenskiöldsgatan 17  
SE-211 17 Malmö  
Sweden  
Tel. +46 8 598 563 00

**Peking**

Room 609, 6F, CYTS Plaza  
No. 5 Dongzhimen Nandajie  
Dongcheng District  
Beijing  
China  
Tel. +86 138 1090 7007