

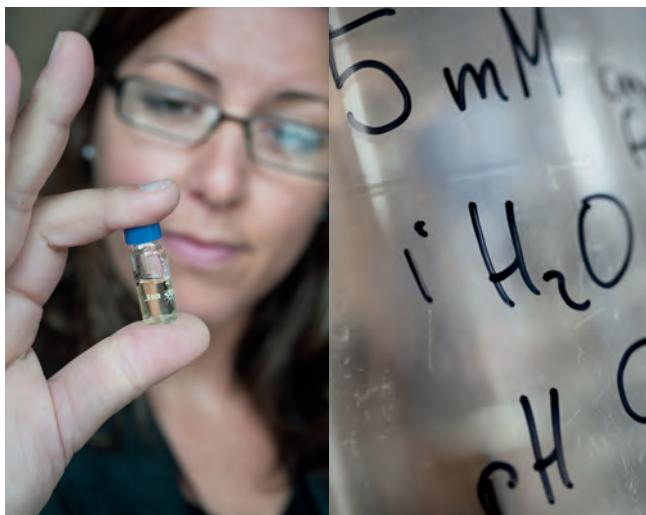
ANNUAL REPORT  
2008



## The year in brief

- Net turnover increased by more than 20% and was the highest in the company's history at SEK 195,5 million (2007: SEK 162,3 million).
- Profits for the year increased by 64% to SEK 4,2 million (SEK 1,5 million).
- The number of employees increased during the year, totalling 179 (165) at year's end.
- Tord Svedberg became President & CEO of IVL Swedish Environmental Research Institute in May in succession to Björn Lundberg, who retired on pension after 20 years in the position. Tord Svedberg joined the company from AstraZeneca, where he was a member of executive management.
- On 1 June, IVL reinforced its expertise in the indoor environment field by taking over the operations of Aimex – one of Sweden's leading companies in the investigation of damage caused by damp and mould. New recruitment was also undertaken to strengthen this area.
- During the year, IVL expanded and strengthened its expertise in the climate area. Among other things, this included the recruitment of vulnerability analysts and sociologists to facilitate additional work on risk and climate adaptation issues.
- During the year, IVL merged with the Swedish Network for Transport and the Environment (NTM), and received funding from Vinnova to develop the tool of the future for analysing the environmental impact of goods transport. The intention is to make this an international standard.
- IVL's Martin Erlandsson received the Innovation of the Year 2007 award from the Development Fund of the Swedish Construction Industry (SBUF) for the Anavitor project – an industry-wide method of evaluating the environmental impact of buildings.
- IVL demonstrated a successful optimisation solution for the process industry at the Process Engineering Fair held in Göteborg in September 2008. In two weeks, the system – which can also be used in other applications – yielded a 14% gain in an oil fraction at the Nynas AB refinery, with a saving of SEK 850,000.
- One of the more spectacular projects undertaken in 2008 concerned the development of the S'wash – the sustainable domestic washing machine of tomorrow – for which IVL and a consortium of research and industrial stakeholders have received funding from the Swedish Foundation for Strategic Environmental Research (MISTRA).

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## *IVL – a constantly* **evolving organisation**

When IVL Swedish Environmental Research Institute began work on what was then known as 'Clean Tech', the field was not known as environmental technology – just technology. Since then, the operation has grown, and we are now Sweden's leading organisation in applied research in the climate, energy, environment and sustainable growth areas.

The term 'applied' is important to us. Unlike many other parties in the ongoing debate regarding climate, energy and environment issues, our goal is to develop concrete results that will provide our principals with concrete benefits.

Our aim is to bridge the 'no-man's land' that exists between the conception of an idea by a company, organisation or university and its realisation as a commercially viable product. This is facilitated by our proximity to research-intensive environments at the KTH and CTH campuses in Stockholm and Göteborg respectively.

An example of applied research and bridgebuilding is provided by Hammarby Sjöstadsverk, which is located on the Henriksdalsberg heights in Stockholm. Owned by a consortium comprised of IVL and KTH, the facility is the site of Sweden's leading R&D programmes in wastewater treatment technology – a location where researchers, local authority effluent treatment specialists and industrial experts can collaborate in making existing technology more efficient and developing new, sustainable methods.

IVL is known as a 'both and' rather than an 'either or' organisation. By this, I mean that we are involved in both research and contract assignments that provide both business life and the community with added value. Many of our assignments take the form of current problems in the environmental area for which we both develop and apply solutions.

The Research and Innovation Bill (2008/09:50) currently before the Swedish parliament states that the government considers that the form of ownership and structure of IVL are appropriate to its purpose, and should not be changed if this should be disadvantageous to the operation. Since we are owned equally by the Swedish government and business sector, the 'both and' theme is also embodied in our ownership structure.

IVL's unique form of ownership has been a contributory factor to the decisive role that it has played – and continues to play – in ensuring that Sweden, as a nation, occupies a position of leadership in the environmental field. For this reason, we are gratified that the Research and Innovation Bill refers to this in positive terms. It is obvious that IVL's joint ownership by government and business has, over the years, helped to make it a trusted partner of both, and has provided a neutral arena in which all stakeholders can come together and benefit from applied environmental research.

Our form of ownership has also contributed to satisfactory profitability despite the fact that, unlike most other research institutes, we have not been a beneficiary of support in the form of strategic competence development funding.

The ongoing development of IVL must be encouraged and not inhibited. The challenges that exist in the climate, environment and energy areas within both the government/county council/local authority and business sectors are complex and changing constantly.

To help to meet these challenges in the best possible manner, it is very important that IVL retains the special characteristics that distinguish it from other institutes – our pan-industrial reach and our capacity to deal with environmental issues from a holistic perspective at both system level and a concrete, applied level. At present, climate is a live issue in practically every sector and area. This is one of the reasons that we have broadened and strengthened our resources in the climate area through a number of strategic new appointments. In addition, we have initiated research cooperation with the Swedish Geotechnical Institute (SGI) and the Swedish Meteorological and Hydrological Institute (SMHI) in the area of climate adaptation.

A significant number of today's problems and challenges in the climate, energy and environmental area call for global solutions, and the creation of opportunities for exporting leading-edge technologies developed in Sweden. IVL

has long been a contributor to the export of Swedish environmental technology, and we now have a presence in countries such as India and China, in which we are collaborating with companies, institutes and organisations.

In India, activities during the year included a project entitled *Capacity Building on Cleaner Production* dealing with knowledge exchange in the Hyderabad region. Also in India, we have recently initiated cooperation with the EU and Eurochambers within the European Business and Technology Centre (EBTC).

Since 2002, we have been operating a joint-venture environment technology company in Tianjin, China in partnership with a Chinese research institute. This collaboration has now begun to bear fruit in the form of a number of concrete projects and positive economic results.

Activities in China grew significantly in 2008 and we opened a local office in Beijing adjacent to the offices of the Swedish Trade Council. We are leading and/or participating in a number of major EU projects in China, one of which is designed to reinforce Chinese national and regional sustainable development programmes. This also includes the establishment of a platform for climate cooperation between the EU and China.

On 1 June, IVL took over the operations of Aimex – one of Sweden's leading companies in the investigation of damage caused by damp and mould. The acquisition represents a strengthening of our expertise in the area and is yet another indication of IVL's intention to become a key player in the area of sustainable building.

During the second half of the year, the company undertook the task of developing the main elements of a new operational management system. Apart from a strategic overview

IVL is known as a  
**'both and'** rather than an  
**'either or'** organisation

of IVL's operations, this involved the development of the company's mission, vision and goals. These were adopted by the board at its meeting in December, and operations will now be managed and followed up on a regular basis. Work on the development of IVL's value system, which was commenced during the first half of the year, will continue in 2009.

Our financial results in 2008 were very satisfactory and were the best recorded since the company's foundation over 40 years ago. At the same time, developments among many of our customers and in our business environment have made it very difficult to make a meaningful prognosis for the outturn in 2009. Analysis of the trend in the various industries in the business sector is under way in parallel with our assessment of what will be a realistic outcome of the applications that have been, or will be, submitted to national research bodies, research foundations, the EU and similar agencies during the year. The results of this exercise are expected to be available during the spring.

Finally, a number of direct messages:

I would like to assure our principals and/or financiers from the government side that we in IVL will continue to further develop our competencies so that we will continue in future to be the leading environmental institute in Sweden.

My message to our customers and collaborative partners in the business sector is that we will continue to assist you to reduce costs, increase revenue and establish control over environmentally governed business risks.

Lastly, I want to emphasise that IVL is an environmental research institute founded on solid finances and high standards of competence, operating in areas that are of major concern today and are unlikely to become less urgent over the next 50 years.

Given continued high profitability and additional support in the form of increased basic grants, we will be able to deliver an ongoing contribution to ecological, economical and socially sustainable growth within business and society at large.

Tord Svedberg  
Stockholm, February 2009





IVL Swedish Environmental Research Institute Ltd. works for ecological, economic and socially sustainable growth within Swedish business and society at large by pursuing applied research, and by undertaking contract assignments and research projects.

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

IVL has, since its inception, played an important societal role as a bridgebuilder between the research community, the business sector and public agencies.

IVL stands for credibility, totality and foresightedness.

### Competent staff

IVL employs approximately 180 people, 48% of whom are women. About one-third of the staff are qualified researchers, while 64% hold masters degrees in engineering or equivalent academic qualifications.

### Both research and contract assignments

Research and development programmes form the basis of IVL's activities. The close link between research projects and contract assignments enables us to offer customers advantages that other consultants cannot.

Research activities are funded in part by Swedish government and business, and in part through direct grants from national research bodies, research foundations and the EU. In 2008, the Swedish government, through the Swedish Environmental Protection Agency and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS), allocated SEK 23 million in research and development grants in return for the same amount of investment by the Swedish business sector. The allocation for 2009 is SEK 30 million.

The purpose of this jointly financed research is to pursue issues that are of major importance to Swedish business and are of general relevance to the community. In these instances, the finance contributed by the business sector is matched by public funds.

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

### Knowledge communication

IVL Knowledge is an IVL department that organises courses and seminars for people involved professionally in the areas of the environment and sustainable development.

### Networks and cooperation

IVL is a member of a series of national and, in particular, international research networks – including the European Network of Environmental Research Organisations (ENERO) – and enjoys close cooperation with universities and institutes of technology. Together with the Royal Institute of Technology, Stockholm (KTH), it has established the Centre for Sustainable Development (CHU), which is conducting a number of projects in the area, and also owns and operates the Hammarby Sjöstadsverk pilot and test facility. IVL cooperates with Chalmers University of Technology, Göteborg (CTH) within the framework of the Centre for Environmental Assessment of Products and Material Systems (CPM).

### Laboratories

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

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

Together with KTH, IVL also owns and operates Hammarby Sjöstadsverk, a unique pilot and test facility for advanced wastewater treatment technology.

### Long international experience

IVL is not just a key player in 'Environment Sweden', but also plays an international role. With a strong network of contacts, we have a long tradition of working in the international arena. For example, we have been in China for over 20 years and also have contracts in the rest of Asia, as well as in Europe, Africa and South America.



**Six priority areas**

Research and contract assignments are undertaken in the following prioritised main areas:

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

**Climate and energy**

Global climate change is one of the greatest challenges of our time. IVL's work in the climate and energy area is based on the natural sciences, technology and the economic aspects of the social sciences. In 2008, the company's expertise was reinforced in the area of vulnerability analysis in relation to climatic changes.

*THIS WORK IS CONDUCTED IN THE CONTEXT OF A BROAD NATIONAL AND INTERNATIONAL CONTACT NETWORK WITHIN THE FOLLOWING MAIN AREAS:*

**CLIMATE POLICY AND CONTROL MECHANISMS.** Analysis of the design and consequences of Swedish and international climate policy.

**CAUSE AND EFFECT.** Modelling and analysis of emissions and greenhouse gas uptake are central elements, as is analysis of the effects of climate change.

**ENERGY SYSTEMS.** Analysis of how the energy systems of the future will function and the cost of action in different sectors plus the environmental evaluation of different systems.

**BIOENERGY.** This includes everything from issues relating to land use and competition for raw materials to conversion technologies, emissions and the climate impact of bioenergy utilisation.

**ADAPTATION TO CLIMATE CHANGE.** The activity ranges from technical issues to assessment of how society at large can be made less vulnerable. IVL has the experience and expertise to perform vulnerability and consequence analyses, and to interpret and apply climate scenarios.

**CLIMATE STRATEGIES.** IVL offers companies, local authorities and other organisations assistance in changing and managing their activities more efficiently from a climate perspective.

**COMMUNICATION.** IVL develops practical tools that enable individuals and companies to measure, reduce and communicate their climate impact.

**Sustainable building**

The construction and property sector accounts for a high proportion of society's environmental impact, especially in terms of the utilisation of resources, energy and chemicals. The sector as a whole is under considerable pressure to change, particularly in the context of the climate issue.

*IVL'S ACTIVITIES IN THE FIELD ARE FOCUSED ON THE FOLLOWING AREAS:*

**SUSTAINABLE URBAN BUILDING.** This area examines how the city of the future will be structured in terms, for example, of transport, waste and energy utilisation. Topical issues include the role of district heating in cities and how buildings can be adapted to a changed climate.

**LOWER USE AND REDUCED EXPOSURE TO HAZARDOUS SUBSTANCES.** A building consists of many different materials which, in turn, contain many different chemicals. IVL researches systems and tools for reducing the quantities of hazardous substances in buildings. One of these is the BASTA system developed by IVL in collaboration with various players in the construction sector.

**ENERGY-EFFICIENT AND CLIMATE-ADAPTED BUILDING.** Efforts to minimise emissions of greenhouse gases from buildings, while adapting the buildings and infrastructure to a changed climate, are of the utmost importance. IVL develops risk and vulnerability analyses relating to the built environment, and has the tools required to evaluate and calculate energy utilisation in buildings.

**INDOOR ENVIRONMENT.** Reducing energy utilisation in buildings must not be achieved at the expense of a good indoor climate. IVL has significant capacity to evaluate and monitor buildings and building materials.

**Air and transport**

Air pollution has always been a key area of activity within IVL and the company's competence in the area is broad. IVL hosts the national air pollution database, and undertakes a high proportion of the monitoring performed in Sweden, both of urban and background atmospheres. The transport emissions area has been strengthened considerably by the merger with the Swedish Network for Transport and the Environment (NTM).

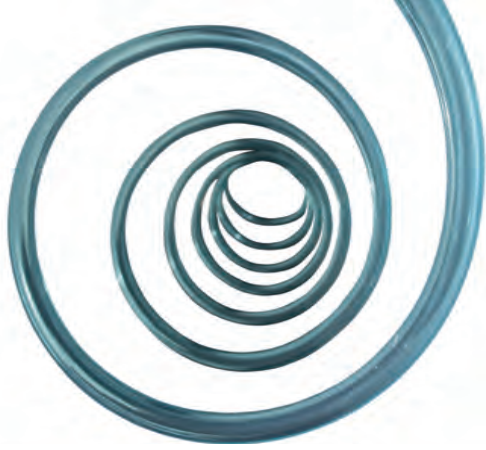
*IVL'S ACTIVITIES IN THE AREA ARE CENTRED ON:*

**AIR QUALITY.** Development of measuring and analytical methods, performance of air measurements at different levels (local, regional, national and international), both for research and environmental monitoring purposes, as well as the modification, application and verification of dispersion models. The area also includes the quantification of human exposure to air pollution in various typical environments.

**EXPOSURE AND ECOSYSTEM EFFECTS.** Dose-effect relationships describing the effects of air pollution on forests, crops, soil and water systems, and interaction with other factors such as climate, land use, lime treatment and other measures to combat acidification.

**CLEAN AIR STRATEGIES.** A wide area in which IVL develops bases and participates in strategic activities used as the basis for Sweden's international negotiations on measures to combat transboundary air pollution.

**EMISSIONS FROM TRANSPORT.** Including both research and comprehensive consultancy activities, the area ranges from emission measurement, through the development, verification and implementation of emission models and emission inventories, to action analyses, including the cost of action programmes.



### Sustainable production

IVL works closely with companies and industries in the analysis and development of processes and products meeting high environmental standards, while improving profitability and creating market benefits without compromising social responsibility. The work is conducted from a life-cycle perspective on both the environment and the economy.

*SUSTAINABLE PRODUCTION ACTIVITIES COVER THE FOLLOWING AREAS:*

**PROCESS OPTIMISATION.** IVL assists companies in adapting production from a sustainability perspective offering both economic and environmental benefits, such as improving a process through new technology or improved control.

**ENVIRONMENTAL TECHNOLOGY.** IVL supports companies in the development and implementation of production and purification technologies by developing, testing and implementing new solutions.

**SUSTAINABLE ENTREPRENEURSHIP AND SUSTAINABLE WORKING LIFE.** Sustainable working life means that production is based on processes that do not harm those that perform them. IVL develops bases that assist companies with the strategic planning of their environmental activities. This includes the development of new methods of pursuing effective environmental and work environment programmes in both large and small companies.

**TOMORROW'S PRODUCTS AND SYSTEMS.** Environmental, climate and sustainability considerations should be central to the development of new products and markets. As a means of converting increased environmental demands into market opportunities, the EU's environmental technology action programme is an important element of this development. IVL is working to make it easier for companies to select the correct process and product solutions.

### Resource-efficient products and waste

IVL works within three sub-areas of this main area – reduced climate impact of products and individuals; sustainable consumption and production; and waste prevention (material efficiency), recycling and more efficient control mechanisms. In these areas, customers and consumers are demanding more and more information on the environmental performance, origins and social conditions associated with product manufacture.

*IVL'S MAIN AREAS OF ACTIVITY ARE:*

**SYSTEM ANALYSIS.** The environmental, social and economic consequences of various technical systems are studied and recommendations issued.

**PRODUCTS FOR SUSTAINABLE DEVELOPMENT.** The environmental performance of the products and potential improvements to them are identified, and communicated to customers and other stakeholders.

**SUSTAINABLE WASTE PLANNING.** Both waste prevention and recycling and final processing are studied. IVL also undertakes waste surveys and analyses the working environment during waste management.

**TESTING.** IVL tests materials for emissions or toxicity. If necessary, new test methods are also developed.

### Water

IVL has been working on water issues since its foundation in 1966. As a result, it has long experience of working on eutrophication, acidification and environmental pollution. This provides the basis for the further development of R&D programmes in the water area as a whole, including both limnetic and marine environments, ground water and storm water.

*THE FOLLOWING AREAS ARE PRIORITISED:*

**INTEGRATED WATER ADMINISTRATION.** IVL develops tools and methods to assist public agencies and organisations to survey and analyse aquatic environment conditions, objectives, action programmes, monitoring activities and administration plans.

**PRIORITISED SUBSTANCES AND 'NEW' CHEMICALS.** IVL develops methods of analysing the sources and effects of substances that are prioritised by the EU. The focus is on chemicals dispersed to the environment by household products rather than on industrial emissions. In parallel with this, IVL develops analytical methods of detecting chemicals in the environment.

**BALTIC SEA, SKAGERRAK AND KATTEGAT.** IVL develops mathematical models describing the sources and transport of phosphorus and nitrogen. Action to reduce the loading of pollutants in the Baltic Sea, Skagerrak and Kattegat is analysed. We also study coastal zone protection measures designed to reduce the impact of substances including oil and chemicals emissions. IVL's oil pollution preparedness service comprises an important support for public agencies in the event of spills to water.

**ENVIRONMENTAL IMPACT ON WATER RESOURCES AS A LIMITING FACTOR IN FOREST PRODUCTION.** IVL analyses forest production, and ensures that biological diversity is maintained while the impact on the aquatic environment is minimised.

## *In the stress zone between* **research and politics**

**How close to politics can research work without losing its integrity? An important issue for everybody working on applied research intended to provide a basis for political decisions, this applies especially in the environmental area, in which the environmental commitment of those engaged in research is strong. Many researchers want their activities to demonstrate a significant relationship or a solution that is efficient and economically justifiable.**

And how are researchers to withstand the expectation of certain results on the part of their principals and of society? Environmental problems often reveal a political divide between those who demand immediate action and those who are prepared to await more reliable results.

In some areas, clearly defined boundaries have been established between research and the political decision-making process. This applies both to the Baltic Sea environmental project and to international climate programmes. In the former case, there is a clear distinction between the political work of Helcom and the scientific work, in which area the International Council for the Exploration of the Sea (ICES) is responsible for developing scientific bases. And on the international front, it is well known that the task of the Intergovernmental Panel on Climate Change (IPCC) is to compile scientific information, while all negotiations take place under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC). In both of these instances, research groups submit reports that are subsequently used as a basis for concluding agreements.

In other areas, the production of scientific bases takes place within the relevant conventions. This is true both of the work to protect the stratospheric ozone layer and that on transboundary pollutants. In these areas, expert groups of research scientists have been established to compile knowledge and develop bases for action programmes within the framework of the conventions. Although decision-makers (industry and public agencies) have access to these groups, their work is, in all essential respects, under the control of researchers.

Which of these courses is the most productive is not, perhaps, obvious. However, given what the organisations have achieved in terms of agreements, it is a fact that programmes to protect the stratospheric ozone layer, as well as international environmental protection programmes, have become operational, and have yielded significantly more

effective measures than has been the case in the marine environment area.

Throughout its existence, IVL has operated in the stress zone between research and the political decision-making process. To some extent, this is inherent in the organisation itself

since state and business are both represented on the board and in various reference groups. This is further emphasised by the structure of jointly financed research.

In my experience of almost 40 years of IVL activities, it is possible to pursue research in close cooperation with the business and public sectors, although pressure is sometimes applied, particularly in the context of project organisation and also, in some cases, as regards the interpretation of research findings.

Should research activities in the climate and Baltic Sea areas be modified for this reason? Yes – I am convinced that working methods must be changed, and structured for much closer cooperation between researchers and decision-makers. In the case of the Baltic Sea project, we also have control over the issues. Far too much research remains uncoordinated, with those who produce the findings unable to transfer them to a structure in which they can be used within the political framework.

Although climate activities are, perhaps, more difficult to modify, several of us who have worked in the area of environmental protection realise that a structure permitting the development of integrated assessments creates a completely different dynamic and type of discussion regarding the setting of priorities, cost effectiveness and uncertainties than is possible around the negotiating table. In addition, with the steadily increasing integration of environmental protection and climate issues – both dealing largely with the same sources and also, to an extent, with the same pollutants – the experience gained from 20 years of environmental protection research is there to be used.

And this body of experience is open and available to public agencies, environmental organisations and business stakeholders.

*Peringe Grennfelt*

Europe, especially the EU nations, is considered to be IVL's home market. Apart from Europe, India, China and southeast Asia are prioritised areas for international activities. At this time, IVL is also conducting projects in Chile, Russia and Ukraine, and has a growing involvement in Africa.

## Good examples of **cleaner production** in India

**A budget of SEK 3 million does not go far towards solving India's major environmental problems. However, ripples can be caused on the surface by harnessing positive forces and using good examples to show that environmental programmes save money and resources.**

This is how the IVL team in India works in close cooperation with the Confederation of Indian Industry as 'door opener', Jawaharlal Nehru Technological University (JNTU) of Hyderabad, the Environment Protection Training and Research Institute (EPTRI) and Gamana, a voluntary development organisation.

The story began three years ago with a survey of environmental problems outside Hyderabad, in which very high levels of pharmaceutical residues were found in lakes and watercourses. The source of these was found to be an industrial estate populated by about a hundred different industries, including everything from tanning factories and machine shops to textile, food processing and pharmaceutical plants – a common sight in India. And as in

many other locations, the site housed an effluent treatment plant to which at least some of the industries were discharging. However, given the mix of industrial and domestic effluent

flows, it was hardly surprising that the treatment plant was not effective.

Under the leadership of department managers Jonas Röttorp and Uwe Fortkamp, among others, the IVL team developed a strategy designed to suit those companies that were very keen to rectify the situation but had limited resources. The aim, in other words, was to treat the process waters at source rather than building a Rolls Royce treatment facility. And, in that way, to demonstrate how adopting process solutions designed to minimise the effluent problem can also save money and raw materials alike. The concept is called *Cleaner production*.

With the assistance of the Confederation of Indian Industry, IVL has now identified a number of companies in the area



around Hyderabad that are prepared to take part. Preliminary sampling has been carried out and pilot tests using membrane filtration have been initiated in some cases. In parallel with this, local operatives are being trained in the operation of the equipment. The aim is to increase capacity and communicate knowledge through good examples.

“Our message is that environmental protection need not cost money. In fact, savings can be made by retaining the raw materials in the product instead of discharging them as effluents. It is end-of-pipe solutions that cost money,” explains Jonas Röttorp, IVL department manager and one of the driving forces behind the Indian project.

### New project to increase cooperation between Europe and India

IVL is managing a project with a total budget of EUR 8.8 million on behalf of the European Chamber of Commerce in Brussels. The twin aims are to expand research cooperation between Europe and India, and to attract Indian companies to Europe. The project will focus mainly on environmental technology, energy, transport and biotechnology.



### Activities in China grow

After more than 20 years of activity in China, IVL opened its first dedicated office in Beijing on 22 January. Since 1986, IVL has undertaken a large number of projects of different types in China, ranging from lake remediation, the introduction of advanced water purification and sustainable waste management to surveying carbon dioxide emissions, air sampling and the development of Chinese environmental research institutes.

IVL is a partner in the SEC joint-venture company together with its Chinese partner, the Tianjin Academy of Environmental Sciences (TAES) research institute outside Beijing. The company's mission is to introduce high-grade Swedish environmental technology to China.

#### *Some current projects in China:*

- The EU-China CDM Facilitation Project is a collaborative venture with China's leading research institutes and central authorities within the climate area. The project is founded largely on IVL's capability of acting as a coordinating link between research, business and, in this case, climate policy, with the aim of strengthening climate cooperation between the EU and China.
- Together with its partner, China Gas, IVL is to develop an industrial zone with the aim of minimising energy utilisation.
- IVL is carrying out a project on energy-efficient building together with China's biggest construction company and Tongji University in Shanghai.
- In Tianjin, IVL is canvassing interest in Swedish environmental technology in the chemical, engineering, and iron and steel industries.
- In Wuhai, IVL is to establish a centre for Cleaner Technology for the purpose of reducing industrial climate impact, particularly from the iron and steel industry.
- In Wuhan, IVL is to work to make the car industry environmentally compatible and to demonstrate the feasibility of extracting more energy from waste.

Hammarby Sjöstadverket has been operated since 1 January 2008 by a consortium consisting of IVL and KTH within the framework of the Centre for Sustainable Development (CHU). The facility permits long-term collaboration between researchers, water supply and sanitation authorities, and industry. Stakeholders in Hammarby Sjöstadverket include the Swedish Environmental Protection Agency, Swedish Water & Wastewater Association (SWWA), SYVAB, Borlänge Energi, ITT Water & Wastewater, Stockholm Environmental Technology Centre (SMTC) and Stockholm Water Company.

## Wastewater treatment **of the future**

**Owned jointly by IVL and the Royal Institute of Technology, Stockholm (KTH), and located above the Henriksdal sewage treatment plant just outside the Stockholm inner city limits, on a height commanding a magnificent view of the environmentally noted Hammarby Sjöstad urban development, Hammarby Sjöstadverket is a unique test and research facility for the development of wastewater treatment technologies.**

At the facility, researchers from IVL are currently working alongside students from KTH and representatives from companies testing new and, thus far, secret wastewater treatment equipment. Basic research, training and applied R&D are carried on in parallel, while the facility also serves as a reference and demonstration plant for methods and equipment.

The solutions developed at Hammarby Sjöstadverket are aimed at today's most important environmental problems – climate change and the shortage of clean drinking water. Thus, the facility deals equally with energy technology and water treatment technology.

Activities include the development and testing of more energy-efficient treatment processes, as well as experiments to extract even more biogas from sludge. One consistent aim is to convert malodorous sewage effluent and sludge into a resource, and to

make the plant a net producer of energy and clean drinking water. The latter goal is of especial interest given that drinking water and fresh water for purposes such as irrigation are scarce resources in many parts of the world.

The facility is also being used to carry out a series of experiments in the post-treatment of water from a conventional treatment plant. These include improved purification from metals, pharmaceutical residues and pathogenic microorganisms.

The plant was built originally by the Stockholm Water Company to test technologies intended for full-scale appli-



### *Eight primary areas*

Research and development carried out at Hammarby Sjöstadverket focuses on eight primary areas:

- Inflow water requirements (causes of process disturbances). This provides an opportunity of investigating the effects of various substances on different treatment processes.
- Optimisation of existing and anaerobic processes.
- Complementary treatment of discharge water, for example to improve purification from heavy metals or pharmaceutical residues.
- Process control and measuring technology.
- Treatment of side flows in the treatment process with the aim of recovering clean products for re-use.
- Climate-efficient treatment technology. Climate change will involve adaptation, for example for higher rainfall intensity and, therefore, an increased demand for treatment of storm water. However, emissions of greenhouse gases from the treatment process should not be allowed to increase.
- Higher biogas production.
- Development of new, innovative, water purification processes.



cation in an effluent treatment plant in the environmental Hammarby Sjöstad urban development. A total of SEK 34 million has been invested in the facility, mainly in the form of public funds from the Local Investment Programmes (LIP) administered by the Swedish Environmental Protection Agency. At the end of 2007, the plant was handed over by the City of Stockholm to a consortium consisting of IVL and KTH.

“We have acquired a top-class facility, one of whose strengths is that we can carry out trials under completely realistic conditions, using ordinary sewage, without jeop-

ardising the operation of the plant if something should go wrong,” says Östen Ekengren of IVL who, together with Professor Vladimir Cvetkovic of KTH, forms the Hammarby Sjöstadsvet executive management team.

The effluent used in the trials is taken either from Hammarby Sjöstad or from the inflow to the Henriksdal sewage treatment plant located in the underground caverns far below the facility itself. Provision has also been made to accommodate large tankers delivering materials such as industrial effluents if specific tests are required.

In 2008, IVL made a significant commitment to indoor environment research by acquiring the Aimex company, and by recruiting people with leading-edge expertise in building physics, in terms of studying damp problems and developing analytical methods to detect mycotoxins in indoor building materials. Today, IVL offers the most complete expertise and equipment available in Sweden for undertaking research and consultancy in indoor environment problems, focusing primarily on the areas of building materials and emissions, air quality, energy efficiency and environmental quality.

## Climate change *moves indoors*

**In the worst case, a changed climate bringing more damp and precipitation, combined with a desire to conserve energy in buildings, may lead to indoor environment problems that are both harmful to health and expensive to solve. Several examples of what can happen are to be seen at IVL's new indoor environment laboratory, to which the Aimex company has moved following its acquisition by IVL.**

Test specimens with mould growth hang in a cabinet on small clips. The purpose of the experiment is to study *Stachybotrys chartarum* – a well-known mould growth that often occurs on the packaging of plasterboard panels that have been exposed to damp.

Although an estimated 350,000 different types of mould exist, only certain types of mould growth have found their own special niche in indoor environments damaged by damp and moisture. Many of these are also powerful producers of mycotoxins – substances whose effects include inflammatory, car-

cinogenic and tissue-destroying properties. *Stachybotrys chartarum* alone produces over 90 different mycotoxins.

“The production of toxins by mould growth may be likened to chemical warfare,” says Erica Bloom, one of the few scientists in the world working on

the analysis of mycotoxins in indoor environment samples. Together with microbiologist Aime Must, who was the first to raise the alarm regarding mould growth problems on plasterboard panels, she forms the core of IVL's new indoor environment group. Other members include Kaisa Svennberg, a building physicist specialising in damp problems, Pär Fjällström, an expert on indoor air in the working environment, Bengt Christensson, who specialises in particle measurement, and a long list of other experts in areas such as chemical analysis and emissions from materials.





“A number of different disciplines are required to deal with the issues, including architects, building physicists, microbiologists, chemists and building practitioners. We have all of these here at IVL. We also have the materials and analytical equipment,” says Aime Must, adding that indoor environment issues are often divided between the researchers and practitioners, and that these two worlds seldom meet.

“The unique thing about IVL is that we are ‘both and’. We have one foot in the academic world and another in the practical world of building. We enjoy credibility in both worlds and we can speak the right language to the right people. Builders don’t read academic theses,” says Aime.

The indoor environment issue is a sensitive one in political, legal and economic terms. Substantial sums are involved in many cases. Damage to residential buildings by water alone is estimated to cost at least SEK 5 billion annually and the health implications make the scenario particularly sensitive.

“We know that damp and water in buildings cause health problems. However, we do not know which specific molecules give rise to different symptoms. We also know that the num-

ber of allergy cases has doubled every decade since the 1970s,” adds Aime Must.

The explanation probably lies in a combination of lifestyle changes, methods of building and an unfavourable mix of materials that are also exposed to damp.

One of the group’s forthcoming projects will be to study whether the various cleanup methods used at present actually stop mould growth and the development of mycotoxins. Another will be to ensure that churches and other cultural buildings can be rescued from the major damp and mould problems from which they have historically suffered. In this case, the particular microorganisms that thrive in the church environment find nutrients in the binders used in centuries-old paintings, forming organic acids that destroy the materials. This results in irreparable damage as the original paints disintegrate.



#### *Indoor environment expertise at IVL*

- Microbiological analysis
- Asbestos analysis
- Analysis (mass spectrometry) of mycotoxins and development of methods for measuring the spread of mould metabolites
- Building physics
- Classification systems for sustainable buildings
- Damp problems associated with choice of materials
- Working environment-related indoor air (measurements and action programmes)
- Analysis and dispersion of chemicals
- Emissions from materials and products
- BASTA – phasing out hazardous substances used in the building sector
- Passive houses
- Air quality issues
- Analysis of organic compounds
- Ventilation and air quality
- Particles/nanoparticles in the indoor environment
- Cleanup operations – hygiene, technologies and materials

## 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 2008 to 31 December 2008.**

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. Formed in 1966, the company employed a total of 179 people in Stockholm and Göteborg as of 31 December 2008. IVL has been a limited company since 1982 and reported net sales of SEK 195.5 million in 2008.

### KEY EVENTS DURING THE YEAR

#### New CEO

Tord Svedberg was appointed President & CEO in succession to Björn Lundberg, who has retired on pension after more than 20 years at the helm, on the occasion of the Annual General Meeting in May 2008. Tord Svedberg, 50, is a graduate engineer who has spent most of his career in the pharmaceuticals industry, first with Pharmacia and, since 1990, with Astra and then AstraZeneca. A member of the board of IVL since 2005, his other roles include vice chairman of the Department of Chemical Engineering of the Royal Swedish Academy of Engineering Sciences.

#### Mission, vision, goals and strategic overview

During the second half of the year, the company undertook the task of developing the main elements of a new operational management system. Apart from a strategic overview of IVL's operations, this involved the development of the company's mission, vision and goals. The mission and vision were adopted by the board at its meeting in December (see below), together with the goals for 2009, and operations will now be managed and followed up on a regular basis in accordance with the mission and vision document.

#### Mission:

IVL's mission is to work, by pursuing applied research, and by undertaking contract assignments and research projects, for ecological, economic and socially sustainable growth within business and society at large.

#### Vision:

##### IVL'S OFFERS

- IVL offers leading-edge expertise in its core areas and is the first choice of its customers.
- IVL provides holistic solutions and develops strategic competencies in collaboration with its customers.
- IVL offers services based on the latest research findings.

##### IVL'S IDENTITY AND RELATIONSHIPS

- IVL is recognised as a respected and independent research institute, both within the EU and internationally.
- IVL works in strong alliances with world-leading research environments and companies.
- IVL is the premier forum for dealing with environmental issues in Sweden.
- IVL adopts work forms that reflect customer needs.

##### IVL AS A WORKPLACE

- IVL is an internationally attractive workplace for all employees working on environmental and sustainability issues.
- We have a unique assembly of expert personnel working at the very forefront of research.
- We aim to increase our market share significantly compared with 2008.

Work on the development of IVL's value system, which was commenced during the first half of the year, will continue in 2009.

#### Expansion and broadening of competence base

On 1 June, IVL acquired the operations of Aimex – one of Sweden's leading companies in the investigation of damage caused by damp and mould. The acquisition represents a strengthening of IVL's expertise in the area and is yet another indication of its intention to become a key player in the area of sustainable building.

IVL also expanded and strengthened its expertise by recruiting personnel including vulnerability analysts, political scientists and sociologists to meet the demand for research into adaptation to climate change in various social sectors, as well as the demand for more policy-oriented research.

Through its merger with the Swedish Network for Transport and the Environment (NTM), IVL has reinforced its role as a key player in the transport and logistics sector. Together, NTM and IVL are developing a tool for analysing the environmental impact of goods transport, with the aim of making this an international standard.

### Communication and cooperation

IVL plays an important role in communicating knowledge, and in translating research into practical benefits for business and society as a whole. The training course and seminar activities of IVL Knowledge play a significant role in this context. These are highly demand-driven and are conducted to high quality standards – a fact that has also been recognised by outside players who are employing IVL Knowledge increasingly to organise major seminars and other events. IVL Knowledge also organises the *Climate Challenge* – a competition for young people that was held for the second time in 2008.

### Commercialisation of R&D

Commercialisation of the research undertaken by IVL can result in faster dissemination of environmental and resource-saving technologies to companies. During the year, work continued to establish a company under the working title of EEQ to spread and increase the use of a methodology to integrate economic, environmental and quality-related goals in day-to-day operations. EEQ, whose intended customer circle is in the process industry, attracted major attention when it was unveiled at the Process Engineering Fair in Göteborg in September 2008.

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 used in building materials. The operation has gathered momentum and initiatives were taken during the year to develop the system by adding risk modules.

### 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, universities and institutes of technology. As part of this, IVL has also formalised its cooperation with both the Royal Institute of Technology, Stockholm (KTH) and Chalmers University of Technology (CTH).

#### CHU

IVL's cooperation with KTH is conducted within the framework of the joint Centre for Sustainable Development (CHU).

The centre will receive basic annual funding of SEK 2 million each from IVL and KTH, initially until 30 June 2009. Activities are conducted in three profile areas – *Sustainable building*, *Resource-efficient production and products*, and *Water*. In these areas, a total of 14 preliminary studies was initiated or completed by the end of 2008, in addition to studies undertaken to initiate joint activities in China and India.

In 2008, cooperation was initiated in the working environment area with the School of Technology and Health at KTH, and in studies relating to the future with the Centre for Environmental Strategies Research at KTH. The purpose is to develop more powerful methods to enable companies and public organisations to work on environmental issues from a clearly defined future-related perspective.

### Hammarby Sjöstadsverk

Owned jointly by IVL and KTH within the framework of the Centre for Sustainable Development (CHU), the Hammarby Sjöstadsverk research facility 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 parties for testing new treatment technologies on effluents of various types. During the year, IVL used the facility to initiate three major projects in increased biogas extraction, reduced energy utilisation and the treatment of pharmaceutical residues. Projects valued at over SEK 4 million were undertaken in 2008 and the operation is expected to grow in 2009.

#### CPM

IVL operates the Centre for Environmental Assessment of Product and Material Systems (CPM) in collaboration with Chalmers. The centre is being used by IVL to conduct projects on sustainable transport, and to develop methods of 'extra-financial analysis' with the focus on evaluating corporate environmental images.

### RATIO OF RESEARCH PROJECTS TO CONTRACTS

Revenue from fees during the year was divided between research projects and contracts in the ratio of 46% to 54% (compared with 56% and 44% respectively in 2007). In this context, research projects are projects funded jointly by the Swedish government and Swedish industry through

the Foundation for the Swedish Environmental Research Institute (SIVL), as well as activities financed by grants from public research agencies, research institutes, the EU and similar bodies. Jointly-financed activities accounted for 16% (16%) of fee-based revenue and grant-aided activities for 29% (40%). 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 competence. 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.

### Current projects

In addition to the comprehensive research undertaken by IVL with funding from the EU's framework programme, the company has recently been appointed to direct an increasing number of R&D projects financed by other EU agencies. These include assignments for the European aid organisations, EuropeAid and SwitchAsia. In 2008, the company undertook a major project in Shanghai on resource-efficient building, in which it is working, among others, with China's biggest construction company. IVL has already directed a major CDM project in China designed to strengthen the country's capacity under the Kyoto protocol's Clean Development Mechanism.

During the year, IVL also undertook an EU project aimed at increasing exports from the EU to India, and has conducted projects which, by providing good examples, demonstrate how more environmentally adapted production can be implemented in Indian industry.

Together with the Norwegian Institute for Air Research (NILU), IVL has carried out a global inventory of mercury emissions and has prepared cost estimates for various remedial measures. The work also includes an estimate of the health treatment costs attributable to global emissions of mercury.

The projects mentioned above are just a sample of the international assignments commenced and completed in 2008. Additional to these are a large number of EU-funded projects that were started earlier. Examples include *SO-COPSE (Source Control of Priority Substances in Europe)*, which is related to the EU's Water Framework Directive and is led by IVL, *CADASTER (Case studies on the Development and Application of in-Silico Techniques for Environmental hazard and Risk assessment)*, which deals with the develop-

ment of risk analysis relating to the EU's chemicals directive, *REACH (Registration, Evaluation, Authorisation and restriction of Chemical substances)*, and *Pass-Net*, whose purpose is to disseminate knowledge concerning passive houses and low-energy houses in Sweden and Europe.

IVL is also directing several major projects funded by the Swedish Environmental Protection Agency, including *SCARP (Swedish Clean Air Research Programme)*, *Sustainable Waste Management* and *Emissions from goods*.

In 2008, AFA Insurance provided finance for four major work environment projects on measures to reduce falling accidents in the building industry, integrated systems for the management of quality, and environment and the working environment, as well as a study of the role of corporate health care in reducing sick leave.

In 2008, with funding from the Swedish International Development Cooperation Agency (SIDA) and the Swedish Agency for Economic & Regional Growth (NUTEK), IVL undertook a series of different projects as part of the *DemoMiljö* programme, the purpose of which is to increase the export of services and environmental technology to countries including China, Thailand and South Africa. At the end of the year, the company undertook a major project (part-funded by the EU) designed to increase employment in and environmental technology exports from Sweden's Mälardal Region. The project is managed by IVL.

During the year, IVL undertook a number of R&D assignments relating to the impending equipment of the 'Restore the million' programme. In IVL's case, these deal primarily with energy efficiency.

Among noteworthy activities in the climate area, IVL is leading the international research programme, *Clipore*, which is funded by MISTRA. The aim of the programme is to promote the development of a more effective national and international climate policy. IVL is also providing expert support to the Swedish delegation involved in negotiations to draft a new, post-Kyoto protocol.

### JOINTLY-FINANCED RESEARCH

In 2008, the Foundation for the Swedish Environmental Research Institute (SIVL), as owner of the company and principal of IVL's jointly-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 an audit of two of the six thematic areas was carried out during the year.

Funding of SEK 23 million for jointly-financed research was available to SIVL in 2008 through the Swedish government's grants to the Swedish Environmental Protection Agency and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS).

### External audit of two thematic areas

An external audit of IVL's R&D activities in the thematic areas of *Air and transport* and *Resource-efficient products and waste* was carried out in autumn 2008. Although the inspectors were generally very positive, they also noted that long-term competence development is subject to different demands than normal R&D activities, and that this aspect calls for additional funding.

## BUSINESS CLIMATE AND FUTURE DEVELOPMENT

The need for research and development to solve today's major climate challenges is well recognised, as is evident particularly from the environmental and energy-related initiatives taken by the Swedish government. In 2008, the climate scenario was identified as the main issue to be pursued by Sweden during its presidency of the EU in 2009.

The global financial crisis has increased the need of Swedish business, and of small and medium-sized enterprises in particular, for research and development to enable them to survive in tough international competition. IVL, with its roots in environmental, energy and climate-related research, as well as its tradition of working with small and medium-sized companies, is particularly well equipped to meet these needs.

Over the years, IVL's joint ownership by government and business has helped to make it a trusted partner of both, and has provided a neutral arena in which all stakeholders can come together and benefit from applied environmental research. The ownership structure also receives very favourable comment in the December 2008 Research and Innovation Bill. Our form of ownership has also contributed to satisfactory profitability despite the fact that, unlike most other research institutes, we have not been a beneficiary of support in the form of strategic competence development funding.

The Swedish institutional sector has been described as a key player in several studies, most recently, in the research policy bill, in terms of maintaining the position of Swedish industry in the environmental field. The sector has been

undergoing restructuring for several years and the above-mentioned bill proposes the establishment of a new holding company through the reorganisation of Ireco Holding AB, to coordinate and develop the government's ownership interests in industrial research institutes.

The future structure of the industrial research institutes was formalised in 2008 by measures such as the formation of the new holding company known as Research Institutes of Sweden Holding (RISE). During the year, IVL was invited to join or become associated with this structure. So far, however, the cooperative benefits offered by the new holding company are unclear, apart from those already afforded by existing cooperation with the RISE institutes.

In 2009, IVL will engage in dialogue with the management of RISE to obtain a value offer covering issues such as:

- the base finance to be received by IVL Swedish Environmental Research Institute Ltd.
- the cooperative benefits to be achieved in addition to those already existing
- how our role as the leading research institute will be strengthened by any closer cooperation with RISE

Both the *Commission on Climate and Vulnerability* and the *Climate Committee* have identified the institutional environment as a particularly suitable platform for research and competence development relating to adaptation and vulnerability in the wake of climatic changes. To create a broad base and competence in these important issues, IVL, the Swedish Meteorological and Hydrological Institute (SMHI) and the Swedish Geotechnical Institute (SGI) have initiated discussions on how the three institutes can work in close cooperation to create the joint competence called for by the commissions. Working together with their complementary competencies, the three institutes can offer completely new opportunities in competence development and research-based knowhow that would not be available if they were acting independently.

## ENVIRONMENTAL AND QUALITY MANAGEMENT

IVL deals with environmental and quality issues within the framework of an integrated management system, which was certified under ISO 14001 in 2002 and ISO 9001:2000 in 2003. Both systems were re-certified in June 2008. Since 1992, much of the company's work relating to sampling, field measurement and analysis has also been accredited by Swedac in accordance with SS-EN ISO/IEC 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. As a means of reducing travel, additional and more up-to-date videoconferencing equipment was installed during the year. The new equipment is of a standard that also permits international video conferences.

IVL's quality activities are focused on customer relations so as to enable activities to be monitored continuously and ensure that customers are satisfied with the company's work. A questionnaire has been produced in which customers' perceptions of IVL in terms of customer care, competence, on-time performance, cost-effectiveness etc. are surveyed. Conducted in December 2008, the survey attracted a response frequency of 45% and returned positive results. The customer satisfaction index (the weighted average of the numerical answers to the questions) was 4.0 on a scale of 1 to 6. The lowest value was 3.7 compared with the target minimum value of 3.

## NET SALES, NET INCOME AND CAPITAL STRUCTURE

### Group

The Group's net sales for the accounting year totalled SEK 196,261 (2005: 162,561) thousand, yielding a net profit after financial items of SEK 6,183 (2,217) thousand. The net profit after taxes was SEK 4,185 (1,463) thousand. The return on adjusted equity was 10.2 (3.9) % and the return on capital employed 5.1 (2.5) %.

The Group's total assets increased to SEK 137,168 (98,165) thousand and its total equity capital to SEK 46,020 (41,684) thousand. Cash flow was positive at SEK 28,336 (-8,190) thousand.

Capital investment in inventories and equipment totalled SEK 1,961 (3,671) thousand. The equity/assets ratio fell to 33.6 (42.5) %.

### Parent company

IVL's net sales for the accounting year totalled SEK 195,483 (162,347) thousand, yielding a net profit after financial items of SEK 6,253 (2,047) thousand. The net profit after taxes was SEK 2,034 (1,693) thousand.

Total assets amounted to SEK 136,638 (98,271) thousand and total equity capital to SEK 30,128 (28,094) thousand. Adjusted equity capital was calculated at SEK 36,321 (32,094) thousand. Cash flow was SEK 28,087 (-8,453) thousand. The return on adjusted equity was 13.2 (4.7) % and the return on capital employed 6.0 (2.3) %.

Capital investment in inventories and equipment totalled SEK 1,947 (3,671) thousand. The adjusted equity/assets ratio fell to 26.6 (32.7) %.

## PARENT COMPANY EMPLOYEES

### Structure and personnel turnover

During the year, the number of employees averaged 164 (158), of whom 52 (53) % were men and 48 (47) % women. Of the workforce, 28 (28) % hold postgraduate degrees, while 64 (62) % hold masters degrees in engineering or other academic qualifications.

During the year, 12 (14) employees left the company for other positions, while 2 (2) employees retired on pension.

### Competence development

In 2008, competence development activities were carried on in three main areas with funds from the IVL staff training foundation. These were:

- Active involvement of junior employees in the company's customer and network development activities.
- Leadership development aimed at younger employees. Started in 2007, the programme involved 11 employees, 6 of whom have completed the course. The group is responsible for submitting to management proposals contributing to the development of the company.
- Individual competence development, which is administered through application to the council. Thirty-one employees have been granted funding from this source for competence development in areas such as analysis and modelling. To date, 21 of these have completed training.

### Chargeability rate

The chargeability rate for the period was 65.0 (64.6) %. Chargeability rate is defined as the proportion of total attendance time 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 21.5 (22.3) % of normal working time. Sick leave accounted for 2.86 (1.72) % and holiday time for 9.16 (9.58) %. Leave of absence accounted for 7.24 (8.68) %, of which 6.3 (7.39) % 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 2008

Under the Swedish Annual Accounts Act, annual reports are now 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	
	2008	2007	2008	2007
All employees	2.96	1.74	1.36	0.15
Women	3.8	2.1	1.96	0.23
Men	2.1	1.38	0.75	0.06
29 years or younger	2.4	1.86	0	0
30–49 years	2.58	1.47	0.9	0
50 years or older	3.8	2.24	2.54	0.47

## Other personnel information

Personnel turnover, %	2008	2007
Number of employees to resign as percentage of average workforce for year – including pension	7.3	8.9
8.5	10.1	
Length of service, %	2008	2007
Length of service, years		
–2	24	14
2–10	40	45
> 10	36	41
Average length of service: 11 (12) years		
Age distribution, %	2008	2007
20–29 years	12	10
30–39 years	34	36
40–49 years	22	24
50–59 years	18	17
60–69 years	14	13
Average age: 43 (42) years		
Qualifications, %	2008	2007
PhD	23	24
Other research qualification	5	4
Graduate engineer	31	32
Other academic qualification	33	30
Technical high school qualification	8	10
Key financial indicators per employee (figures in SEK thousand)	2008	2007
Sales, excl. expenses	1,128	948
Salaries	612	592
Net profit/loss after financial items	38	13

# Summary of business and financial ratios

(figures in SEK thousand)

	Group					Parent company				
	2008	2007	2006	2005	2004	2008	2007	2006	2005	2004
<b>Sales and profit/loss</b>										
<i>Invoiced fees and expenses</i>	196,261	162,561	175,170	197,151	151,477	195,483	162,347	175,071	196,918	151,435
<i>Operating profit after depreciation</i>	5,539	1,292	572	3,339	2,293	5,623	1,123	-1,105	-1,334	181
<i>Operating profit after financial items</i>	6,183	2,217	870	3,473	2,363	6,253	2,047	-808	-1,203	250
<i>Profit margin</i>	3.2	1.4	0.5	1.8	1.6	3.2	1.3	NEG	NEG	0.2
<b>Capital structure</b>										
<i>Fixed assets</i>	16,936	15,149	15,008	15,857	10,509	17,514	15,732	15,519	16,343	10,993
<i>Current assets</i>	120,232	83,016	85,332	78,592	68,851	119,124	82,539	85,015	78,236	68,701
<i>Equity</i>	46,020	41,684	40,197	39,856	37,122	30,128	28,094	26,401	26,247	24,950
<i>Untaxed reserves</i>	-	-	-	-	-	8,602	5,556	6,032	7,355	10,144
<i>Current liabilities</i>	82,181	51,128	54,703	49,250	37,382	95,035	64,621	68,101	60,977	44,600
<i>Provisions</i>	8,967	5,353	5,440	5,343	4,856	2,873	-	-	-	-
<i>Total assets</i>	137,168	98,165	100,340	94,449	79,360	136,638	98,271	100,534	94,579	79,694
<i>Adjusted equity</i>	-	-	-	-	-	36,321	32,094	30,744	31,543	32,254
<i>Equity, annual funds</i>	43,852	40,941	40,027	38,489	36,322	34,208	31,419	31,143	31,898	32,177
<i>Capital employed, annual funds</i>	117,667	99,253	97,395	86,905	79,092	117,455	99,403	97,557	87,137	79,117
<i>Equity/assets ratio, %</i>	33.6	42.5	40.1	42.2	46.8	26.6	32.7	30.6	33.4	40.5
<i>Current ratio</i>	1.46	1.62	1.56	1.60	1.84	1.25	1.28	1.25	1.28	1.54
<b>Profitability</b>										
<i>Return on adjusted equity, %</i>	10.2	3.9	1.6	6.5	4.7	13.2	4.7	NEG	NEG	0.6
<i>Return on capital employed, %</i>	5.1	2.3	1.1	3.8	3.2	6.0	2.1	NEG	NEG	0.5
<b>Other</b>										
<i>Capital expenditure</i>	1,961	3,671	3,538	8,545	5,316	1,947	3,671	3,538	8,545	5,316
<i>Invoiced sales per employee, incl. expenses</i>	1,182	1,022	1,062	1,248	1,017	1,192	1,028	1,068	1,254	1,023
<i>Invoiced sales per employee, fees and analyses</i>	1,119	944	915	976	808	1,128	948	919	981	813
<i>Chargeability rate, %</i>	65.0	64.6	65.8	67.0	66.2	65.0	64.6	65.8	67.0	66.2
<i>Number of employees</i>	166	159	165	158	149	164	158	164	157	148
<i>Personnel costs per employee</i>	606	587	546	533	491	612	592	549	536	494

## Adjusted equity

Total equity, plus untaxed reserves, less deduction of standard tax at 28%.

## Number of employees

The number of employees for the year expressed in terms of full-time positions. The actual number of employees is higher because of 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 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	19,693,937
Profit for year	2,034,438
<b>Total</b>	<b>21,728,375</b>

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

To be carried forward	21,728,375
<b>Total</b>	<b>21,728,375</b>

See the income statement, balance sheet, cash flow statement, and notes to the financial statements and accounts for information on the profit reported by the company and the Group for the financial year, as well as the general financial position as of 31 December 2008. All figures are in SEK thousand.

## Income statement

(figures in SEK thousand)

		Group		Parent company	
		2008	2007	2008	2007
<b>Operating income</b>					
Net sales	Note 1	196,261	162,561	195,483	162,347
Change in work in progress	Note 2	-8,009	6,368	-7,597	6,207
Other operating income	Note 3	1,814	613	1,856	613
		<b>190,066</b>	<b>169,542</b>	<b>189,742</b>	<b>169,167</b>
<b>Operating expenses</b>					
Expenses		-32,542	-36,650	-32,543	-36,650
Other external expenses	Note 4	-38,931	-32,409	-38,664	-32,247
Personnel costs	Note 5	-108,811	-95,511	-108,681	-95,479
Depreciation of tangible fixed assets	Note 6	-3,848	-3,664	-3,836	-3,652
Depreciation of intangible fixed assets	Note 6	-395	-16	-395	-16
		<b>-184,527</b>	<b>-168,250</b>	<b>-184,119</b>	<b>-168,044</b>
<b>Operating profit</b>		<b>5,539</b>	<b>1,292</b>	<b>5,623</b>	<b>1,123</b>
<b>Earnings from financial investments</b>					
Interest income	Note 7	1,487	1,125	1,472	1,121
Interest expenses		-843	-200	-842	-197
<b>Profit after financial items</b>		<b>6,183</b>	<b>2,217</b>	<b>6,253</b>	<b>2,047</b>
Appropriations	Note 8			-3,046	476
Tax on profit for year	Note 9	-1,998	-754	-1,173	-830
<b>NET PROFIT</b>		<b>4,185</b>	<b>1,463</b>	<b>2,034</b>	<b>1,693</b>

## Cash flow statement

(figures in SEK thousand)

	Group		Parent company	
	2008	2007	2008	2007
<b>Operating activities</b>				
Profit after financial items	6,183	2,217	6,253	2,047
Adjustment for non-cash items	11,315	2,744	10,478	2,795
Income tax paid	-2,172	-124	-1,346	-160
<b>Cash flow from operating activities before changes in working capital</b>	<b>15,326</b>	<b>4,837</b>	<b>15,385</b>	<b>4,682</b>
<b>Cash flow from changes in working capital</b>				
Increase/decrease in receivables	-7,974	-6,026	-7,708	-6,265
Increase/decrease in accounts payable, trade	1,352	3,136	1,177	3,106
Increase/decrease in other liabilities	5,504	1,692	5,504	1,692
Increase/decrease in advance payments for work in progress	20,155	-7,947	19,743	-7,786
<b>Cash flow from operating activities</b>	<b>34,363</b>	<b>-4,308</b>	<b>34,101</b>	<b>-4,571</b>
<b>Investment activities</b>				
Purchase of property, plant and equipment	-1,961	-3,671	-1,947	-3,671
Purchase of intangible fixed assets	-2,149	-151	-2,150	-151
Acquisition of financial assets	-1,917	-60	-1,917	-60
<b>Cash flow from investment activities</b>	<b>-6,027</b>	<b>-3,882</b>	<b>-6,014</b>	<b>-3,882</b>
<b>Financing activities</b>				
<b>Cash flow from financing activities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Cash flow for year</b>	<b>28,336</b>	<b>-8,190</b>	<b>28,087</b>	<b>-8,453</b>
Cash and bank balances at beginning of year	17,401	25,506	1,6781	25,245
Exchange rate difference in cash and cash equivalents	115	85	-	-11
<b>Cash and bank balances at end of year</b>	<b>45,852</b>	<b>17,401</b>	<b>44,868</b>	<b>16,781</b>

# Balance sheet

(figures in SEK thousand)

	Group		Parent company		
	2008	2007	2008	2007	
<b>ASSETS</b>					
<b>Fixed assets</b>					
<i>Intangible fixed assets</i>	Note 10	2,666	911	2,666	911
<i>Tangible fixed assets</i>	Note 11	12,308	14,193	12,245	14,135
<i>Financial assets</i>	Note 12	1,962	45	2,603	686
<b>Total fixed assets</b>		<b>16,936</b>	<b>15,149</b>	<b>17,514</b>	<b>15,732</b>
<b>Current assets</b>					
Current receivables					
<i>Accounts receivable, trade</i>		53,280	45,303	53,265	45,272
<i>Receivables from group companies</i>		14,382	15,886	14,382	16,122
<i>Income taxes recoverable</i>		809	635	773	600
<i>Other receivables</i>		1,579	78	1,506	51
<i>Prepaid expenses and accrued income</i>	Note 13	4,330	3,713	4,330	3,713
<b>Total current receivables</b>		<b>74,380</b>	<b>65,615</b>	<b>74,256</b>	<b>65,758</b>
<b>Cash and bank balances</b>		<b>45,852</b>	<b>17,401</b>	<b>44,868</b>	<b>16,781</b>
<b>Total current assets</b>		<b>120,232</b>	<b>83,016</b>	<b>119,124</b>	<b>82,539</b>
<b>TOTAL ASSETS</b>		<b>137,168</b>	<b>98,165</b>	<b>136,638</b>	<b>98,271</b>
<b>EQUITY AND LIABILITIES</b>					
<b>Equity</b>	Note 14				
Restricted equity					
<i>Share capital (7,000 shares)</i>		7,000	7,000	7,000	7,000
<i>Restricted reserves</i>		17,078	15,167	1,400	1,400
<b>Total restricted equity</b>		<b>24,078</b>	<b>22,167</b>	<b>8,400</b>	<b>8,400</b>
Non-restricted equity					
<i>Non-restricted reserves</i>		17,757	18,054	19,694	18,001
<i>Profit for year</i>		4,185	1,463	2,034	1,693
<b>Total non-restricted equity</b>		<b>21,942</b>	<b>19,517</b>	<b>21,728</b>	<b>19,694</b>
<b>Total equity</b>		<b>46,020</b>	<b>41,684</b>	<b>30,128</b>	<b>28,094</b>
<b>Provisions</b>	Note 15	<b>8,967</b>	<b>5,353</b>	<b>2,873</b>	–
<b>Untaxed reserves</b>	Note 8			<b>8,602</b>	<b>5,556</b>
<b>Current liabilities</b>					
<i>Advance payments for work in progress</i>	Note 2	38,195	18,040	51,342	31,599
<i>Accounts payable, trade</i>		13,651	12,299	13,446	12,269
<i>Other liabilities</i>		16,876	11,372	16,876	11,372
<i>Accrued expenses and deferred income</i>	Note 16	13,459	9,417	13,371	9,381
<b>Total current liabilities</b>		<b>82,181</b>	<b>51,128</b>	<b>95,035</b>	<b>64,621</b>
<b>TOTAL EQUITY AND LIABILITIES</b>		<b>137,168</b>	<b>98,165</b>	<b>136,638</b>	<b>98,271</b>
<b>MEMORANDUM ITEMS</b>					
<i>Pledged assets</i>		8,084	5,000	8,084	5,000
<i>Contingent liabilities</i>		–	3,985	–	3,985

## Comments and notes to the accounts

### Parent company and ownership structure

IVL is a wholly-owned subsidiary of the Foundation for 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 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 jointly by the Swedish government and business sector for environmental research carried out by IVL. The foundation is managed by a 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.

### Current tax case

IVL has been contesting a value-added tax issue with the Swedish National Tax Board (SKV) since 2004. The case has been heard by the County Administrative Court in Stockholm and, following an appeal by IVL, by the Administrative Court of Appeal, which issued its ruling on 15 January 2009. Both courts found in favour of the SKV case, which is that IVL is not entitled to recover VAT paid on costs chargeable to grant-aided activities.

In the view of IVL, it is highly important that the Administrative Court of Appeal should issue clarification of its judgement. Unlike the Tax Board, the company maintains that there shall be no restriction on the recovery of VAT on expenditure financed by taxable grants and intends to seek a judicial review by the Supreme Administrative Court.

In the event that the SKV case is upheld following judicial review, the position would be the following: In purely general terms, the payment of taxable project grants of specific amounts to IVL by public agencies or the business sector would have a cumulative impact on earnings since IVL would be unable to recover the value-added tax paid on the associated costs. In terms of the annual cost to IVL, the

sums involved would be considerable. For the years 2003 to 2008, the total cost is estimated to be approximately SEK 16 million. For the current year of the case, the company has set aside and booked the relief sought as a cost in this year's accounts.

### ACCOUNTING PRINCIPLES

#### Accounting and valuation principles

The accounts comply with the provisions of the Swedish Annual Accounts Acts, the general rules of the Swedish Accounting Standards Board and 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 company, Sino-Swedish (Tianjin) Environmental Technology Development Co. Ltd., and of 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 72% of the Group's untaxed reserves, and deferred tax liability, equivalent to 28% of untaxed reserves. In the consolidated accounts, the tax reserve component of uninvoiced research and consultancy assignments has been allocated in similar 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 11).

### 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, applying a value above the lowest permissible fiscal value and below the highest 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 with the research financier and disburses project funds to other project participants, the funds in question are not reported as sales, but are recorded directly under the balance sheet item of '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.

#### NOTE 1 Net sales (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	2008	2007	2008	2007
<b>Net sales are divided into:</b>				
Invoiced fees and analyses	185,753	150,053	184,975	149,839
Invoiced expenses	10,508	12,508	10,508	12,508
<b>Total net sales</b>	<b>196,261</b>	<b>162,561</b>	<b>195,483</b>	<b>162,347</b>

Of the net sales for the year, 18.56 (21.14) % consists of amounts invoiced to the parent company, mainly as remuneration for jointly-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	
	2008	2007	2008	2007
Assignment costs	432,852	376,760	419,705	363,201
Invoiced in advance	-471,047	-394,800	-471,047	-394,800
Book value	38,195	18,040	51,342	31,599
<b>Change reported in income statement</b>	<b>8,009</b>	<b>6,368</b>	<b>7,597</b>	<b>6,207</b>
<b>Change for current projects reported directly in balance statement</b>	<b>12,146</b>	<b>1,579</b>	<b>12,146</b>	<b>1,579</b>
<b>Total change for year in advance payments for work in progress</b>	<b>20,155</b>	<b>7,947</b>	<b>19,743</b>	<b>7,786</b>

#### NOTE 3 Other operating income (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	2008	2007	2008	2007
Currency changes, net	1,354	-	1,396	-
Other	460	613	460	613
<b>Total other income</b>	<b>1,814</b>	<b>613</b>	<b>1,856</b>	<b>613</b>

#### NOTE 4 Other external costs (figures in SEK thousand) Group and Parent company

The item includes audit fees of SEK 220 (347) thousand paid to BDO Nordic and SEK 3 (48) thousand to other auditors.

#### Leasing charges

Charges for financial leasing agreements in 2008 amounted to SEK 14,288 (13,290) 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:

	2009	2010	2011	2012	2013
Leasing charges, other	1,617	934			
Premises	10,963	10,963	10,963	10,963	10,963
<b>Total</b>	<b>12,580</b>	<b>11,897</b>	<b>10,963</b>	<b>10,963</b>	<b>10,963</b>

#### NOTE 5 Personnel costs

Salaries and other remuneration (figures in SEK thousand)

##### Parent company

	2008		2007	
	Salaries and other remuneration	Payroll overheads (of which pension costs)	Salaries and other remuneration	Payroll overheads (of which pension costs)
Board and CEO	1,804	1,359 (711)	1,590	2,174 (1,419)
Other employees	66,465	36,285 (11,787)	59,047	30,533 (8,913)
<b>Total</b>	<b>68,269</b>	<b>37,644</b> <b>12,498</b>	<b>60,637</b>	<b>32,707</b> <b>10,332</b>
of which pension provision for former CEO		(2,873)		—

##### Group

The group also pays the salaries of the CEO of the joint-venture company, amounting to SEK 75 (65) thousand, and other permanent employees amounting to SEK 56 (0) thousand.

Average number of employees\* for year

##### Parent company

	2008			2007		
	Men	Women	Total	Men	Women	Total
Stockholm	58	37	95	54	35	89
Göteborg	28	41	69	29	40	69
<b>Total</b>	<b>86</b>	<b>78</b>	<b>164</b>	<b>83</b>	<b>75</b>	<b>158</b>

\* defined as full-time, salaried employees

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

	2008	2007
Men	11 (6)	10 (5)
Women	6 (0)	6 (0)

##### Group

The Group has 2 (1) additional employees, including one man in management position.

#### MANAGEMENT

##### Parent company

In accordance with the decision of Annual General Meeting, a total of SEK 330 (322) thousand was paid in fees to members of the board. Of this amount, the chairman of the board received SEK 55 (55) thousand. The company has concluded a pension entitlement and severance pay agreement with the CEO.

The employment of the CEO of the parent company is subject to a period of notice of 12 months, 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 changed 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 on his own notice of six months and to receive a severance payment equivalent to 18 times his 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 year in question, 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 April 2008. The position is not pensionable.

#### NOTE 6 Depreciation of tangible and intangible fixed assets

##### 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 Interest income and expenses

##### Group and Parent company

The item includes bank interest income of SEK 387 (1,111) thousand. SEK 142 (132) thousand of the interest expenses of the parent company relates to Group companies.

#### NOTE 8 Appropriations and untaxed reserves (figures in SEK thousand)

	PARENT COMPANY	
	31 Dec. 2008	31 Dec. 2007
<b>Opening untaxed reserves</b>	<b>5,556</b>	<b>6,032</b>
Accumulated depreciation above/below plan	779	1,019
Change in tax allocation reserve	2,267	-1,495
<b>Total appropriations</b>	<b>3,046</b>	<b>-476</b>
<b>Closing untaxed reserves</b>	<b>8,602</b>	<b>5,556</b>
<b>of which deferred tax at 28%</b>	<b>2,409</b>	<b>1,556</b>

#### NOTE 9 Tax on profit for year (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	2008	2007	2008	2007
<b>Estimate of effective tax rate</b>				
<b>Profit before tax</b>	<b>6,183</b>	<b>2,217</b>	<b>3,207</b>	<b>2,523</b>
Tax at current tax rate of 28%	1,731	621	898	706
Non-taxable income	-24	-3	-24	-3
Non-deductible expenses	1,028	122	1,028	122
Standard tax, tax allocation reserve	6	5	6	5
Tax from previous year	-735		-735	
Current tax expenses, international	71	12		
Deferred tax	-79	-3		
<b>Effective tax</b>	<b>1,998</b>	<b>754</b>	<b>1,173</b>	<b>830</b>
<b>Effective tax rate, %</b>	<b>32.3</b>	<b>34.0</b>	<b>36.6</b>	<b>32.9</b>

## NOTE 10 Intangible fixed assets (figures in SEK thousand)

	DEVELOPMENT COSTS		GOODWILL	
	31 DEC. 2008	31 DEC. 2007	31 DEC. 2008	31 DEC. 2007
<b>Opening acquisition value</b>	<b>927</b>	<b>776</b>	–	–
Acquisitions for year	350	151	1,800	–
<b>Closing accumulated acquisition value</b>	<b>1,277</b>	<b>927</b>	<b>1,800</b>	–
Opening depreciation	–16	–	–	–
Depreciation for year	–185	–16	–210	–
<b>Closing accumulated depreciation</b>	<b>–201</b>	–	<b>–210</b>	–
<b>Closing residual value according to plan</b>	<b>1,076</b>	<b>911</b>	<b>1,590</b>	–

## NOTE 11 Fixtures and equipment (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	31 DEC. 2008	31 DEC. 2007	31 DEC. 2008	31 DEC. 2007
<b>Opening acquisition value</b>	<b>71,597</b>	<b>67,927</b>	<b>71,453</b>	<b>67,783</b>
Purchases for year	1,961	3,671	1,947	3,671
Exchange rate differential/ scrapped equipment	29	–1	–1	–1
<b>Closing accumulated acquisition value</b>	<b>73,587</b>	<b>71,597</b>	<b>73,399</b>	<b>71,453</b>
<b>Opening depreciation</b>	<b>–57,404</b>	<b>–53,740</b>	<b>–57,318</b>	<b>–53,666</b>
Exchange rate differential/ scrapped equipment	–38	–	–	–
<b>Depreciation for year</b>	<b>–3,837</b>	<b>–3,664</b>	<b>3,836</b>	<b>–3,652</b>
<b>Closing accumulated depreciation</b>	<b>61,279</b>	<b>–57,404</b>	<b>61,154</b>	<b>–57,318</b>
<b>Closing residual value</b>	<b>12,308</b>	<b>14,193</b>	<b>12,245</b>	<b>14,135</b>

## NOTE 12 Financial assets

## Shares and holdings

COMPANY	NUMBER	GROUP		PARENT COMPANY	
		HOLDING	BOOKED	NOMINAL	BOOKED
Holding in IVL Swedish Environmental Research Institute foundation for staff training	1		5	5	5
United Competence Sverige AB	400	20 %	40	40	40
BASTA online AB	600	60 %	–	60	60
Sino-Swedish (Tianjin) Environmental Technology Development Co., Ltd	1	50 %	–	581	581
<b>Total</b>			<b>45</b>	<b>686</b>	<b>686</b>

## Endowment insurance

	GROUP		PARENT COMPANY	
	31 DEC. 2008	31 DEC. 2007	31 DEC. 2008	31 DEC. 2007
<b>Opening book value</b>	–	–	–	–
Acquisition value	3,000	–	3,000	–
Change in value	83	–	83	–
<b>Current portion</b>	<b>–1,167</b>	–	<b>–1,167</b>	–
<b>Closing book value</b>	<b>1,917</b>	–	<b>1,917</b>	–

## Associated companies

United Competence Sweden Ltd., corporate identity number 556622-8663, is headquartered in Göteborg. A decision to liquidate the company was taken in 2008.

## NOTE 13 Prepaid expenses and accrued income

(figures in SEK thousand)

## Group and Parent company

Totalling SEK 4 330 (3 713) thousand, this item consists of prepaid rentals for offices and premises amounting to SEK 2,948 (2,972) thousand, and other prepaid expenses amounting to SEK 1,382 (920) thousand.

NOTE 14 Equity (figures in SEK thousand)

Group	Share	Statutory	Non-	Profit/	Total
	capital	reserves	restricted	loss	
			reserves	for year	
<b>Opening balance</b>	<b>7,000</b>	<b>15,167</b>	<b>18,054</b>	<b>1,463</b>	<b>41,684</b>
Appropriation per AGM		1,463	-1,463	0	
Transfer between restricted and non-restricted equity		1,878	-1,878	0	
Translation difference		33	118		151
<b>Profit/loss for year</b>				<b>4,185</b>	<b>4,185</b>
<b>Closing balance</b>	<b>7,000</b>	<b>17,078</b>	<b>17,757</b>	<b>4,185</b>	<b>46,020</b>

Parent company

Parent company	Share	Statutory	Profit/loss	Profit/	Total
	capital	reserves	brought forward	loss	
				for year	
<b>Opening balance</b>	<b>7,000</b>	<b>1,400</b>	<b>18,001</b>	<b>1,693</b>	<b>28,094</b>
Appropriation per AGM			1,693	-1,693	0
<b>Profit/loss for year</b>				<b>2,034</b>	<b>2,034</b>
<b>Closing balance</b>	<b>7,000</b>	<b>1,400</b>	<b>19,694</b>	<b>2,034</b>	<b>30,128</b>

NOTE 15 Provisions (figures in SEK thousand)

	GROUP		PARENT COMPANY	
	31 Dec. 2008	31 Dec. 2007	31 Dec. 2008	31 Dec. 2007
Deferred tax	6,094	5,353	-	-
Pension provisions	2,873	-	2,873	-
<b>Total at end of year</b>	<b>8,967</b>	<b>5,353</b>	<b>2,873</b>	<b>-</b>

NOTE 16 Accrued expenses and deferred income  
(figures in SEK thousand)

	GROUP		PARENT COMPANY	
	31 Dec. 2008	31 Dec. 2007	31 Dec. 2008	31 Dec. 2007
Holiday and overtime liabilities	4,952	4,728	4,952	4,728
Accrued payroll overheads	4,902	2,435	4,902	2,435
Other accrued expenses	3,605	2,218	3,517	2,218
<b>Total at end of year</b>	<b>13,459</b>	<b>9,381</b>	<b>13,371</b>	<b>9,381</b>

NOTE 17 Pledged assets and contingent liabilities  
(figures in SEK thousand)  
Group and Parent company

	31 Dec. 2008	31 Dec. 2007
	<b>Pledged assets</b>	
Floating charges	5,000	5,000
Pledged endowment insurance	3,084	-
<b>Total</b>	<b>8,084</b>	<b>5,000</b>

Contingent liabilities

Pension commitment to CEO	-	3,985
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Stockholm, 18 February 2008

Kjell Jansson  
*Chairman of the Board*

Lars-Göran Bergquist

Peter Nygårds

Edvard Sandberg

Camilla Hällinder Ehrencrona

Marie S. Arwidson

Kerstin Cederlöf

Birgitta Palmberger

Kurt Palmgren

Mark Sanctuary

Tord Svedberg  
*President & CEO*

My auditor's report was submitted on 17 April 2009.

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**

I have audited the annual 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 period 1 January 2008 to 31 December 2008. 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. My responsibility is to express an opinion on the annual accounts and administration of the company on the basis of my audit.

The audit was conducted in accordance with accepted auditing practice in Sweden. This means that I 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 my opinion concerning discharge from liability, I 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. I 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.

I believe that my audit provides a reasonable basis for my opinions as set out below.

The annual accounts and group accounts have been prepared in accordance with the Swedish Annual Accounts Act, and, therefore, 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.

I recommend that the Annual General Meeting confirm the income statements and balance sheets, allocate the profit 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, 17 April 2009

Ulf H Davéus  
*Authorised Public Accountant*

## IVL Board



**Kjell Jansson,**  
Chairman of the Board  
Board member since 1997  
CEO, Swedenergy



**Marie S. Arwidson**  
Board member since 2004  
CEO, Swedish Forest  
Industries Federation



**Lars-Göran Bergquist**  
Board member since 2000  
Chairman, Foundation for  
Swedish Environmental  
Research Institute



**Kerstin Cederlöf**  
Board member since 2004  
Director, Swedish  
Environmental  
Protection Agency



**Peter Nygårds**  
Board member since 2008  
Senior Vice President,  
Swedbank



**Birgitta Palmberger**  
Board member since 2005  
Department head,  
Swedish Energy Agency



**Edvard Sandberg**  
Board member since 2005  
Director, Swedenergy



**Kurt Palmgren**  
Board member since 2003  
Director



**Camilla Hällinder  
Ehrencrona**  
Board member since 2005  
Staff representative



**Mark Sanctuary**  
Board member since 2008  
Staff representative

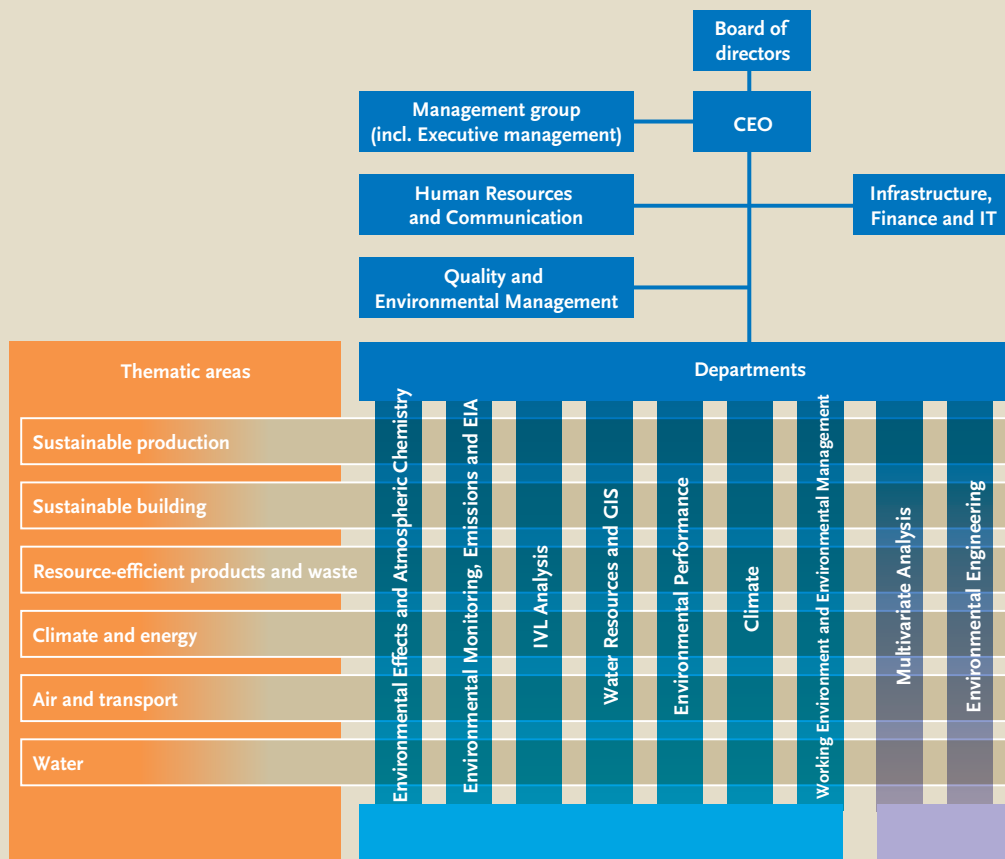
### Deputy members

Lars Ekecrantz, Ministry of Sustainable Development  
Christer Forsgren, Stena Metall Group  
Pererik Karlsson, staff representative  
Åsa Stenmarck, staff representative

### Executive management group

Tord Svedberg – President & CEO  
Mats Ridner – Administration Director  
Åke Iverfeldt – Deputy CEO  
Östen Ekengren – Deputy CEO  
Peringe Grennfelt – Research Director  
Lars-Gunnar Lindfors – Research Director

# IVL organisation



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