

ANNUAL REPORT
2009



The year in brief

- **NET TURNOVER** increased to SEK204 million (2008: SEK196 million) and the profit for the year was SEK3.8 (4.2) million.
- **THE NUMBER OF EMPLOYEES** in the Stockholm, Gothenburg and Beijing offices at 31 December 2009 was 179 (179).
- After more than 20 years of operation in China, IVL opened the **FIRST OFFICE OF ITS OWN IN BEIJING** on 23 January.
- IVL, with support from the **BALTIC SEA 2020 FOUNDATION**, undertook a notable project to mitigate phosphorus leakage from agricultural land. The aim of the work is to develop methods of intercepting such leakage by means of ditch dams and ditch filters located close to the source, before the pollution reaches major watercourses and the Baltic Sea.
- IVL's regular major conference was held in May in the presence of **HM CARL XVI GUSTAF OF SWEDEN**. The theme of the conference was an energy scenario developed by IVL researchers showing the conditions necessary to reduce Swedish carbon dioxide emissions by 90 percent by the year 2050 with the aid of a high level of wind power and Swedish-produced biofuels.
- With IVL as a founder member, **THE SWEDEN GREEN BUILDING COUNCIL (SGBC)** was established in June to promote sustainability in the building and property sector.
- In August, it was announced that the Gothenburg consortium, of which IVL is a member, was the body chosen to receive funding from the Swedish Foundation for Strategic Environmental Research (MISTRA) to establish an international research centre – **MISTRA URBAN FUTURES** – for sustainable urban development.
- A **TRAINING COURSE FOR JOURNALISTS** was held in August in cooperation with the Swedish Ministry of the Environment, Swedish Environmental Protection Agency, European Commission and Stockholm Environment Institute (SEI). The focus of the course was on climate, climate policy and Baltic Sea issues.
- IVL participated in a number of events during the Swedish EU presidency, such as the presidential inauguration and several high-level meetings, and demonstrated its new **CLIMATE CALCULATOR, CLIMATE ACCOUNT ON THESE OCCASIONS**. In September, the company hosted the European Affairs ministers of the 27 EU member nations aboard the research vessel, Sunbeam.
- In September, Ann-Beth Antonsson was appointed to a professorship in ergonomics at KTH, **THE INSTITUTION'S FIRST FEMALE ADJUNCT PROFESSOR**.
- IVL researcher Lisa Schmidt was awarded the inaugural **BLIWA INSURANCE GRANT** of SEK300,000 for a research project designed to help people with long-term illnesses to return to work.
- IVL was allocated funding by **MISTRA** to continue work on the **ENTWINED** research programme for a further four years. The purpose of the programme is to study the interaction between international environmental policies and global trade, with the focus on cross-boundary problems.
- IVL arranged and participated in a number of events held in conjunction with the **COP15** climate negotiations in Copenhagen in December.
- IVL was appointed by the Swedish Environmental Protection Agency to lead the new three-year research programme, **CLIMATE CHANGE AND ENVIRONMENTAL OBJECTIVES (CLEO)**. With a budget of SEK21 million, the programme is designed to examine how climate change will influence the achievement of environmental goals in the future.

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When all is **said and done...**

When all is said and done, there is usually more said than done! However, this does not apply to IVL. We differ from most players in the climate, energy and environmental field in that we marry policy activities and awareness creation with robust technology. Our aim is to achieve concrete results that will provide our principals with concrete benefits.



The year 2009 was a good one for IVL and our financial performance for the year was satisfactory despite the global financial crisis, and despite the caution that prevailed in a number of industries in relation to assignments and investment. Now, midway through the first quarter of 2010, we detect signs that Swedish business is once again prepared to invest more in research and development to maintain its status and expand. Now is the time, as we begin to recover from a wide-ranging and deep recession, that we must make the right decisions and build the sustainable society of the future.

IVL continues to contribute to the competitiveness of Swedish industry through its research and contract assignment activities, the pan-industrial nature of which enables us to take a holistic view that few, if any, of our counterparts can match. The close contacts that we maintain with industry enable us to act as a bridge between the academic community and the practical world of business. With our expertise and roots in environmental, energy and climate-related

research, our experience of exporting environmental technology, and our collaboration with large, medium-sized and small businesses alike, we are particularly well-equipped to contribute to the development and competitiveness of Swedish industry.

Basic funding essential to long-term leadership

For IVL to fulfil this task, it is essential that the allocation of funding for strategic competence development be governed by a principle that extends to all research institutes and does not, on obscure grounds, exclude any one or more of those institutions. IVL is not one of the research institutes that receives funding from this source, an exclusion that we consider unjustified. We have the same requirement for basic funding as other institutes to enable us to maintain our position at the forefront of environmental research in the longer term also.

The fact that IVL is owned jointly by the Swedish government and Swedish business contributes to its role as a credible and foresight-

*We marry **policy activities**
and **awareness creation** with
robust technology'*

We help **companies and organisations** *to utilise their resources* **more efficiently**'

ed partner to the academic community, business sector and society. IVL's ownership and organisational structure offers a unique and efficient model for jointly-financed research – a model that promotes cooperation and trust, and has contributed for many years to the status of world leadership now enjoyed by many Swedish companies.

Exporting cutting-edge technologies

Today's environmental problems and challenges call for global solutions, and afford opportunities for exporting cutting-edge technologies developed in Sweden. In 2009, we continued with our work on various EU projects and with the expansion of our operations, mainly in China and India, where we are conducting projects at both national level (public services, infrastructure etc.) and detailed level (energy-efficient building and the indoor environment). IVL is currently working intensively on these issues – from passive houses in Sweden to energy-efficient building in China, from our involvement in the new international centre in Gothenburg for the development of the sustainable cities of the future to our participation in infrastructural development for poor, urban population groups in Iraq.

Swedish EU presidency

A number of activities undertaken by IVL during the Swedish EU presidency, many of them in cooperation with the Prime Minister's Office, Ministry of the Environment, Ministry of Enterprise, Energy and Communications, and the European Commission, provides another example of our involvement inside and outside Sweden. These activities were focused partly on policy matters, and partly on demonstrating how we contribute to reducing climate and environmental impact with tools and projects. One of the tools demonstrated was a climate calculator, Climate Account, that enables an individual to calculate his or her climate footprint. Another much-noted project dealt with the use of phosphorus-absorbent pellets as a radical and cost-effective method of reducing phosphorus leakage from agricultural land into the Baltic Sea.

An organisational review was carried out in late autumn 2009 to enable us to continue to meet the needs of our customers, both existing and new, maintain satisfactory profitability and develop our expertise. On 1 February 2010, IVL adopted a new organisation with fewer units and a more uniform distribution of management personnel in terms of both gender and geographical location.

IVL a natural and neutral meeting place

Both the business sector, and the public sector at national, regional and local level, face challenges that are complex and constantly changing. IVL will continue to provide a natural and neutral meeting place and communication link that enables academia, business and society to share applied research and discuss new solutions. We help companies and organisations to utilise their resources more efficiently, reduce their raw material and energy costs, and minimise the costs of managing spills and waste, while reducing their environmental footprint. In many cases, our researchers and experts discover that investments made to reduce or eliminate emissions also yield financial benefits for the companies concerned.

Can the solutions needed to emerge from the financial crisis be configured so that they also help to solve the bigger and longer-term problems associated with climate and environmental issues? We believe so. Some commentators maintain that it is too expensive to commit to improved environmental technology. But is this really true? Replacing the horse and carriage with the railway obviously cost money, but was regarded as an obvious and positive development. The development of modern health care and new medicines was also an expensive undertaking, but one that nobody questions today as average life expectancy increases all over the world and human suffering is alleviated. Major investment was required to establish today's high-tech telecommunications systems, but without the Internet, mobile phones and computers, today's increasingly global society would not have existed.

A few years from now, nobody will consider investment in modern environmental technology and in clean, resource-efficient manufacturing to have been too expensive. Like the mobile phone, modern health care and efficient transport, these advances will be seen as a matter of course.

Tord Svedberg
President & CEO
Stockholm, February 2010

This is IVL Swedish Environmental Research Institute

Sweden's first and oldest environmental research institute

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

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

Mission and values

IVL Swedish Environmental Research Institute undertakes applied research and contract assignments with the aim of promoting ecological, economic and socially sustainable growth within business and society at large. IVL's values are founded on credibility, totality and foresight.

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. In 2009, one colleague, Markus Wråke, was awarded a PhD, while IVL acquired another adjunct professor in the person of Ann-Beth Antonsson, who was appointed to a professorship in ergonomics at KTH. Thirty-seven scientific papers by IVL staff (see list on page 37) were published during the year.

Both research and contract assignments

Research and development programmes form the basis of IVL's activities. The company's research is financed partly by joint funding from the Swedish government and the Swedish business sector, and

partly through grant aid furnished by national research bodies, research foundations and the EU.

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

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. In 2009, the state, through the Swedish Environmental Protection Agency and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS), allocated the company research and development funding of SEK30 million against a commitment by business stakeholders to allocate an equivalent amount.

Six priority areas

Research and contract assignments are undertaken in the prioritised thematic areas of Climate and energy, Sustainable building, Resource-efficient products and waste, Sustainable production, Water, and Air and transport. These are described in further detail on pages 8-13.

Knowledge communication

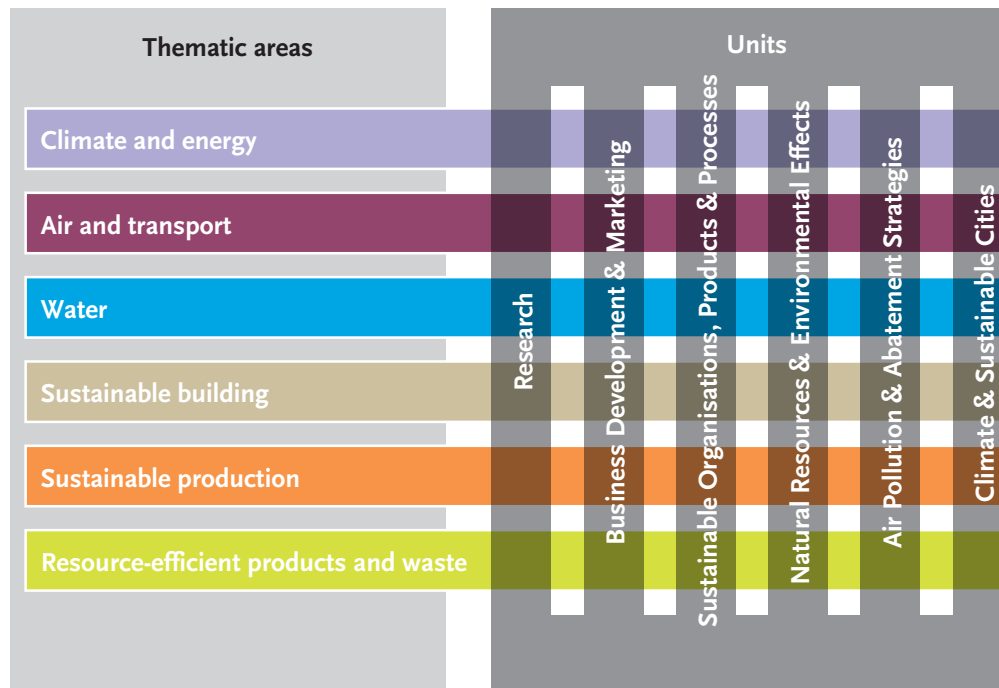
Apart from its series of published reports and articles in scientific journals, IVL disseminates knowledge through lectures and participation in seminars. In addition, it holds its own courses and seminars under the banner of IVL Knowledge for professionals in the area of environment and sustainable development.

Networks and cooperation

IVL is a member of a series of research networks – including the European Network of Environmental Research Organisations (EN-ERO) – and enjoys close cooperation with universities and institutes



Organisation chart



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 Sjöstadspark pilot and test facility. IVL cooperates with Chalmers University of Technology, Gothenburg (CTH) within the framework of the Centre for Environmental Assessment of Products and Material Systems (CPM).

Laboratories

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

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

Together with KTH, IVL also owns and operates Hammarby Sjöstadspark, 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 has a long tradition of activity in the international arena. For example, the company has been in China for almost 25 years, and is also working on contracts in the rest of Asia, as well as in Europe, Africa, and South America.

Environment and quality

IVL deals with environmental and quality matters, as well as work environment issues, within the framework of an integrated management system, which has been awarded environmental certification under ISO 14001 and quality certification under ISO 9001:2000.

Organisation

IVL has been partly reorganised since 1 February. The new structure includes four production units, an administrative unit, and units for research, business development and market. All units work together within the six thematic areas that also comprise IVL's market offer.

Jointly-financed research offers double benefits

Research and development form the basis of IVL's activities. This close association between research and contracts is what enables us to offer our customers advantages that other consultancies lack.

Part of the company's programmes consists of jointly-financed research – a unique form of financing available to pri-

ivate companies and organisations, which can have 50 percent of their research costs covered provided that the research is of significant interest to business and of general relevance to the community. In principle, the findings of jointly-financed research are always public.

This mechanism enables private companies and organisations to obtain assistance in developing cost-effective

solutions to problems relating to the environment and sustainable development.

In 2009, the Swedish government allocated SEK30 million to jointly-financed research through the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) and the Swedish Environmental Protection Agency.

Much to be learned from **successful international air quality programmes!**

During most of the 1980s, the environmental debate in Sweden and Europe was dominated by the issue of acidification, which many politicians described as the greatest environmental problem of our time. The warning signs were many and comprehensive – the scenario was dominated by lakes without fish life, damaged forests, soil acidification and acidified ground water.

The debate concerning the importance of remedial action was also intensive. The power industry in many countries maintained that this would be too expensive and there was also strong resistance to measures proposed to limit emissions from transport. Today, 20-30 years later, many observers consider the acidification issue to be dead. And so it is to a large extent in terms of both political debate and media interest.

Acidification research, like other studies of transboundary atmospheric pollution, have yielded results. Sulphur emissions in Europe have fallen by over 80 percent (and by more than 90 percent in many countries), while emissions of nitrogen oxides will soon have decreased by 50 percent. Moreover, emissions continue to fall thanks to new standards and remedial action, despite the absence of an impelling debate. Today, joint action is driven primarily by the effects of the emissions on health. In addition, negotiations regarding further reductions are taking place within both the *European Commission and the Convention on Long-range Transboundary Air Pollution (CLRTAP)*.

Given the repercussions that followed Copenhagen, and the credibility problems accompanying both the scientific basis and international cooperation, I believe that there is reason to reflect on what has made air quality programmes so successful and whether we involved in climate activities have something to learn from them. However, before continuing, I would emphasise that I am fully aware that climate issues present a problem of a completely different order compared with environmental protection. And although compari-

My first **experience of the air quality area** *was that the process was at least as important as the result*

sons must be made with caution, I nevertheless believe that the latter area offers some experience that is useful.

We at IVL, and I personally, have followed air quality programmes closely and very actively ever since their inception. The first experience that I would like to quote from this area is that the process was at least as important as the result. Two significant working processes that differ from those in the climate area were developed at an early stage. The first was that the scientific work of developing a decision-making basis was at all times a central element of the work of the convention itself. Communication relating to major research into the interaction between emissions and their effects, as well as the conditions and cost of action programmes, took place directly at the negotiating table. We researchers were able, on a continuous basis, to submit documentation in the form of summaries, concepts and calculations. The process was also transparent to the extent that models and data were continually available for scrutiny.

The second experience is that the technical work of the convention was largely decentralised to various working groups that met and worked outside of the direct negotiations. The advantage of this was that technical issues remained technical and non-political, apart from some issues of principle.

IPCC is an anonymous body *in that the researchers behind the results are largely invisible in the* **climate negotiation context**

Now that I have been able to follow international climate negotiations for a number of years in my capacity as director of the climate policy programme, Clipore, it is clear to me that IPCC, whose laudable aim is to present independent results without any political bias has, despite all, become politicised. Furthermore, IPCC is an anonymous body in that the researchers behind the results are largely invisible in the climate negotiation context. Climate negotiators know one, or just a few, of the leading figures within IPCC, as well as a few of their own national experts. In this respect, the anonymity of the research impairs credibility.

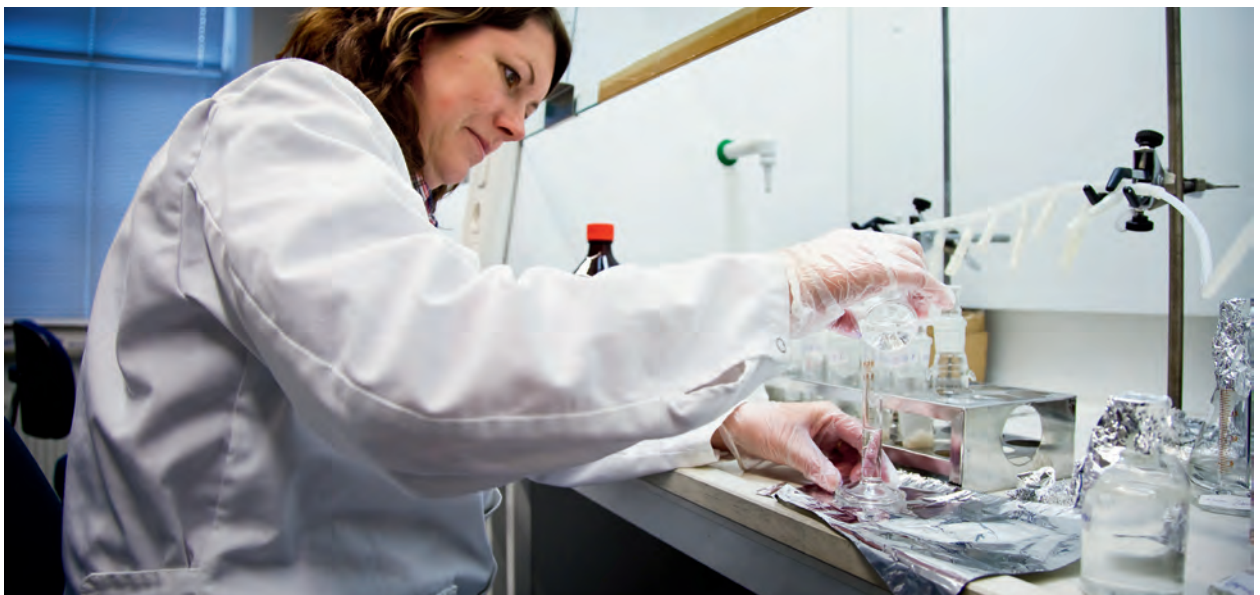
I see a similar problem in relation to technical basis activities in that a large number of sub-groups are currently meeting while the major negotiation sessions are under way – similar to what happened at the COP15 meeting in Copenhagen. Clearer separation of the technical work in committees, which work more independently, would probably simplify the activity and reduce the risk of negotiating more or less about physical constants.

There are several other issues that are worth considering from a comparative perspective. One of the most important is that action taken within the framework of international agreements in general should become cheaper and achieve greater acceptance when implemented than when negotiated.

I hope that the current review of the negotiation process within the climate area will not only examine the technical issues relating to the assurance of scientific credibility, but will also include the somewhat 'softer' issues that will help to establish greater trust between the research and political spheres. The significant potential and power of international negotiations has been demonstrated particularly by activities in the areas of acidification and air quality.

Moreover, both the political and scientific worlds are generally agreed on the seriousness of the climate problem and on the need for action. I believe that the system of international negotiation needs to seek other forms of cooperation between negotiators and researchers, business and various organisations.

PERINGE GRENNFELT
SENIOR ADVISOR, IVL AND DIRECTOR, CLIPORE



Water

IVL hosted the European Affairs ministers of the 27 EU member states on board the research vessel Sunbeam at the end of September 2009. On that occasion, IVL's Sam Ekstrand reported on a highly topical research project designed to reduce eutrophication in the Baltic Sea. The project team is testing a method of trapping phosphorus leakage from agricultural land using clay pellet filters.



Photo: Gunnar Seibold/Regeringskansliet

Trapping phosphorus leakage to protect the Baltic

The leakage of nutrients from agricultural land is significant and is affecting the Baltic Sea severely in the form of eutrophication and dead seabed zones. In 2009, IVL undertook a new and notable research project to alleviate the eutrophication problems in the Baltic Sea. The purpose of this is to develop methods of trapping leakage phosphorus from farmland in ditch dams and ditch filters close to the source, before the pollution reaches major watercourses and the Baltic Sea.

Laboratory trials carried out already indicate that it may be possible to reduce phosphorus leakage from agricultural land by up to 40 percent. As a further benefit, it should be possible to return the trapped phosphorus to the land.

In the first phase of the project, IVL will study the filter materials that are most effective in reducing phosphorus under the most common soil and fertilisation conditions, how the water flow should be regulated and the retention potential of the ditch dams. Among other aspects, the project team will also examine the possibilities of applying the technology on a wider scale in other Baltic States, especially Poland and Russia, and will survey the potential overall reduction of phosphorus discharges to the Baltic Sea. The potential for marketing the filter material will also be examined.

The project is being conducted within the framework of IVL's jointly-funded research programmes, with support from the Baltic Sea 2020 Foundation.

IVL's water activities include the area as a whole, including both the limnetic and marine environments, ground water and storm water. The work extends to all aspects from the identification of sources and sampling to the development of measurement methods, warning systems, risk analysis, and pollution transport modelling. In recent years, there has been a growing demand for holistic analysis taking account of effects on the ecosystem, as well as on the public economy.

We work on projects offering opportunities of developing tools to support planning and adaptation to the new environmental standards applying, among other things, to the implementation of the European Community Regulation, REACH (Registration, Evaluation, Authorisation and restriction of CHemical substances), and the EU Water Framework Directive. Another aspect is to examine how industry can reduce water consumption while minimising the emission of chemicals to the environment.

Climate-related water management

IVL prioritises research directed towards greater understanding of processes that are critical to water quantity and quality in the context of a future climate. This involves the development of models and tools for assessing ecological status, the effects of action programmes, exploitation, and climate change.

Prioritised substances and 'new' chemicals

A priority area at both national and European level, this is related to both REACH and the EU Water Framework Directive. IVL surveys emissions, dispersion paths and levels of chemicals in various parts of ecosystems, both by measurement and using models. Screening is carried out to demonstrate the occurrence of 'new' chemicals in the environment. We perform risk assessments based on the uses and properties of chemicals, and their occurrence in the environment.

Baltic Sea, Skagerrak and Kattegat

Our Swedish seas and coastal areas are affected by difficult environmental problems in the form of eutrophication, the effects of environmental toxins, the risk of oil spills, and exploitation of coastal zones. The Baltic Sea is also a pilot area for the EU's marine strategy. To IVL, the ongoing development of research aimed at quantifying emission sources, and the causes of eutrophication and environmental toxins, are of high priority. We also analyse possible courses of action, both on land and in the receptor, and develop methods of assessing the cost-effectiveness of corrective measures.

Climate and energy

Climate Account is an example of climate and environmental communication developed by IVL. We also develop bases for climate declarations and carbon footprints.



Climate Account calculates individual greenhouse gas emissions

Climate Account is an easy-to-use tool that calculates an individual's climate footprint due to emissions of carbon dioxide, methane and dinitrogen oxide, in the form of GWP (Global Warming Potential) from a 100-year perspective.

The focus is on the individual's consumption of goods, as well as his or her living and travel patterns, based on Swedish conditions in a life-cycle context. This means that account is taken of all stages of product life cycle, from the extraction of natural raw materials, such as oil or iron ore, until the time that the products are recycled, incinerated or consigned to landfill. Emissions from the entire product life cycle are considered, regardless of whether these originate in Sweden or elsewhere.

The user can obtain a quick indication of his or her status relative to the Swedish average and to a sustainable level. The tool also provides

more basic information and hints on how emissions can be reduced, and on the effects of control mechanisms on the population's emissions of greenhouse gases.

Climate Account was developed by IVL in cooperation with, and with financial support from, stakeholders including E.ON, Futura Foundation, Skanska, Swedish Society for Nature Conservation (SSNC), Church of Sweden, Swedish Engineers' Environmental Fund, City of Stockholm, and City of Gothenburg. The web-based tool is also available in several customised versions which, in addition to the foregoing companies and organisations, are used by a number of local authorities.

IVL had the opportunity of demonstrating Climate Account at several ministerial meetings and other international events associated with Sweden's EU presidency in 2009.

Climate and energy is a wide area that impinges on many aspects of IVL's activities. Research in the area is founded mainly on natural sciences, engineering, and economics. In recent years, the company has strengthened its expertise in the area by appointing sociologists and vulnerability analysts.

The activity is focused on communication, policy issues and control mechanisms for limiting greenhouse gas emissions, as well as on the analysis of causal relationships and the consequences of a changed climate. The issue of adaptation to climate change will become increasingly important, and we have focused particularly on projects dealing with vulnerability, risk and consequence analyses, as well as the interpretation and application of climate scenarios.

Policy issues, control mechanisms and decision support systems

The focus of the activity is on climate communication, as well as on the development

and consequence analysis of various control and decision support systems for limiting greenhouse gas emissions, with particular emphasis on emissions trading. The activity is based on Clipore, the MISTRA climate policy research programme, in which IVL plays a leading role.

Causal relationships and environmental consequences of a changed climate

IVL's research into the environmental consequences of climate change is focused on interactions between ecosystems (forest, soil and surface water), air pollution and climate. For example, air pollution can reduce the greenhouse effect as well as reinforcing it. IVL is also a participant in *ArcRisk*, the EU project focusing on how climate change will affect the transport and effects of environmental toxins in the Arctic.

Development of energy systems and action to reduce greenhouse gas emissions

A significant part of IVL's climate activities is focused on action to ensure the efficient utilisation of primary energy resources and the reduction of greenhouse gas emissions. This involves the development, analysis and environmental assessment of all or part of various energy systems, of which system analysis of bioenergy is a key element.

Adaptation to climate change

Although this area is still under development, work is in progress, for example within *Climate and Energy Systems*, the Nordic project in which IVL is carrying out a case study of how a biofuel-powered CHP plant may be affected by climate change.

Air and transport

IVL researchers deal with all aspects of transport and the environment. Emissions from marine traffic is one area in which they possess international leading-edge competence.



Photo: Per Westergård

From knowledge of emissions to estimating cost of action

IVL personnel with measuring equipment are to be seen on vessels in Gothenburg port. Over the years, IVL researchers have developed international leading-edge competence in emissions from marine traffic. Their research has provided a valuable basis for developing higher-quality emission data, for example from the movements of vessels in port, but also in terms of the efficiency of various measures. This may apply, for example, to how different grades of fuel affect particulate emissions. Much of this research is carried on in close cooperation with Chalmers where, incidentally, IVL's Erik Fridell has been adjunct professor of marine environmental technology since the end of 2008.

Over the years, IVL has played a leading international role in the monitoring of what are commonly known as *real-world emissions* from transport. With that experience, we have been able to further refine emission data that can be used to analyse the possible effects of different transport and logistics solutions on human health and the environment.

Emissions of both greenhouse gases and atmospheric pollutants from transport continue to increase despite wide-ranging efforts by both the corporate and public sector to develop less environmentally harmful transport systems. Both market-driven bases for action and opportunities for companies to obtain information about the effectiveness of the measures that are implemented (which are often of a long-term nature) are lacking at present. As a result, tools and support for analysing environmental and climate impact are needed both in the areas of goods and passenger transport.

Acting in close cooperation with potential purchasers, such as goods owners and haulage companies, IVL is pursuing the development of the type of tools that will, firstly, report the extraneous overheads of a company's transport operations and, secondly, provide an idea of the cost-effectiveness of the measures that the company can implement. Extraneous overheads include costs due to factors such as air pollution, climate change, noise, effects on soil, water and nature, traffic congestion, and accidents.

Research into air pollution and the development of action strategies is one of the areas in which IVL both has a long tradition and wide-ranging competence. In recent years, apart from our regular air quality monitoring activities, we have worked intensively on research and development in the transport area, focusing on the environmental and climate aspects. This includes the development of models and tools for analysing the environmental and climate impact of various transport and logistics solutions.

Air quality

The focus is on studies relating to the EU's Air Quality Directive and the Swedish Environmental Objectives (Clean Air). The pollutants under study are nitrogen oxides and particulates, including particle-borne organic and inorganic substances.

Exposure and ecosystem effects of air pollutants

Research under this programme is concerned mainly with dose-effect relationships and their interaction with other factors, such as climate and land use. The pollutants involved are acidifying and eutrophying substances, tropospheric ozone, mercury and organic environmental toxins. Typical projects undertaken in 2009 include the EU project *Impact of Climate Change on the Quality of Urban and Coastal Waters – Diffuse Pollution (diPol)*.

Clean air strategies

Focusing on both local and large-scale environmental and health problems, this sub-programme includes both the development of methods of assessing non-technical issues, the evaluation of control mechanisms

and the development of monitoring methods. The research is based in IVL's participation in SCARP (*Swedish Clean Air Research Programme*) and the further development of GAINS as an integrated model for cost-effective action and effects in the air quality and climate area.

Emissions from transport, and effects of transport and logistics solutions

In this area, the focus is on the harmonisation and reliability of emission models and emissions data in the transport sector, as well as the consequences, from local to global scale, of various transport and logistics solutions both in terms of their impact on environment and health, and on public and corporate finances.

Sustainable building

IVL has developed various tools to help players in the building sector to reduce their environmental and climate footprint.



Photo: Jan Westerlund

IVL provides building sector with tools for sustainable development

In recent years, IVL has developed a series of tools to assist players in the building and property sector to reduce their environmental and climate footprint. Known as Anavitor, one of these has recently become highly attractive to the growing corps of players in the building and property sector involved in preparing climate declarations, performing climate calculations or anxious to offer their customers climate compensation.

The tool calculates life-cycle costs (LCC) and performs life-cycle analysis (LCA) for the Swedish building market on the basis of information already available from business systems, CAD systems or production costings. This information can then be used to calculate the environmental loading of a building structure over its entire life. If required, a company can obtain a report classifying the environmental impact by category, such as operation, maintenance, dismantling, building components, environmental class etc.

Interest is also growing in the development of life-cycle data for major construction and infrastructural projects. At present, this applies to the production of environmental and energy data for entire infrastructures, including roads, railways, bridges, tunnels, station

installations and goods handling terminals. In 2009, for example, IVL developed system analyses for the entire Swedish rail infrastructure on behalf of the Bothnia Line and the former Swedish National Rail Administration (Banverket), which is now part of the recently established Swedish Transport Administration.

The BASTA system is a tool developed by IVL in collaboration with major sections of the building sector, and is managed by a company now owned jointly by IVL and the Swedish Construction Federation. Initiated as a research project, BASTA has since been developed into a functioning marketplace for environmentally compatible building materials. At present, the system covers over 7,700 products complying with its strict environmental standards, making it the biggest system on the market for environmentally compatible product specification.

The basic concept underlying BASTA is that the material suppliers register the products that comply with strict standards in terms of chemical content. Since the system criteria are based on the European Community Regulation, REACH, BASTA is a practical tool that enables material manufacturers, suppliers and purchasers alike to comply with its provisions.

Sustainable building is the IVL area of operation that affects most parts of the community, although the building and property sector is the primary market. Since this sector accounts for a high proportion of society's environmental footprint – not least in terms of the utilisation of resources, energy and chemicals – the potential for change is significant. IVL's role is to work to create socially and economically sustainable built environments, including good, healthy internal environments. Among other things, this means that we will work to:

- reduce flows of scarce resources in the built environment;
- reduce the spread of materials that have an adverse effect on the internal or external environment, or on the people that live and work in them.

Sustainable urban building

This heading covers projects that are focused, at a more general level, on the entire planning

and building process for urban environment and infrastructural development, both in relation to new construction and, not least, the refurbishment of existing environments. *Dispersion models for allergens* is an example of the projects that were undertaken in 2009. At present, no data is available for the dispersion of equine allergens, which is a factor of importance in planning applications and conditions for building in the vicinity of stud farms and stables in built-up areas.

Reducing use and exposure to hazardous substances

This area of activity includes projects designed to reduce the inflow of hazardous substances into building materials, reduce the risk of exposure when using new products containing hazardous substances, and reduce the risks involved in demolition and rebuilding, as well as in surveying and remediating contaminated soil. In 2009, the

BASTA system for phasing out hazardous substances in building products was complemented with a risk information module.

Energy-efficient and climate-adapted building with good indoor environment

In this area, IVL conducts projects focused on efficient energy utilisation with reduced global or local environmental impact, including emissions of greenhouse gases, as well as a higher proportion of renewable energy forms in buildings. We also undertake projects dealing with construction, infrastructure and other urban planning in the context of a changed climate. Projects carried out in this area in 2009 included *Influence of building structures on the indoor environment*, which is designed to establish systems for monitoring the effects of damp in buildings on the indoor environment, as well as various techniques for correcting damage caused by damp.

Sustainable production

IVL's work environment researchers have studied the most effective way of protecting welders from unnecessary exposure to welding fumes.



Foto: Pär Fjällström

Sustainable development assumes good work environment

Two independent studies carried out by IVL work environment researchers yielded similar findings to the effect that breathing equipment does not always provide the protection expected of it.

One of the studies dealt with disposable filter masks, half-mask respirators and fan-supplied respirators with particle filters. A series of about 80 measurements was carried out, mainly in the construction and engineering industries, and the results varied widely regardless of the type of protection used.

In those instances in which the equipment failed to provide protection, incorrect use was found to be the usual reason. Facial hair, old and defective filters, and dirty masks were among the causes identified. In some instances, users were cleaning the devices with a vacuum cleaner or compressed air instead of replacing the filters, causing the filters to crack and permit particle ingress.

The purpose of the second study is to identify the most effective method of protecting welders from unnecessary exposure to welding fumes, based on the findings of visits to those companies that have been most successful in the area. Somewhat surprisingly, however, this indicated that the measures implemented by these companies were still less than satisfactory. The reasons for this were analysed carefully. Apart from factors such as under-designed ventilation systems, defective hoses, modified exhaust nozzles and incorrectly located extraction booms, this study also revealed that the main problem is insufficient knowledge, especially of breathing equipment, and how it should be used and maintained.

Since measures do exist that function well and can reduce the exposure of the welder, as well as his or her workmates, to welding fumes, IVL is continuing on this as well as the breathing equipment project. Supported by funding from AFA Insurance, IVL's work environment researchers will develop a web site providing information on how to use breathing equipment. A web site for improving the work environment in welding operations will also be set up.

Activities in the area of Sustainable Production are very comprehensive, covering everything from environmental engineering solutions to organisational measures designed to create a good work environment, effective environmental management and the societal aspects of an operation, something that affects working conditions both in a company's own facilities and those of its suppliers.

The objective of Sustainable Production activities is to meet the needs of companies for expertise in analysing and developing operations and production activities that comply with environmental and work environment standards, while improving the company's profitability and creating market opportunities for it.

IVL has a very long tradition in this area and is working closely with a series of companies and industries to develop systems for cost-effective environmental engineering solutions, technical and organisational measures designed to create a good work

environment and effective environmental management.

Environmental engineering expertise for process optimisation

The need to streamline production is considerable, especially in view of international competition in many industries. As a result, it is important to develop new, and optimise existing, production engineering solutions in terms of environment, product quality, material and energy utilisation, costs, and societal aspects. Improvements should be developed with a life-cycle perspective of both the environmental and economic aspects.

Environment and work environment important elements of corporate management

Sustainable working life means that production is based on processes that do not harm those who perform them, and that also facilitate the involvement and dedication of the

employees. Sustainable enterprise is about methods of environmental management and sustainable development. These methods, including a sustainable corporate working life, are also being developed, evaluated and implemented in the area.

Tomorrow's products and systems

The area includes work on the development of a basis that will help companies to strategically plan their environmental programmes. Also included is the development of new products and services for sustainable production, and the use of these in the companies' domestic markets, as well as the rapidly growing export market for environmental technology and environmentally compatible products. In 2009, the verification of environmental technology was an important issue, as were other methods of promoting innovation in the field.

Resource-efficient products and waste

Why is the market for recycled structural plastics not working? That was the basic question when IVL undertook the EQP research project. The work illustrates how IVL functions as a neutral meeting place, in this case for players in a complete refinement chain.



Photo: Jan Westerlund

Bringing together the complete recycling chain to increase plastics recycling

End-of-life vehicles and electronic products are collected all over Europe. These are dismantled and sorted in a manner that ensures the destruction, of toxic substances. However, whereas glass and metals are recovered and recycled to make new products, plastics are accumulated in the recycling plants in rapidly growing stockpiles of what are known as structural plastics. Possessing good long-term properties, these materials should be very suitable for making new vehicle or electronic components; however, they are not being used for this purpose.

Together with the Royal Institute of Technology, (KTH), IVL is conducting the EQP (EcoQualityPolymer) research project financed by FORMAS. Among other aims, EQP is designed to examine why the market for recycled plastics is not working and to propose solutions for the efficient recycling of structural plastics.

The first step in the project was to gather together representatives of the complete refinement chain. The meeting was attended by representatives of the vehicle industry (Volvo and Saab), the plastics

industry (Polykemi AB), and the recycling industry (Swerec, Stena, Interseroh, El-kretsen, and the Swedish Recycling Industries' Association). Other participants included a number of trade associations, such as the Swedish Car Recyclers Association (SBR) and BIL Sweden. The interesting aspect was that none of these players had ever sat around the same table to discuss common matters.

All flows, as well as the quantities and types of plastic involved, are charted as part of EQP, from the point that the material becomes part of the relevant product until it reaches its final destination. Issues such as the quality assurance of recycled plastic raw materials and all matters associated with the concept of Design for recycling are among other important aspects.

The overall aim of the project is to increase the recycling of plastics from cars and electronics, and to increase the proportion of recycled plastics in the products – in other words, to close the plastics cycle.

The EQP project illustrates, with unusual clarity, IVL's unique competence in terms of system and life-cycle perspectives, as well as its role as a bridgebuilder between third-level research and business.

The overall thrust of the thematic area of Resource-efficient products and waste is to develop methods and tools for sustainable products and sustainable waste management, and to help to ensure that these are adopted by the community. Another important task is to identify both the obstacles and opportunities associated with products intended for sustainable development or sustainable consumption.

IVL has been working on methods development and system analysis of products and production processes for Swedish business for over 20 years, and system analysis and a life-cycle perspective are now the hallmarks of the company's entire approach and modus operandi in the area.

Products for sustainable development in the community

The focus is on conserving resources and reducing the environmental impact of goods, services and other technical systems from

a life-cycle perspective. In 2009, we made a particular study of the feasibility of developing projects in the area of Sustainable consumption and production – an area prioritised by the EU. This includes the development of methods and tools for quantifying and communicating the environmental performance of products.

Prevention and management of waste

This area includes system analyses, as well as studies of waste prevention, recycling and waste management, and the management of landfill sites and leachate. IVL is leading Sustainable waste management, a multi-year research programme funded by the Swedish Environmental Protection Agency. Examples of research carried out as part of this programme include the recycling of electronic components, plastics and textiles, as well as biological recycling in the form of case studies. The work environment associated with

the prevention and management of waste, and the development of sustainable waste management and cycle activities, are other aspects studied by IVL. In 2009, priority was given to measures for reducing the workload involved in refuse collection operations.

Risk assessment of end-of-life products and waste

IVL develops methods of soil analysis, risk assessment and risk evaluation for the purpose of developing action programmes and suitable remediation measures. In 2009, priority was given to eco-toxicological testing, among other things to provide an alternative to soil testing and risk assessment of materials.

IVL and the Copenhagen Climate Change Conference

During 2009, particularly during the second half of the year when Sweden assumed the EU presidency, IVL was involved in preparations for COP15, the UN Climate Change Conference, which was held in Copenhagen in December.

IVL researchers and experts were involved in several different contexts, ranging from the production of emissions data and the establishment of decision-making bases, to holding seminars for the delegates. These seminars were held either within the UN framework or in the special EU pavilion.

IVL expert contributes to climate negotiations

Throughout 2009, IVL researcher Karin Kindbom, on behalf of the Swedish Environmental Protection Agency, took part in the UN's climate negotiation activities, culminating in the COP15 meeting in Copenhagen during an intensive period in December. Her assignment was to compile documentation and viewpoints prior to the negotiations, and also to observe and analyse the trend in the negotiation status. The work involved the coordination and planning of various matters, both within Sweden and the EU, as part of one of the expert groups under WPIEI-CC (*Working Party on International Environmental Issues – Climate Change*), the EU Council's working group on climate issues. During the Swedish EU presidency in the second half of 2009, Karin, together with the Swedish Environmental Protection Agency representative, worked as a member of the EU's

expert group on reporting issues. The group monitored the negotiations and prepared the EU's negotiating positions in terms, for example, of criteria and rules for inventorying, reporting, monitoring and inspecting the participating nations' greenhouse gas emissions. The group also worked on issues relating to definitions and the future content of MRV (Measurable, Reportable, Verifiable), a key concept introduced during the Bali negotiations in 2007.

Optimistic 2050 energy scenario for Sweden

Swedish emissions of carbon dioxide can be reduced by 70 percent between 2007 and 2050 while maintaining economic growth and using currently known technology – and by 80 percent if carbon dioxide storage (CCS technology) is also adopted. This was the message from IVL's Lars Zetterberg to the Copenhagen negotiators at one of the seminars in which IVL was involved during COP15. Organised in partnership with the Swedish Ministry of the Environment, the seminar was entitled *Getting serious about 2030 targets* and dealt with the problem of setting targets now for 2020 while establishing long-term incentives for a comprehensive reduction in greenhouse gas emissions.

The scenario was a development of the noteworthy energy scenario presented at the IVL conference in May 2009. This examined the feasibility of achieving a significant reduction in carbon dioxide emissions with the aid of currently known technology and intensive utilisation of bioenergy – a development which, in turn, assumes a high level of utilisation of felling waste and forestry by-products for energy purposes. According to the estimates of the Swedish Forest Agency, this would be feasible without jeopardising the availability of forest raw materials for both the pulp and paper industry, and for the sawmilling and wood products industry.

Reliable reporting is key

"Our work of measuring atmospheric emissions, and developing emission factors and methods of inventorying sources and pollutants of various types, has given us a significant body of knowledge about environmental impact in Sweden. With this as basis, we have been able, by a process of summary, evaluation and synthesis, to contribute action proposals, as well as a basis for developing legislation, limits and/or recommendations governing emission levels.

"This knowledge – which we have built up over 40 years or so – has been, and continues to be, very important. This is especially apparent from our experience of the international climate negotiations. Without meticulous procedures for measuring, evaluating and, in particular, reporting emissions we really do not know what the outcome of agreements will be in practice. A reliable and robust reporting system is key to an international climate agreement and forms the basis for verifying that the parties to it honour their commitments under the Climate Convention (UNFCCC) and the Kyoto Protocol."

Karin Kindbom works on the inventorying and reporting of greenhouse gases and other atmospheric pollutants with organisations including the Swedish Environmental Emissions Database (SMED) (www.smed.se), of which IVL is a member.



Karin Kindbom



Photo: Charlotte Nilsson

CDM in China – Chinese and European perspectives

Together with the European Commission's Directorate-General for External Relations (DG Relex), IVL held a seminar on CDM (*Clean Development Mechanism*) in China. CDM may be described as a collaborative model defined by the UN Climate Convention and the Kyoto Protocol that enables concrete measures to be taken to reduce greenhouse gas emissions in instances where the effect per unit of investment is greatest. The seminar focused on technology transfer, the impact of sustainable development, market development and policy. The presentations were based on the results of the *EU-China CDM Facilitation Project* led by IVL.

Climate justice and sustainable development

Together with Action for Global Climate Community, IVL presented a model – a climate community – that can lead the world in the fight against climate change within the framework of continued economic

development. The climate community concept includes opportunities and critical factors for increasing the involvement of China and India in climate policy.

Technology transfer between EU and India

The *European Business and Technology Centre (EBTC)* in India was the subject of yet another seminar. IVL is a stakeholder in EBTC, whose mission is to work to increase the EU's environmental engineering technology transfer to India, with the focus on climate improvement measures.

Climate Account

Delegates and other visitors to the COP15 negotiations were invited to the Bella Centre to test *Climate Account* – the IVL-developed tool designed to help individuals to reduce their climate footprint (see also page 9).



Photo: iisd

IVL's Philip Thörn (centre) took part in seminars on CDM in China and on global climate justice as part of the UN Climate Change Conference in Copenhagen in December.

IVL **over 20 years** in China

After more than 20 years of activity in China, IVL opened the first office of its own in the country on 22 January 2010 in Beijing. The new office is located adjacent to the premises of the Swedish Trade Council, enabling Swedish companies to avail of IVL's many years of experience in exporting environmental technology to China.

Almost 25 years have elapsed since the Chinese ambassador in Stockholm unexpectedly contacted IVL to discuss a list of environmental problems that needed to be solved in Tianjin. One reason was that Tianjin, which was then in effect the port of Beijing, was one of the few open cities in China at the time, and the severe environmental issues that it was obviously experiencing were proving an obstacle in attracting foreign investors.

That IVL was privileged to be awarded this assignment was due to the fact the Sweden had impressed the Chinese as the home of active environmental agencies, and that IVL was considered to be in the absolute forefront of applied environmental research.

SEC helps Swedish companies to penetrate Chinese market

The result of all this was a visit by IVL to Tianjin to meet representatives of the institution now known as the Tianjin Academy of Environmental Science (TAES). This led, in 1986, to the establishment of cooperation that is still active and is manifested, among other things, by the joint-venture company, SEC (Sino-Swedish Environmental Technology Development Centre). During the 2000s, SEC – which now has a staff of four – assisted several Swedish companies to enter the Chinese market.

During the initial phase of IVL's activities in China, interest was focused mainly on the problems associated with the condition of the Tianjin canals, the air quality situation, the expansion of the coastal

zone and the supply of fresh water from various reservoirs. With the improvement of the external environment, the emphasis shifted to industrial effluents and technology transfer in the areas of cleaner production engineering, separation technology, and biological final treatment. A special focus was also placed on the development of information showing the importance of implementing upstream action leading to reduced utilisation of water, energy, and chemical additives.

Training in life-cycle thinking

A large number of researchers, companies and public agency personnel have been trained in life-cycle thinking to encourage a holistic mindset. This was carried out while the parties were also mapping the environmental footprint of products made by three different companies. The result was to enable Chinese companies to identify the market opportunities available to those that manage their environmental programmes conscientiously.

Lake remediation, environmental technology centre and sustainable cities

Over the years, IVL has also participated in projects in other locations in China. Examples include the remediation of Lake Wuliangshuhai in Inner Mongolia, the introduction of the Cleaner Production concept in Liaoning province, a survey of atmospheric pollutants in Kunming, implementation of the Sustainable City concept in Wuhai and Hohot, and the establishment of an environmental technology centre and waste management facility in Wuhan.

EU-funded projects

In recent years, IVL has been appointed to direct more and more EU-funded projects in China. Examples include the *EU-China CDM*



Photo: Jonas Röttorp



Photo: Jonas Röttorp

One of IVL's first assignments in China over 20 years ago was a project to clean the canals in Tianjin.

Facilitation Project, whose purpose is to strengthen CDM (Clean Development Mechanism), one of the flexible mechanisms specified in the Kyoto protocol. One of the biggest EU projects of its type, this is directed by IVL and executed by a consortium of Chinese and European partners. The project includes research, capacity expansion, communications, and information dissemination elements. The research aspect is focused mainly on a study of how CDM is influencing China's sustainable development and how the nation's CDM policies can be improved. IVL has directed research projects dealing with technology transfer through CDM and with the development of the CDM market in China, and has played an active role in other research projects.

Competence development in Shanghai building sector

The *Train the Trainers* project is being carried out within the framework of the EU's Switch Asia programme. Its purpose is to develop competence in the building sector in the Shanghai region through collaboration between IVL, Tongji University – one of the foremost technological institutions in China – and the EU Chamber of Commerce in Shanghai.

The overall goal is to communicate knowledge of energy-efficient building in China. 'Train the trainers' will ensure that more people – especially building contractors and design engineers – benefit from this knowhow. In addition, experiences of different policies on energy-efficient building are compared and policy improvement proposals developed as a means of influencing the Chinese government and EU legislators.

The training methodology used in Shanghai is similar in very many respects to the competence development programme developed by IVL and used within the framework of the competence development programme of the Building-Living dialogue.

Natural gas-based district heating an alternative to coal in China

In a 2009 study carried out with a Chinese partner within the framework of the EU-China Energy and Environment Programme, IVL developed proposals for meeting the energy needs of the partially undeveloped eastern zone of Yizhuang with the minimum possible environmental impact given conditions in the region. The project methodology was based on the concept known as *Comprehensive Energy Planning* (CEP), in which energy production, transport, conversion, and utilisation are considered in totality.

Based on the findings of the study, IVL proposed a changeover to natural gas-based district heating to minimise emissions from the energy system. The study also illustrated the potential environmental benefits of modifying China's energy supply structure in comparison with the present system, in which energy producers may not sell electricity to external customers.

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BUSINESS DEVELOPMENT & MARKETING

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 2009 to 31 December 2009.

Owned jointly by the Swedish government and Swedish industry, IVL Swedish Environmental Research Institute Ltd. (IVL) undertakes research projects and contract assignments in the environmental field. Established in 1966, the company employed a total of 179 people in Stockholm, Gothenburg and Beijing as of 31 December 2009. IVL has been a limited company since 1982 and reported net sales of SEK203.9 million in 2009.

Ongoing implementation of new operational management system

A strategic review of IVL's activities was carried out in 2008. The company's Mission and Vision were revised and adopted by the board (see below), together with the associated key performance indicators (KPIs) for 2009. During the year, the operation was managed and monitored at regular (quarterly) intervals in relation to the set targets. Target compliance for the full year was just over 80%.

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

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

Value system

The work of developing IVL's value system began in 2008. A number of meetings were held in 2009 by a working group to discuss both the content of the value system and how to keep it alive. Among other activities, the task was based on lunch meetings that were open to all employees. The value system was defined as follows:

IVL's value system is founded on credibility, totality and foresightedness. As employees, we are committed to and proud of doing a good job that is of benefit both to society and our customers.

Key events during the year

Organisational review

A review of IVL's organisation began in the autumn. Several change goals were established, including an increase in the number of projects and customers, assured profitability and reinforced competence. A change team was assigned to develop and work through a number of organisational options, and the options reviewed were communicated to the workforce. Viewpoints were sought from both management and other employees through a number of seminars and presentations. Co-determination negotiations regarding the new organisation took place before Christmas, the executive management group was appointed in January 2010 and the new structure became effective on 1 February.

Activities in China strengthened

Due to the increase in scope of its activities in China in a number of areas of operation, IVL opened its own office in Beijing in January. Prior to this, the company's representation in the country had been limited to its joint-venture collaboration with SEC (Sino-Swedish Environmental Technology Development Co. Ltd.) in Tianjin. In November, CEO Tord Svedberg was part of a European trade mission that visited China in conjunction with the *Fifth EU-China Business Summit* in Nanjing. The theme of this meeting was *The Green Agenda*.

Current activities in China include an EU project in Shanghai, in which IVL's role is to support the University of Tongji with various research-related resources that can be used to develop competencies in the construction industry. An energy optimisation project at a new industrial zone on the outskirts of Beijing was also completed. A current water project is designed to develop preventive measures, including warning systems, to protect drinking water sources. In the area of environmental engineering, a number of demonstration projects are also under way in Wuhai, Wuhan and Tianjin.

During the year, IVL continued to direct the major CDM project, whose purpose is to strengthen China's capacity under the Kyoto protocol's *Clean Development Mechanism*. Notable as one of the EU's most successful ventures in China, the project was featured at the COP15 climate negotiations in Copenhagen in December.

Activities relating to Sweden's EU presidency and COP15

IVL was involved in a number of events held in conjunction with the Swedish presidency of the EU, mainly in cooperation with the Prime Minister's Office, Ministry of the Environment, Ministry of Enterprise, Energy and Communications, and European Commission. Among other things, IVL's new climate calculator, *Climate Account* – a tool that enables an individual to calculate his or her climate footprint – was demonstrated at the presidential inauguration on 1 July, the energy and environment ministers' meeting at the end of July, and the high-level meeting in Strömstad in September.

Recognising the important role of the media in communicating knowledge of IVL itself, as well as its research activities, the company took the initiative of holding a full-day training course for journalists on matters featuring on the environmental agenda of the Swedish EU presidency – climate, climate policy, and Baltic Sea issues. This was

carried out in August in cooperation with the Ministry of the Environment, the European Commission, the Swedish Environmental Protection Agency, and Stockholm Environment Institute (SEI).

In mid-September, IVL hosted Ministers for European Affairs of the 27 EU member nations aboard the research vessel, *Sunbeam*. CEO Tord Svedberg described IVL's activities, especially in the Baltic Sea region, and displayed sediment samples from dead and recovering seabed zones in the area. Department head Sam Ekstrand gave an overview of the environmental situation in the Baltic Sea reporting, among other things, on a promising project in which phosphorus-absorbent pellets are being used to radically reduce phosphorus leakage into the sea.

IVL was appointed to arrange a number of activities at the COP15 climate negotiations in Copenhagen in December. In addition to mounting an exhibition and demonstrating the *Climate Account*, IVL contributed to the following events:

- *Climate justice and sustainable development: Intensifying the dialogue between EU, India and China*, in which IVL, together with Action for a Global Climate Community, presented a climate community that can contribute to efforts to combat climate change within the framework of ongoing economic development.
- *CDM in China – Chinese and European Perspectives*, in which IVL, together with the European Commission's Directorate-General for External Relations (DG Relex), held a seminar on CDM in China, technology transfer, impact on sustainable development, market development and policy.
- A presentation on the *European Business and Technology Centre (EBTC)* in India, in which IVL is a partner. The idea is that EBTC will work to increase environmental technology transfer from the EU to India as a means of promoting environmental improvement measures.
- *Getting serious about 2030 targets*, an event in which the IVL-based climate policy research programme, Clipore, together with the Ministry of the Environment, focused on the conflict between setting targets (for 2020) at the present time and long-term incentives for comprehensive low-carbon investment.

Expansion and broadening of competence base

In mid-2008, IVL took over the operations of Aimex – one of Sweden's leading companies in the investigation of damage caused by damp and mould. Additional researchers and experts were recruited in 2009, giving IVL a leading position in an area that is an essential aspect of sustainable building – one of the company's priority areas.

Communication and cooperation

Communication with a series of target groups – internal in the context of research projects, as well as external – will be of greater importance to IVL in the future. One reason will be to increase the general level of knowledge regarding the company's activities and expertise, another to refine and customise communication relating to research findings to suit the particular target group. A further reason is to ensure that the research and development work pursued by IVL will benefit many more stakeholders than at present. This has been underlined, for example, by the independent assessment of IVL research that was initiated in 2008 and continued in 2009.

IVL strengthened its communication resources even further during the year, and undertook an internal project designed both to improve the communicative capacity of its employees and develop

models to improve the target group adaptation of what we communicate. The overall purpose is to deliver even greater customer benefit and ensure that essential knowledge is translated into practical application in the community as quickly as possible.

The training courses and seminars conducted by IVL Knowledge play a vital role in this context. Highly demand-driven, these programmes are tailored to high quality standards, a fact that has also been noted by outside players, who are increasingly using the services of IVL Knowledge for major seminars and events. In April, for example, IVL Knowledge organised the major Nordic passive houses conference – which was attended by over 400 delegates – on behalf of the Swedish Energy Agency, Västra Götaland Regional Administration, Swedish Passive House Centre, SP Technical Research Institute of Sweden, IVL, and Swedish Construction Federation.

Since its establishment in 2005, IVL Knowledge has organised 75 seminars and courses attended by over 2,500 people. IVL Knowledge also organises the Climate Challenge – a competition for young people that was held for the third time in 2009.

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, relatively major resources were committed to the establishment of a company under the working title of EEQ to disseminate and promote the use of a methodology, especially within the process industry, of integrating economic, environmental and quality-related goals in day-to-day operations.

BASTAonline Ltd. became a limited company in 2007, and is presently owned by IVL (60%) and the Swedish Construction Federation (40%). The company administers and develops the BASTA system of evaluating and phasing out particularly hazardous substances in building materials, and had a turnover of SEK1.7 million in 2009. During the year, the company worked to develop the system by incorporating risk management modules, and also initiated collaboration with the Swedish Building Materials Assessment Association (BVB) and the building materials database, DocuByggfakta, both of which are important players in specifying environment-friendly products, in a development welcomed particularly by the construction industry. As of 1 January, the BASTA system and the Finfo product database have been interlinked more closely in technical terms, simplifying their use for many material suppliers.

Collaboration with universities and institutes of technology

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

As one element of these cooperative ventures, IVL is working to establish closer involvement between its researchers and the research programmes of the institutions concerned. One outcome of this during the year was the appointment of Ann-Beth Antonsson to a professorship in ergonomics at KTH's School of Technology and Health, the institution's first female adjunct professor.

Erik Fridell has been adjunct professor of marine environment technology at CTH since December 2008.

CHU

IVL's cooperation with KTH is conducted within the framework of the joint Centre for Sustainable Development (CHU), which is a platform for initiating cooperation rather than a physical facility. The centre received annual funding of SEK2 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 16 preliminary studies was initiated or completed by the end of 2009, in addition to studies undertaken to initiate joint activities in China and India. A decision in principle has been taken to continue the activity from 2010 on, with a stronger focus on the Hammarby Sjöstadsværk project, efficient coproduction of energy goods linked to utilisation, and sustainable urban development. A stronger relationship with basic education is planned, mainly with the new graduate engineering programme focusing on energy and the environment.

Hammarby Sjöstadsværk

Owned jointly by IVL and KTH within the framework of the Centre for Sustainable Development (CHU), the Hammarby Sjöstadsværk 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 stakeholders for testing new treatment technologies on effluents of various types. During the year, IVL continued to use the facility to conduct three major projects in increased biogas extraction, reduced energy utilisation and the treatment of pharmaceutical residues. During the year, we also evaluated a new laser technology for measuring bacteria 'on line' and optimised energy utilisation in pumping. Fifteen wastewater treatment companies form a cluster group that is working to improve public and industrial water treatment technology. With funding from the Swedish Water & Wastewater Association (SWWA) and municipal authorities in the Mälardalen region, a centre for public water treatment has been established in partnership with KTH, Uppsala University, the Swedish University of Agricultural Sciences (SLU) and Mälardalen University. The facility also attracts many visitor groups.

CPM

The Centre for Environmental Assessment of Product and Material Systems (CPM), which reached the end of its fifth three-year project stage in 2009, is operated by IVL in collaboration with CTH. As part of the fifth stage, IVL conducted projects on sustainable transport and the development of methods of 'extra-financial analysis', with the focus on evaluating corporate environmental images. IVL is to increase its involvement in CPM in the sixth project stage due to begin in 2010. Although much of the forthcoming activity is still under planning, the stage was given a flying start when VINNOVA allocated SEK4.7 million for a three-year project to develop tools for calculating the environmental impact and efficiency of transport systems. Managed by IVL, the project will involve collaboration between IVL and Chalmers researchers and major Swedish industrial concerns.

Mistra Urban Futures

In August 2009, it was announced that the Swedish Foundation for Strategic Environmental Research (MISTRA) had selected the 'Gothenburg consortium' – of which IVL is one of seven partners –

to host *Mistra Urban Futures*, an international centre for sustainable urban development. In addition to IVL, the partners in the consortium include Chalmers University of Technology (CTH), University of Gothenburg, City of Gothenburg, Gothenburg Regional Association of Local Authorities (GR), Västra Götaland Region, and Västra Götaland County Administrative Board. Financed by MISTRA, together with the Swedish International Development Cooperation Agency (SIDA) and the consortium members, the centre's total assets are expected to amount to approximately SEK20 million during the 2010-2011 development phase and almost SEK50 million per annum thereafter.

Five pilot projects will be undertaken during the first year of operation under the following headings: *Multi-level governance for sustainable urban and regional development*; *Building for climate change*; *Urban empowerment – fighting social segregation through participation and learning*; *Business-driven sustainable development* and *Urban games: mutual learning for sustainable urban development*.

Ratio of research projects to contracts

Revenue from fees during the year was divided between research projects and contracts in the ratio of 53% to 47% (compared with 46% and 54% respectively in 2008). In this context, research projects are projects funded jointly by the Swedish government and Swedish industry through the Foundation of the Swedish Environmental Research Institute (SIVL), as well as activities financed by grants from public research agencies, research institutes, the EU and similar bodies. Jointly-financed activities accounted for 16% (16%) of fee-based revenue and grant-aided activities for 37% (29%). IVL's research is an integral part of the company's operations and is a prerequisite to its facility for undertaking assignments using leading-edge expertise. Contracts undertaken by IVL include both short-term consultancy and analytical assignments, as well as more comprehensive national and international contracts of a research and development nature.

Current EU projects

A large number of projects funded by the EU research framework programme was approved and initiated in 2009, together with projects financed through other EU organs, such as EU structural funds. The latter category includes *COHIBA (Control of Hazardous Substances in the Baltic Sea region)*, one of whose purposes is to identify major sources of pollution in the Baltic and develop action programmes, *DiPol (Impact of Climate Change on the quality of urban and coastal waters)*, which is designed to study the impact of climate change on coastal waters, *Environmental technology for growth*, to expand the export of environmental technology from the Mälardal region, and *PRIN-CIP*, to gather and disseminate knowledge of climate-smart energy systems in the Kattegatt and Skagerrack, as well as *SPIN (Sustainable production through innovation in SMEs)*, with the aim of stimulating innovative development by small and medium-sized companies in the Baltic region.

Other major EU-funded projects approved or initiated in 2009 include *Advance ETV – European Environmental Technology Verification* to develop a system for verifying environmental technology, *Arc-Risk*, which deals with health hazards associated with climate change in the Arctic region and Europe, *CADASTER (Case studies on the Development and Application of in-Silico Techniques for Environmental hazard and Risk assessment)*, which deals with the development of risk analysis techniques related to the EU chemicals directive, REACH,

GreenClimeAdapt (Green Tools for Urban Climate Adaptation) and *Riskcycle*, dealing with safety and risk evaluation of chemicals. IVL's role in the *NorthPass* project is to work for harmonisation and knowledge dissemination in the area of very low-energy housing in the Nordic countries.

IVL has two major assignments for Switch-Asia, the European aid programme. The first of these, *Train the Trainers*, is designed to expand knowledge transfer in energy-efficient building between the EU and China. The second deals with the reduction of the environmental footprint of major export sectors in Sri Lanka.

Other current research programmes

At the end of 2009, IVL was assigned by the Swedish Environmental Protection Agency to manage *CLEO (Climate Change and Environmental Objectives)*, a new, three-year research programme to study how future climate change will influence the possibility of achieving Swedish environmental goals. IVL was already leading the *SCARP (Swedish Clean Air Research Programme)*, and *Emissions from goods* programmes, which are also funded by the agency, as is the Sustainable waste management programme that entered its second phase in 2009.

AFA Insurance is financing several IVL projects dealing with work environment issues. In 2009, approval was granted for a major project to study methods of improving air quality in office buildings. An AFA-funded study of the role of corporate health care in reducing sick leave was initiated early in the year.

IVL is leading two major research programmes – *Clipore* and *Entwined* – financed by the Swedish Foundation for Strategic Environmental Research (MISTRA). The aim of *Clipore* is to promote the development of a more effective national and international climate policy. The purpose of *Entwined*, which was granted funding for a further four years in 2009, is to study the interaction between international environmental policies and global trade, with the focus on cross-boundary problems.

Jointly-financed research

In 2009, the Foundation of 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 (two areas were audited previously in 2008).

Funding of SEK30 million for jointly-financed research was available to SIVL in 2009 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). Total funding for jointly-funded research consists of SEK13 million from Formas, SEK15 million from the Swedish Environmental Protection Agency, SEK14.3 million from the Swedish business sector and SEK14.3 million from the EU. Additional finance of SEK2 million is provided by Formas for scientific publications.

External audit of two thematic areas

An external audit of IVL's R&D activities in the thematic areas of Water and Climate and energy was carried out in autumn 2009. Although the inspectors were generally very positive, they recommended that

IVL should reinforce the research emphasis by "selling the customer the importance of the academic 'quality mark' and, with it, greater credibility", and also increasing the level of scientific publication. This means that IVL must secure basic funding for long-term competence development.

Examples of jointly-financed research projects

Some of the jointly-financed research projects approved and/or commenced in 2009 are listed below:

Determination of emission factors and dispersion calculations of equine allergies, Calculation tools for climate and environmental effects of personal travel, Development of methods to reduce the environmental impact of metal machining operations, Thermal characterisation of nanoparticles from marine engines, Environmental handbook for fuels, Evaluation of different methods of cleaning mould damage, LCA for infrastructures – development of computer models for environmental, energy and resource evaluation of rail and road infrastructures, LCA of creosote-impregnated posts and alternative materials, Environment in churches – development of energy-efficient systems preventing the occurrence of the mould damage presently being observed in church buildings and their inventories, Development of a web site offering education on a good working environment for welding, Web-based information on the correct use of breathing protection equipment.

Business climate and future development

Global issues – climate and the financial crisis

The year 2009 was notable mainly for the global financial crisis and climate issues. Once the global financial crisis has receded, Swedish business should once more be in a position to commit further investment to research and development, to hold its ground and expand in tough international competition. In this context, IVL, with its platform of environmental, energy and climate-related research, and with its experience of exporting environmental technology and collaborating with large companies and SMEs alike, is particularly well equipped to meet these needs.

In IVL's view, companies will, to a greater extent than before, require assistance in improving their utilisation of resources to reduce both their raw material and energy costs, and the cost of managing spillage and waste. It is also clear that knowledge and technology transfer, including the export of environmental technology to the developing nations, will be of growing importance.

Climate was one of the Swedish government's main issues during Sweden's EU presidency. The fact that the COP15 climate negotiations in Copenhagen in December 2009 failed to produce a binding climate control agreement is likely to result in a major demand for the type of policy support offered by IVL.

IVL also differs from other players in the climate area in its clear focus on applications that yield results. When all is said and done in the climate debate, more is usually said than done! IVL goes a step further by linking policy activities and awareness promotion with concrete action and robust technology.

Basic funding for certain institutes only?

Today, IVL and other research institutes are playing a decisive role in increasing the competitiveness of Swedish industry, and making real use of the research conducted by the universities and other third-level institutes.

IVL's joint ownership by government and business has helped to make it a trusted partner of both. Its ownership structure and

organisation are also recognised by the Research and Innovation Act passed by the Swedish parliament on 28 January 2009, in which the government affirms that the ownership structure is suitable for its purpose and should not be modified if this should be disadvantageous to the company's activities.

IVL's ownership structure was also contributory to the continued high profitability that the company enjoyed in 2009 at a time of economic recession, and despite the fact that, unlike other institutes, it was not a beneficiary of any basic assistance in the form of strategic competence development funding. In 2009, the institutes associated with RISE, the new national holding company, were allocated approximately SEK350 million to enable them to maintain and develop the competencies they require to support Swedish industry.

IVL is not among the institutes that benefit from this funding, a situation that we find inequitable. We see a need for the same type of basic funding as that enjoyed by other institutes to enable us also to maintain our long-term capacity to remain at the forefront of environmental research, thereby contributing to the development and competitiveness of Swedish industry.

Discussions with the ministry in question and with the management of RISE will continue in 2010 with a view to securing a value offer specifying the basic funding that IVL will receive, how its role as Sweden's leading environmental research institute will be strengthened in the event of closer collaboration with RISE, and the benefits of collaboration that may be realised in addition to those already enjoyed by institutes in the RISE sphere.

IVL will continue to function as a natural and neutral communications link and meeting place where academic, business and public stakeholders can participate in applied environmental research and discuss new solutions. The pan-industrial scope of our activities provides us with a holistic view that few, if any, other research institutes can achieve. Institutions, such as IVL, that work in close cooperation with industry act as a bridge between the academic world and the practical world of business. To enable us to fulfil this role, it is important that basic funding be allocated on the principle that the entire research sector is included, and that no institute is excluded on spurious grounds.

Environmental and quality management

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

Most of the company's work relating to sampling, field measurement and analysis is accredited and inspected regularly by SWEDAC (the national Swedish accreditation authority) in accordance with SS-EN ISO/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. A new method of evaluating the environmental impact of major assignments (worth over SEK500,000) was developed in 2009 and concrete results are expected in the years ahead. The company's videoconferencing equipment continues to

increase the number of meetings and discussions that are held without travel, while the number of international video meetings is growing successively. Compared with 2008, the environmental footprint of the company's air travel has been reduced by 9%, while rail journeys now account for a growing proportion (up 4%) of domestic travel. Domestic air travel where rail is an alternative is down 60%.

IVL's quality activities are focused on customer relations. For this reason, activities are monitored continuously to ensure that customers are satisfied with the company's work. A survey is held annually to determine customers' perceptions of IVL in terms of factors such as customer care, competence, on-time performance, and cost benefit. The customer satisfaction index in 2009 was 4.2 (2008: 4.0).

Greener IT with more efficient server systems

Virtualisation of IVL's server environment was commenced in 2009 as a move to improve system reliability. Virtualisation permits a number of physical server computers to be decommissioned permanently without ceasing to be a network resource. Virtual servers share technical resources while acting as individual server computers with different software support and network functions. Fewer physical computers not only lower maintenance costs, but also reduce overall energy utilisation, not least in terms of server room energy demand.

The introduction of virtualisation in IVL's Gothenburg office yielded an annual energy saving of 57,000 kWh in 2009. Further savings may be expected when this is implemented in the company's Stockholm office in 2010.

In general, IVL seeks to minimise the environmental impact of all of its activities without compromising function or reliability. This also applies to IT, in which measures other than virtualisation include environmentally compatible packaging processing and sorting, impacting suppliers/products when purchasing and, by carrying out periodical supplier assessments, providing greater opportunities for meetings without travel with the aid of modern video systems and flexible working through remote-controlled links.

Net sales, net income and capital structure

Group

The Group's net sales for the accounting year totalled SEK204,452 (2008: 196,261) thousand, yielding a net profit after financial items of SEK5,401 (6,183) thousand. The net profit after taxes was SEK3,764 (4,185) thousand. The return on adjusted equity was 8.1 (10.2) % and the return on capital employed 3.9 (5.1) %.

The Group's total assets increased to SEK143,125 (137,168) thousand and its total equity capital to SEK50,079 (46,020) thousand. Cash flow was positive at SEK23,510 (28,336) thousand.

Capital investment in inventories and equipment totalled SEK5,603 (1,961) thousand. The equity/assets ratio increased to 35.0 (33.6) %.

Parent company

IVL's net sales for the accounting year totalled SEK203,939 (195,483) thousand, yielding a net profit after financial items of SEK1,706 (6,253) thousand. The net profit after taxes was SEK389 (2,034) thousand.

Total assets amounted to SEK143,004 (136,638) thousand and total equity capital to SEK30,517 (30,128) thousand. Adjusted equity capital was calculated at SEK37,576 (36,321) thousand. Cash flow was SEK24,131 (28,087) thousand. The return on adjusted equity was 3.4 (13.2) % and the return on capital employed 1.3 (6.0) %.

Capital investment in inventories and equipment totalled SEK5,595 (1,947) thousand. The adjusted equity/assets ratio fell to 26.3 (26.6) %.

Parent company employees

Structure and personnel turnover

During the year, the number of employees averaged 171 (164), of whom 51 (52) % were men and 49 (48) % women. Of the workforce, 27 (28) % hold postgraduate degrees, while 63 (64) % hold masters degrees in engineering or other academic qualifications.

During the year, 11 (12) permanent employees left the company for other positions, while 7 (2) employees retired on pension. New recruitment totalled 14 persons in areas including analysis, indoor environment, emissions, communication, and administration.

Policy review

During the year, the company undertook a review of its internal policies, with the focus on areas of importance to the employees, including working hours and free time, equality and fair treatment, working environment, salaries, travel, recruitment, and competence development. The work will continue in 2010 with the development of implementation procedures and tools.

Competence development

The area of competence development was included in the policy review and the new policy reflects the '70-20-10 model', in which 70% of professional development should take the form of on-the-job training, 20% of networking and feedback, and the remaining 10% of formal training activities. A development target of two days per employee per year, with a yearly review, was established.

Chargeability rate

The chargeability rate for the period was 67.7 (65.0) %. 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 21.7 (21.5) % of normal working time. Sick leave accounted for 2.0 (2.9) % and holiday time for 9.3 (9.2) %. Leave of absence accounted for 7.5 (7.3) %, of which 6.6 (6.3) % 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 2009

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	
	2009	2008	2009	2008
All employees	2.1	3.0	0.3	1.4
Women	2.2	3.8	0.4	2.0
Men	2.1	2.1	0.1	0.8
29 years or younger	2	2.4	0	0
30–49 years	2.4	2.6	0.3	0.9
50 years or older	1.7	3.8	0.3	2.5

Other personnel information

Personnel turnover, %	2009	2008
Number of employees to resign as percentage of average work- force for year	6.4	7.3
– including pension	10.5	8.5

Age distribution, %	2009	2008
Age		
20–29	11	12
30–39	35	34
40–49	24	22
50–59	18	18
60–69	12	14
Average age: 43 (43) years		

Key financial indicators per employee (figures in SEK thousand)	2009	2008
Sales, excl. expenses	1,168	1,128
Salaries	622	612
Net profit/loss after financial items	10	38

Length of service, %	2009	2008
Length of service, years		
–2	27	24
2–10	38	40
> 10	35	36
Average length of service: 11 (12) years		

Qualifications, %	2009	2008
PhD	22	23
Other research qualification	5	5
Graduate engineer	28	31
Other academic qualification	35	33
Technical high school qualification	10	8

Summary of business and financial ratios

(figures in SEK thousand)

	GROUP					PARENT COMPANY				
	2009	2008	2007	2006	2005	2009	2008	2007	2006	2005
Sales and profit/loss										
Invoiced fees and expenses	204,542	196,261	162,561	175,170	197,151	203,939	195,483	162,347	175,071	196,918
Operating profit after depreciation	5,338	5,539	1,292	572	3,339	1,496	5,623	1,123	-1,105	-1,334
Operating profit after financial items	5,401	6,183	2,217	870	3,473	1,706	6,253	2,047	-808	-1,203
Profit margin	2.6	3.2	1.4	0.5	1.8	0.8	3.2	1.3	neg	neg
Capital structure										
Fixed assets	16,636	16,936	15,149	15,008	15,857	17,225	17,514	15,732	15,519	16,343
Current assets	126,489	120,232	83,016	85,332	78,592	125,779	119,124	82,539	85,015	78,236
Equity	50,079	46,020	41,684	40,197	39,856	30,517	30,128	28,094	26,401	26,247
Untaxed reserves						9,578	8,602	5,556	6,032	7,355
Current liabilities	84,204	82,181	51,128	54,703	49,250	101,031	95,035	64,621	68,101	60,977
Provisions	8,842	8,967	5,353	5,440	5,343	1,878	2,873	-	-	-
Total assets	143,125	137,168	98,165	100,340	94,449	143,004	136,638	98,271	100,534	94,579
Adjusted equity						37,576	36,321	32,094	30,744	31,543
Equity, annual funds	48,050	43,852	40,941	40,027	38,489	36,949	34,208	31,419	31,143	31,898
Capital employed, annual funds	140,147	117,667	99,253	97,395	86,905	139,821	117,455	99,403	97,557	87,137
Equity/assets ratio, %	35	33.6	42.5	40.1	42.2	26.3	26.6	32.7	30.6	33.4
Current ratio	1.5	1.46	1.62	1.56	1.6	1.24	1.25	1.28	1.25	1.28
Profitability										
Return on adjusted equity, %	8.1	10.2	3.9	1.6	6.5	3.4	13.2	4.7	neg	neg
Return on capital employed, %	3.9	5.1	2.3	1.1	3.8	1.3	6	2.1	neg	neg
Other										
Capital expenditure	5,603	1,961	3,671	3,538	8,545	5,595	1,947	3,671	3,538	8,545
Invoiced sales per employee, incl. expenses	1,175	1,182	1,022	1,062	1,248	1,193	1,192	1,028	1,068	1,254
Invoiced sales per employee, fees and analyses	1,151	1,119	944	915	976	1,168	1,128	948	919	981
Chargeability rate, %	67.7	65	64.6	65.8	67	67.7	65	64.6	65.8	67
Number of employees	174	166	159	165	158	171	164	158	164	157
Personnel costs per employee	611	606	587	546	533	622	612	592	549	536

Adjusted equity

Total equity, plus untaxed reserves, less deduction of standard tax at 26.3 (28) %.

Equity/assets ratio

Adjusted equity in relation to balance sheet total.

Chargeability rate

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

Number of employees

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

Current ratio

Current assets divided by current liabilities.

Profit margin

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

Debiteringsgrad

Mot kund debiterad tid i förhållande till total närvarotid.

Return on equity

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

Proposed appropriation of profits

(figures in SEK)

The following funds are available to the Annual General Meeting:

Profit carried forward	21,728,376
Profit for year	<u>388,885</u>
Total	22,117,261

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

To be carried forward	22,117,261
Total	<u>22,117,261</u>

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 2009. All figures are in SEK thousand.

Income statement

(figures in SEK thousand)

		GROUP		PARENT COMPANY	
		2009	2008	2009	2008
Operating income					
Net sales	Note 1	204,452	196,261	203,939	195,483
Change in work in progress	Note 2	-5,190	-8,009	-8,926	-7,597
Other operating income	Note 3	226	1 814	222	1 856
		199,488	190,066	195,235	189,742
Operating expenses					
Expenses		-38,086	-32,542	-38,086	-32,543
Other external expenses	Note 4	-42,040	-38,931	-41,780	-38,664
Personnel costs	Note 5	-109,248	-108,811	-109,112	-108,681
Depreciation of tangible fixed assets	Note 6, 10	-4,114	-3,848	-4,099	-3,836
Depreciation of intangible fixed assets	Note 6, 11	-662	-395	-662	-395
		194,150	-184,527	-193,739	-184,119
Operating profit		5,338	5,539	1,496	5,623
Earnings from financial investments					
Interest income	Note 7	219	1 487	212	1 472
Dividends from group companies				148	-
Interest expenses		-156	-843	-150	-842
Profit after financial items		5,401	6,183	1,706	6,253
Appropriations	Note 8			-975	-3,046
Tax on profit for year	Note 9	-1,637	-1,998	-342	-1,173
NET PROFIT		3,764	4,185	389	2,034

Balance sheet

(figures in SEK thousand)

		GROUP		PARENT COMPANY	
		2009	2008	2009	2008
Fixed assets					
Intangible fixed assets	Note 10	2,004	2,666	2,004	2,666
Tangible fixed assets	Note 11	13,793	12,308	13,741	12,245
Financial assets	Note 12	839	1,962	1,480	2,603
Total fixed assets		16,636	16,936	17,225	17,514
Current assets					
Current receivables					
Accounts receivable, trade		32,816	53,280	32,748	53,265
Receivables from group companies		14,772	14,382	14,819	14,382
Income taxes recoverable		2,964	809	2,968	773
Other receivables		1,407	1,579	1,374	1,506
Prepaid expenses and accrued income	Note 13	4,870	4,330	4,870	4,330
Total current receivables		56,829	74,380	56,779	74,256
Cash and bank balances		69,660	45,852	69,000	44,868
Total current assets		126,489	120,232	125,779	119,124
TOTAL ASSETS		143,125	137,168	143,004	136,638
Equity and liabilities					
Equity					
Note 14					
Restricted equity					
Share capital (7,000 shares)		7,000	7,000	7,000	7,000
Restricted reserves		20,921	17,078	1,400	1,400
Total restricted equity		27,921	24,078	8,400	8,400
Non-restricted equity					
Non-restricted reserves		18,394	17,757	21,728	19,694
Profit for year		3,764	4,185	389	2,034
Total non-restricted equity		22,158	21,942	22,117	21,728
TOTAL EQUITY		50,079	46,020	30,517	30,128
Provisions	Note 15	8,842	8,967	1,878	2,873
Untaxed reserves	Note 8			9,578	8,602
Current liabilities					
Advance payments for work in progress	Note 2	49,636	38,195	66,519	51,342
Accounts payable, trade		10,271	13,651	10,273	13,446
Other liabilities		15,025	16,876	15,025	16,876
Accrued expenses and deferred income	Note 16	9,272	13,459	9,214	13,371
Total current liabilities		84,204	82,181	101,031	95,035
TOTAL EQUITY AND LIABILITIES		143,125	137,168	143,004	136,638
MEMORANDUM ITEMS					
Pledged assets	Note 17	6,991	8,084	6,991	8,084

Cash flow statement

(figures in SEK thousand)

	GROUP		PARENT COMPANY	
	2009	2008	2009	2008
Operating activities				
Profit after financial items	5,401	6,183	1,706	6,253
Adjustment for non-cash items	-75	11,315	-931	10,478
Income tax paid	-3,792	-2,172	-2,537	-1,346
Cash flow from operating activities before changes in working capital	1,534	15,326	-1,762	15,385
Cash flow from changes in working capital				
Increase/decrease in receivables	20,246	-7,974	20,212	-7,708
Increase/decrease in accounts payable, trade	-3,380	1,352	-3,173	1,177
Increase/decrease in other liabilities	-1,851	5,504	-1,851	5,504
Increase/decrease in advance payments for work in progress	11,441	20,155	15,177	19,743
Cash flow from operating activities	27,990	34,363	28,603	34,101
Investment activities				
Purchase of property, plant and equipment	-5,603	-1,961	-5,595	-1,947
Purchase of intangible fixed assets	-	-2,149	-	-2,150
Change in financial assets	1,123	-1,917	1,123	-1,917
Cash flow from investment activities	-4,480	-6,027	-4,472	-6,014
Financing activities				
Cash flow from financing activities	-	-	-	-
Cash flow for year	23,510	28,336	24,131	28,087
Opening cash and bank balances	45,852	17,401	44,868	16,781
Exchange rate difference in cash and cash equivalents	298	115	1	-
Closing cash and bank balances	69,660	45,852	69,000	44,868

Comments and notes to the accounts

Parent company and ownership structure

IVL is a wholly-owned subsidiary of the Foundation of the Swedish Environmental Research Institute (SIVL), corporate identity number 802006-2611, whose head office is located in Stockholm. On conversion of the former Swedish Institute for Water and Air Pollution Research (IVL) into a limited company in 1982, the original share capital was allocated in equal proportions to the foundation by agreement between the Swedish government and the Swedish business sector. The aim of the foundation is to promote the long-term conditions required for environmental research and, through its ownership, guarantee the independent status of IVL. The foundation is responsible for the funds allocated jointly by the Swedish government and the Swedish 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 SEK5 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. In April 2009, IVL sought leave to appeal from the Administrative Court of Appeal and this was granted in a judgement issued on 15 December 2009. The final verdict of the Administrative Court of Appeal may be expected in 2010 unless the case is referred to the European Court of Justice, in which case a final judgement may not be expected before 2011 at the earliest.

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 2004 to 2008, the total cost is estimated to be approximately SEK13 million. The company set aside and booked the relief sought as an expense in its accounts for 2008, while the 2009 accounts have been adjusted to allow for the SKV position. This means that a total of SEK2,706 thousand has been booked as a non-recoverable VAT expense.

Accounting principles

Accounting and valuation principles

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

Consolidated accounts

The consolidated accounts have been prepared in accordance with Recommendation RR 14, Joint Ventures, of the Swedish Financial Accounting Standards Council. Consolidation of the associated 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 73.7% of the Group's untaxed reserves, and deferred tax liability, equivalent to 26.3% of untaxed reserves. In the consolidated accounts, the tax reserve 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 12).

Work in progress, parent company

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

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

Fixed-price work in progress is valued at the lower of the production cost and invoicing value. The production cost has been calculated using a prudent valuation; in other words, 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 of the research financier and disburses project funds to other project participants, the funds in question are not reported as turnover, 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.

Notes

Note 1 NET SALES, SEK THOUSAND

	GROUP		PARENT COMPANY	
	2009	2008	2009	2008
<i>Net sales are divided into:</i>				
Invoiced fees and analyses	200,255	185,753	199,742	184,975
Invoiced expenses	4,197	10,508	4,197	10,508
Total net sales	204,452	196,261	203,939	195,483

Of the net sales for the year, 20.32 (18.56) % consists of amounts invoiced to the parent company as remuneration for jointly-financed research performed by the company on a contract basis.

Note 2 ADVANCE PAYMENTS FOR WORK IN PROGRESS, SEK THOUSAND

	GROUP		PARENT COMPANY	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Assignment costs	487,861	432,852	470,978	419,705
Invoiced in advance	-537,497	-471,047	-537,497	-471,047
Book value	49,636	38,195	66,519	51,342
Change reported in income statement	5,190	8,009	8,926	7,597
Change reported in balance statement	6,251	12,146	6,251	12,146
Total change for year	11,441	20,155	15,177	19,743

Note 3 OTHER OPERATING INCOME, SEK THOUSAND

	GROUP		PARENT COMPANY	
	2009	2008	2009	2008
Currency changes, net	-	1,354	-	1,396
Other	226	460	222	460
Total other income	226	1,814	222	1,856

Note 4 OTHER EXTERNAL COSTS (SEK THOUSAND) GROUP AND PARENT COMPANY

The item includes audit fees of SEK216 (220) thousand paid to the company's auditor and SEKo (3) thousand to other Group auditors.

Charges for financial leasing agreements in 2009 amounted to SEK15,322 (14,288) 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:

	2010	2011	2012	2013	2014
Leasing charges, other	2,392	1,499			
Premises	12,481	12,481	12,481	12,481	10,400
Total	14,873	13,980	12,481	12,481	10,400

Note 5 PERSONNEL COSTS

Salaries and other remuneration (SEK thousand)

Parent company	2009		2008	
	Salaries and other remuneration	Payroll overheads (of which pension costs)	Salaries and other remuneration	Payroll overheads (of which pension costs)
Board and CEO	2,044	1,280	1,804	1,359
		(604)		(711)
Other employees	70,387	33,549	66,465	36,285
		(9,199)		(11,787)
Total	72,431	34,829	68,269	37,644

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 SEK97 (75) thousand, and other permanent employees amounting to SEK39 (56) thousand.

The average number of employees¹⁾ for the year was as follows:

Parent company	2009			2008		
	Men	Women	Total	Men	Women	Total
Stockholm	57	41	98	58	37	95
Gothenburg	29	44	73	28	41	69
Total	86	85	171	86	78	164

¹⁾ defined as full-time, salaried employees

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

	2009	2008
Men	11 (6)	11 (6)
Women	6 (0)	6 (0)

Group

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

Management

Parent company

In accordance with the decision of Annual General Meeting, a total of SEK357 (330) thousand was paid in fees to members of the board. Of this amount, the chairman of the board received SEK55 (55) thousand.

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

The CEO shall be entitled to a pension from the age of 62. The CEO's pension is of the defined contribution type and an amount equivalent to 35% of salary for the 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 2009. 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

The item includes bank interest income of SEK203 (387) thousand. SEK28 (142) thousand of the interest expenses of the parent company relates to Group companies.

Note 8 APPROPRIATIONS AND UNTAXED RESERVES (SEK THOUSAND)

	PARENT COMPANY	
	31 Dec 2009	31 Dec 2008
Opening untaxed reserves	8,603	5,557
Accumulated depreciation above plan	560	779
Change in tax allocation reserve	415	2,267
Total appropriations	975	3,046
Closing untaxed reserves of which deferred tax at 26.3 (28) %	2,519	2,409

Note 9 TAX ON PROFIT FOR YEAR (SEK THOUSAND)

	GROUP		PARENT COMPANY	
	2009	2008	2009	2008
Estimate of effective tax rate				
Profit before tax	5,401	6,183	731	3,207
Tax at current tax rate of 26.3 (28) %	1,420	1,731	192	898
Non-taxable income	-2	-24	-41	-24
Non-deductible expenses	189	1,034	189	1,034
Tax from previous year	-	-735	2	-735
Current tax expenses, international	54	71	-	-
Deferred tax	-24	-79	-	-
Effective tax	1,637	1,998	342	1,173
Effective tax rate, %	30.00%	32.30%	47.00%	36.60%

Note 10 INTANGIBLE FIXED ASSETS (SEK THOUSAND)

	DEVELOPMENT COSTS		GOODWILL	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Opening acquisition value	1,277	927	1,800	-
Acquisitions for year	-	350	-	1,800
Closing accumulated acquisition value	1,277	1,277	1,800	1,800
Opening depreciation	-201	-16	-210	
Depreciation for year	-302	-185	-360	-210
Closing accumulated depreciation	-503	-201	-570	-210
Closing residual value according to plan	774	1,076	1,230	1,590

Note 11 FIXTURES AND EQUIPMENT (SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Opening acquisition value	73,587	71,597	73,399	71,453
Purchases for year	5,603	1,961	5,595	1,947
Exchange rate differential/scrapped equipment	-14	29	-	-1
Closing accumulated acquisition value				
Opening depreciation	79,176	73,587	78,994	73,399
Closing accumulated acquisition value	-61,279	-57,404	-61,154	-57,318
Exchange rate differential/scrapped equipment	10	-38	-	-
Depreciation for year	-4,114	-3,837	-4,099	-3,836
Closing accumulated depreciation	-65,383	-61,279	-65,253	-61,154
Closing residual value	13,793	12,308	13,741	12,245

Note 12 FINANCIAL ASSETS (SEK THOUSAND)

Shares and holdings

Company	GROUP			PARENT COMPANY	
	Number	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
BASTAonline AB	600	60	-	60	60
Sino-Swedish (Tianjin) Environmental Technology Development Co. Ltd	1	50	-	581	581
Total			45	686	686

Endowment insurance

	GROUP		PARENT COMPANY	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Opening book value	1,917	-	1,917	-
Acquisition value		3,000		3,000
Change in value	73	83	73	83
Current portion	-1,196	-1,167	-1,196	-1,167
Closing book value	794	1,917	794	1,917

Associated companies

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

Note 13 PREPAID EXPENSES AND ACCRUED INCOME (SEK THOUSAND)

Totalling SEK4,870 (4,330) thousand, this item consists of prepaid rentals for offices and premises amounting to SEK2,994 (2,948) thousand, and other prepaid expenses amounting to SEK1,876 (1,382) thousand.

Note 14 EQUITY (SEK THOUSAND)

Group	Share capital	Statutory reserves	Non-restricted reserves	Profit/loss for year	Total
Opening balance	7,000	17,078	17,757	4,185	46,020
Appropriation per AGM			-4,185	-4,185	0
Transfer between restricted and non-restricted equity		3,474	-3,474		0
Translation difference		369			369
Gain/loss for year			-74		-74
Closing balance				3,764	3,764
Opening balance	7,000	20,921	18,394	3,764	50,079
Parent company	Share capital	Statutory reserves	Profit/loss brought forward	Profit/loss for year	Total
Opening balance	7,000	1,400	19,694	2,034	30,128
Appropriation per AGM			2,034	-2,034	0
Profit/loss for year				389	389
Closing balance	7,000	1,400	21,728	389	30,517

Note 15 PROVISIONS (SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Deferred tax	6,964	6,094	–	–
Pension provisions	1,878	2,873	1,878	2,873
Total at end of year	8,842	8,967	1,878	2,873

Note 17 PLEDGED ASSETS AND CONTINGENT LIABILITIES
(SEK THOUSAND)

	2009-12-31	2008-12-31
Pledged assetsr		
Floating charges	5,000	5,000
Pledged endowment insurance	1,991	3,084
Total	6,991	8,084

Note 16 ACCRUED EXPENSES AND DEFERRED INCOME
(SEK THOUSAND)

	GROUP		PARENT COMPANY	
	31 Dec 2009	31 Dec 2008	31 Dec 2009	31 Dec 2008
Holiday and overtime liabilities	5,214	4,952	5,214	4,952
Accrued payroll overheads	2,301	4,902	2,301	4,902
Other accrued expenses	1,757	3,605	1,699	3,517
Total at end of year	9,272	13,459	9,214	13,371

Stockholm, 10 March 2010

Kjell Jansson
Chairman of the Board

Lars-Göran Bergquist

Peter Nygårds

Christer Forsgren

Camilla Hållinder Ehrencrona
Staff representative

Marie S. Arwidson

Kerstin Cederlöf

Birgitta Palmberger

Kurt Palmgren

Mark Sanctuary
Staff representative

Tord Svedberg
President & CEO

My auditor's report was submitted on 7 April 2010

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 2009 to 31 December 2009. 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 7 April 2010

Ulf H Davéus
Authorised Public Accountant

IVL Board



KJELL JANSSON, ORDFÖRANDE
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 of
the 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



CHRISTER FORSGREN
Member since 2008
Director, Stena Metall



KURT PALMGREN
Board member since 2003.
Director



**CAMILLA HÅLLINDER
EHRENKRONA**
Board member since 2005.
Staff representative



MARK SANCTUARY
Board member since 2008.
Staff representative

Deputy members

LARS EKECRANTZ, Ministry of the Environment

ELISABETH NILSSON, CEO Jernkontoret

PER ERIK KARLSSON, staff representative

ÅSA STENMARCK, staff representative

Executive management group



The executive management group as of 1 February 2010:
Standing, from left: Eva Bingel, Östen Ekengren, Karin Sjöberg, Elin Eriksson, Britt Björnsput, Tord Svedberg and Åke Iverfeldt.
Seated, from left: John Munthe, Anna Jarnehammar, Anna Jöborn and Mats Ridner

Executive management group:

TORD SVEDBERG – President & CEO

ÖSTEN EKENGREN – Executive Vice President, Business Development & Marketing

ÅKE IVERFELDT – Executive Vice President, Business Development & Marketing

MATS RIDNER – CFO

JOHN MUNTHE – Vice President, Research

ELIN ERIKSSON – Director, Sustainable Organisations, Products & Processes

ANNA JARNEHAMMAR – Director, Climate & Sustainable Cities

ANNA JÖBORN – Director, Natural Resources & Environmental Effects

KARIN SJÖBERG – Director, Air Pollution & Abatement Strategies

Adjunct members

EVA BINGEL – Information Director

BRITT BJÖRNSPUT – Director, Human Resources

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