

# ABB Group Sustainability Report

Published June 2002



# Contents

<b>1 Highlights of 2001</b>	<b>28 Stakeholder dialogue</b>	<b>60 Position statements</b>
<b>2 ABB at a glance</b>	How do you give a global corporation a social conscience?	ABB's position on climate change and global warming
<b>4 Chief Executive's letter</b>	<b>32 The role of eco-efficient products</b>	ABB's position on SF <sub>6</sub>
Adapting to a changing environment	Getting more from less	<b>62 ABB's sustainability progress assessment</b>
<b>8 Vision and strategy</b>	<b>38 Common efforts</b>	Statement by Det Norske Veritas
Mapping out the roads to sustainability	Working together to address global problems	<b>65 Glossary</b>
Highlights of the last decade	<b>42 Environmental awards to promote continuous improvement</b>	<b>68 Further reading</b>
<b>11 ABB's sustainability performance in 2001</b>	Thousands of steps in the right direction	
11 Introduction	Environmental Management awards	
12 Environmental performance	<b>48 Policies and organization</b>	
18 Economic performance	<b>56 Sustainability management systems</b>	
20 Social performance	<b>58 Stakeholder relationships</b>	
22 ABB's performance in sustainability ratings		
<b>24 Outlook for 2002 and 2003</b>		
Putting our special skills and knowledge to work		



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# Highlights of 2001

ABB is a global leader in power and automation technologies that enable utilities and industry customers to improve performance while lowering environmental impact. ABB is present in more than 100 countries. We rank number one, two or three in almost all our industries.

## Triple bottom line reporting

In producing this report, ABB has been inspired by the guidelines of the Global Reporting Initiative (GRI), published in June 2000, and has made a first attempt to take account of its recommendations in so far as they are relevant to ABB's activities.

01	53
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Estimated total sustainability costs (\$ millions)

## Sustainability costs

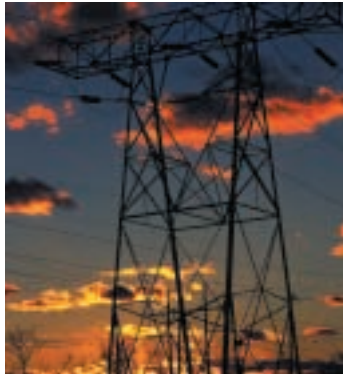
With our environmental management program now in its tenth year, total annual costs directly relating to our sustainability activities have stabilized at around \$ 55 million. (See page 57 for details of these costs).

ABB's Sustainability Report is available in English, German and Swedish on the Internet.

[www.abb.com](http://www.abb.com)

- ABB published its first social policy in 2001 and held round-table discussions with stakeholders in 34 countries about its content and implementation
- ABB's environmental management program now includes operations in more than 50 countries, with Vietnam and Bulgaria the newest members. The ISO 14001 standard has been implemented in some 98 percent of ABB's manufacturing and service sites
- The publication of Environmental Product Declarations (EPDs), begun in 2000, accelerated. By year-end there were 43 EPDs (nine of them externally certified) covering all of ABB's major product lines
- For the third year running, ABB topped its industry group in the Dow Jones Sustainability Index
- ABB was also included in the new FTSE4Good Index of socially responsible companies and was rated one of the top five sustainability companies in India by the Tata Electrical Research Institute
- ABB introduced a program in its research and development organization to investigate future sustainability challenges

# ABB at a glance



## ABB Group

ABB is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact.

We have three end-user divisions – Utilities, Industries, and Oil, Gas and Petrochemicals. Two divisions provide power and automation technology products via internal and third-party channel partners, as well as direct sales. Another division, Financial Services, serves ABB, its channel partners and customers.

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## Utilities

- Business areas**
- Utility Partner
  - Utility Power Systems
  - Utility Automation Systems

ABB serves electric, gas and water industries – whether state-owned or private, global or local, operating in liberalized or regulated markets – with a portfolio of products, services and systems. Our principal customers are generators of power, owners and operators of power transmission systems, energy traders and local distribution companies. ABB is a global leader in the utilities market.

## Industries

- Business areas\***
- Automotive Industries
  - Building Systems
  - Logistic Systems
  - Marine and Turbocharging
  - Paper, Printing, Metals and Minerals
  - Petroleum, Chemical and Life Sciences
  - Telecom and Product Manufacturing Industries

ABB Industries division serves the automotive, cement, chemical, distribution, electronics, food and beverage, life sciences, marine, metals, mining, paper, petroleum, printing, telecommunications and turbocharging industries with application-specific power and automation technology. The division has strong domain expertise to create Industrial IT-enabled products and services for its customers in these industries.

## Oil, Gas and Petrochemicals

- Business areas**
- Downstream
  - Upstream

ABB supplies a comprehensive range of products, systems and services to the global oil, gas and petrochemicals industries, from the development of onshore and offshore exploration technologies to the design and supply of production facilities, refineries and petrochemicals plants. ABB is a leading presence in many of the upstream and downstream markets.

\* Structured Finance and Building Systems business areas are scheduled to be divested.



## Power Technology Products

### Business areas

- Distribution Transformers
- High-Voltage Technology
- Medium-Voltage Technology
- Power Transformers

ABB is the global market leader in power technology products. We cover the entire spectrum of technology for power transmission and power distribution, including transformers, switchgear, breakers, capacitors and cables, as well as other products, platforms and technologies for high- and medium-voltage applications. Our products are used in industrial, commercial and utility applications.



## Automation Technology Products

### Business areas

- Control and Force Measurement
- Drives and Power Electronics
- Electrical Machines
- Instrumentation and Metering
- Low-Voltage Products
- Robotics

ABB is the global market leader in automation technology. We provide products, software and services for the automation and optimization of discrete, process and batch manufacturing operations. Our key technologies include measurement and control, instrumentation, process analysis, drives and motors, power electronics, robots and low-voltage products, all geared toward one common Industrial IT architecture for real-time automation and information solutions throughout a business.



## Financial Services

### Business areas\*

- Equity Ventures
- Insurance
- Structured Finance
- Treasury Centers

ABB Financial Services supports the group's businesses and customers with innovative financial solutions in structured finance, leasing, project development and ownership, financial consulting, insurance and treasury activities. With operations in every major market of the world, ABB is able to offer its customers the unrivaled combination of financial expertise and global leadership in power and automation technologies.

# Adapting to a changing environment

**“ABB has been undergoing a profound transformation. In 2001, we reorganized ourselves along customer lines, making our company simpler to do business with. One fundamental aspect of our business has not changed – our commitment to sustainability.”**

Jörgen Centerman, President and Chief Executive Officer

## **Our four key goals:**

- To improve our economic performance
- To extend our environmental management system to all employees and all activities
- To proceed with the full-scale, worldwide implementation of our social policy
- To align our core areas of power and automation technologies with common efforts to help reduce poverty throughout the world

It is almost a decade since ABB first committed itself to sustainability by signing the International Chamber of Commerce's Charter for Sustainable Development. We are proud to have been a pioneer and aim to maintain our leadership position, devising and implementing best practices in our own operations.

Equally important, we try to stimulate discussion and debate about how to achieve sustainable development internally in ABB, in our direct contacts with customers and suppliers and also in a broader arena that includes governments, non-governmental organizations and international bodies.

One such debate is about greenhouse gases. We believe that climate change is a reality, and we see greenhouse gas abatement as the biggest single environmental challenge facing governments, industry and society today. In 2001 we signed up with “e-mission 55” an international business initiative which calls on governments to ratify the Kyoto Protocol without further delay.



At its first meeting after the 2002 annual general meeting of shareholders, the ABB Board of Directors elected the chairmen and members of the two board committees. The Nomination and Compensation committee is headed by the board's chairman Jürgen Dormann; members are Martin Ebner and Hans Ulrich Maerki. The Finance and Audit committee is headed by Bernd Voss, and Roger Agnelli and Jacob Wallenberg are committee members.

The role of the Board of Directors in ABB is, among other matters, to supervise the persons entrusted with the management of the company.

This role was highlighted in February 2002, when the board demanded restitution from former CEOs Percy Barnevik and Göran Lindahl of parts of their pensions and other benefits – paid to them in excess of obligations. The board cited procedural shortcomings and failures to secure proper board approvals. Agreements were reached in time for the annual general meeting on March 12, and substantial sums will be returned to the company by the former CEOs.

In connection with these events, ABB has taken steps to increase transparency on executive compensation. For the first time, ABB reported in its Annual Report the 2001 compensation for both the Group Executive Committee and the board, as well as the base salary and bonus of Jörgen Centerman, president and CEO.



Above:

#### **Committed to sustainable energy**

ABB is spearheading the movement to sustainable energy. We are the largest supplier of generators for wind turbines and a leader in advanced power electronics for the latest distributed, small-scale generating solutions.

Below:

#### **The working environment**

ABB's manufacturing and service facilities are run to exacting standards for health and safety, and environmental management. We have implemented the ISO 14001 standard in 531 manufacturing plants – 98 percent of the total.

## **Sustainability and the reshaping of industries**

Nearly two years ago we divested our large-scale power generation business, and set out our vision of the future of the electricity supply business. A shift to sustainable energy sources would create demand for new, small-scale, distributed power generation technologies, along with efficiency gains and environmental improvements in the traditional electricity supply.

ABB is already a leading supplier of many of the new alternative technologies, including microturbines, cogeneration systems and wind-powered generators.

We are also strong in power electronics and controls, which are key enabling technologies for distributed power generation. We are developing converters and control systems for microturbines, fuel cells and photovoltaic applications. Some examples of ABB's activities in these fields are described in this report.

Another fast-growing part of our business is Industrial IT: a new integrated systems architecture for industries and utilities.

Industrial IT brings many benefits. Remote control and automation make factory floors safer; consumption of energy and raw materials is minimized; costs are cut and the finished products are more eco-efficient.

## **Sustainability in ABB**

In 2001, we began a deep transformation of our organization to make it more responsive to our customers' needs. While this process was under way, a business downturn and improved internal processes caused us to reduce the number of employees working in the company. Our sustainability function, which involves some 600 people worldwide, was unaffected by the reduction.

One of the most significant sustainability developments of the year was the launch of our new social policy, with an unprecedented campaign of stakeholder engagement. We held 45 round-table discussions with stakeholders in 34 countries to gather views on the policy, as well as suggestions on how to implement it and measure its performance.

In years of hard work ABB has made sustainability part of our business approach. Independent assessors confirm this: for instance, the Dow Jones Sustainability Index has ranked us at the top of our industry group for three years running.

## Chief Executive's letter continued

In most of our product lines, ABB offers some of the most sustainable solutions available. But this is not enough – our customers have to buy them. It is pointless for our customers to invest in sustainable products, if the extra cost makes their businesses uncompetitive.

Creating the right climate for sustainability requires the involvement of more parties than just suppliers and buyers. Governments, for instance, can create fiscal incentives. Non-governmental organizations of all kinds are increasingly successful in mobilizing public opinion against unsustainable practices. And individual consumers choose to buy sustainable products, even if they cost a little more.

### Ten years after Rio: more talk, more action

A decade ago world leaders, business heads and non-governmental organizations met in Rio de Janeiro, where they issued the United Nations Declaration on Environment and Development. In 2002, they will meet again – this time in Johannesburg, where the agenda includes three of the most important and controversial challenges to sustainability: globalization, climate change and the widening poverty gap.

We at ABB support global efforts to promote sustainability, and we will take part in the discussions in Johannesburg.

But we can do more than talk. In 2001 we started a program called "Access to Electricity." Two billion of the world's poorest people have no electricity supply, and no access to the benefits, such as clean water and basic sanitation, that electricity can help provide.

Our researchers are examining how ABB's sustainable, small-scale power generation technologies might fill this gap. This will be a long-term commitment for ABB, working internationally with various partners to make real progress in the fight against poverty.

Another of our initiatives in 2001 was to launch a corporate research and development program focused on sustainability issues.

### Introducing the triple bottom line

One of the biggest problems of reporting on sustainability performance has always been the lack of agreed standards and measurements.

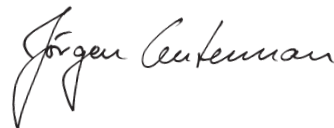
This year, our Sustainability Report has been inspired by the Sustainability Reporting Guidelines, first published in mid-2000 by the Global Reporting Initiative (GRI) – an international multi-stakeholder undertaking. The GRI guidelines are based on a "triple bottom line" reporting concept – covering environmental, economic and social performance.

### The changing climate

In 2002, we intend to integrate sustainability into all levels of our organization: our strategic plans, our management systems and our operating processes. This activity will be led and supported by our Group Function – Sustainability Affairs. As a successor to Jan Strömblad, who retired during 2001, we have brought in Christian Kornevall, who has extensive and diverse experience in the sustainability area, to spearhead this effort.

Of course, we will continue to promote sustainability internally, and in discussions with our customers, suppliers, business and government leaders, and all our other stakeholders.

I believe that the global business climate is changing. ABB has already shown that a commitment to sustainability can be good for business. Soon, commitment to sustainability will be a fundamental requirement for all businesses. And this is a climate for which we at ABB are very well prepared.



Jörgen Centerman  
President and Chief Executive Officer



## Vision and strategy

### Mapping out the roads to sustainability

#### ABB's vision

Commitment to sustainability is key to ABB's value creation. Sustainability is about securing our common future.

For a global company like ABB, it involves working in three dimensions: environmental, economic and social. The right balance of the three will ensure ABB's prosperity and improve the quality of life of the communities in which we operate.

We have come a long way.

Our products are among the most eco-efficient available. This is documented in our Environmental Product Declarations, which help customers make informed, sustainable choices.

Almost all our manufacturing sites have implemented ISO 14001, which is proof of their good environmental practices.

Within ABB, we have good awareness of our sustainability objectives, strategies and roles. Documents like our "Mission and Values" aim to inspire every ABB employee to live and communicate our commitment to sustainability.

So where do we go now?

#### Exploring new viewpoints

We are integrating sustainability more closely into all our operations and decision-making processes.

Together with our customers in industries and utilities, we are starting to look up and down the supply chain, tracing the links all the way from primary production through to consumption.



## Highlights of the last decade

#### 1992

ABB signs the International Chamber of Commerce (ICC) Charter for Sustainable Development.

Environmental Advisory Board is formed.

Corporate Staff for Environmental Affairs is established.

#### 1993

Country environmental controllers and local environmental control officers are appointed.

38 countries participate in the environmental management program.

The first procedure for reporting on environmental performance is introduced.

#### 1994

The decision is made to implement Environmental Management Systems (EMSs).

43 countries participate in the program.

ABB publishes its first environmental report.

#### 1995

15 ABB sites are certified to BS 7750 and/or Eco-Management and Audit Scheme (EMAS).

The first set of corporate environmental objectives is published.

The first design tool for Life Cycle Assessments (LCA) studies of products is launched.

#### 1996

50 ABB sites are certified to ISO 14001.

The first ABB construction site is certified to ISO 14001.

The first ABB site in China is certified to ISO 14001.

Exploring different viewpoints will help us discover new routes to sustainability.

To this end, we will work more with external partners and bring combined resources to bear on complex problems. The recently completed China Energy Technology Program is an example of this type of collaboration (see page 39).

We are also looking at transportation. With activities in 100 countries, ABB is constantly shifting goods and people around the world. Can we reduce the environmental impact by improving our logistics and making better use of telecommunications?

#### **ABB's strategy**

In the short to medium term, this is our strategy for sustainability:

- To ensure that all operating units implement environmental management systems and continuously improve their environmental performance; and to encourage them to set an example by going beyond mere compliance with local environmental standards and laws

- To continuously improve the eco-efficiency of all our products, systems and services, and publish this information in environmental product declarations
- To share the most advanced and eco-efficient technologies with developing countries
- To apply our social policy, including occupational health and safety policies, throughout the Group, and develop procedures and indicators to improve social performance continuously
- To favor and encourage suppliers who have environmental and social policies similar to our own
- To apply resources to common efforts that foster economic, environmental, social and educational development
- To analyze and reduce the environmental impact of our transportation of goods and people
- To use ABB's communications resources to raise awareness of sustainability matters, particularly among our own employees



#### **1997**

123 sites in 20 countries are certified to ISO 14001.

A second-generation LCA strategy is developed.

The second generation of environmental objectives is published.

#### **1998**

ISO 14001 is implemented at 449 sites in 32 countries.

ABB's CEO serves as commissioner on World Commission on Dams.

A second-generation LCA software tool and database are introduced.

Environmental management report summary in 23 languages and the complete report on ABB's Web site improve communications.

#### **1999**

ISO 14001 is in place in 519 sites.

Business area environmental controllers are appointed.

First Environmental Product Declarations (EPDs) are published.

ABB is the first company in South Africa's Black Economic Empowerment (BEE) scheme to receive ISO 14001 certification.

CEO initiates World Energy Council's program to reduce greenhouse gas emissions.

#### **2000**

ISO 14001 is implemented at 539 sites – 97 percent of the total.

Case studies are conducted, investigating the social impact of our operations at sites in seven countries.



## Vision and strategy continued

### Mapping out the roads to sustainability

#### Toward a new consensus

Strategies and policies can take us some of the way. But to make real progress, we need to implement our policies and help shape the environment in which we are active.

In short, it is not enough for ABB alone to place a premium on sustainability. Our customers, our suppliers, in fact, all our stakeholders must agree on the value of sustainability.

More, we must constantly strive to transform sustainability into customer values.

This is the true challenge before us. Gradually, subtly, every company, government, stakeholder and individual must come to agree that sustainable policies are the only acceptable policies.

Sustainability is everyone's business.



ABB's social policy is launched, applicable to all employees.

ABB participates in the launch of the United Nations Global Compact.

ABB divests large-scale fossil fuel, hydro and nuclear power generation activities, and focuses on alternative energy solutions.

#### 2001

ABB produces its first "triple bottom line" Sustainability Report, taking account of the Global Reporting Initiative Guidelines.

Stakeholder dialogue is conducted in 34 countries on the social policy.

Corporate research and development program looks at ABB's future sustainability challenges.

New scorecard developed with Det Norske Veritas (DNV), based on the GRI Guidelines, to better assess ABB's sustainability performance.

By end 2001, 43 EPDs had been produced covering ABB's major project lines.

ISO 14001 is implemented at almost all sites, and program is adapted to cover all remaining ABB employees on non-manufacturing sites.

ABB completes the three-year China Energy Technology Program, undertaken in conjunction with the Alliance for Global Sustainability.

CEO signs corporate citizenship statement drawn up by chief executives at the World Economic Forum annual meeting in New York.

ABB launches biennial Environmental Award scheme for employees.

ABB is rated top of its industry group for the third year running in the Dow Jones Sustainability Index.

For 2001, we have changed the way ABB reports its sustainability performance. The information on the following pages is structured according to the recommendations of the "Sustainability Reporting Guidelines" published in June 2000 by the Global Reporting Initiative (GRI) – a body funded by, among others, the United Nations and the U.S. Environmental Protection Agency.

The GRI suggests reporting indicators for the "triple bottom line" – environmental, economic and social performance – though it freely admits that the latter two are at a very early stage of development.

As far as possible, we have gathered the type of data suggested by the GRI and presented it in the format it suggests. In some cases, the performance indicators suggested by the GRI have not been measured by ABB before; it is, therefore, impossible to make comparisons with previous years. This problem will, of course, be solved with the passage of time.

Some of the performance indicators suggested by the GRI are not relevant to ABB, or cannot be presented meaningfully or aggregated at this stage across our multinational corporation.

We hope to work closely with the GRI in the future to refine its list of performance indicators, as applied to ABB.

### Access to electricity

Electricity is essential for social and economic development. Yet almost one-third of the world's people have no electricity supply. ABB's "Access to Electricity" program will show how to solve the problem, using small-scale, sustainable solutions.



## Environmental performance

### Overview

We expanded the scope of our environmental reporting in 2001. This year, our report covers the activities of approximately 80 percent of ABB's employees, compared with 65 percent in 2000. Those parts of ABB that are not yet covered by our reporting system have very limited environmental aspects. However, we aim ultimately to apply the principles of ISO 14001 to all our operations and report on our entire organization.

The increase in scope, as well as various divestments and acquisitions during the year, naturally makes year-on-year comparisons difficult.

We are pleased to report that energy use per employee was cut by five percent in 2001, beating our target.

For the first time we have reported on our use of transportation. The figures show that our principal mode of transportation is by road. Many of our facilities are now taking steps to reduce the need for road transportation.

At the end of this section we list some environmental incidents and accidents. A total of 66 incidents were reported in 2001. None of them had any serious environmental impact. An important principle of all local environmental management systems is to "learn from our mistakes" by taking action to prevent a recurrence.



## Energy consumption

### Energy used for heating, lighting and manufacturing processes (GWh)

	1999	2000	2001
Primary fuel			
Oil (7.56 MWh/ton)	274	150	165
Coal (9.96 MWh/ton)	59	45	24
Gas	557	533	624
District heat	371	304	318
Electricity	1,914	1,381	1,242
<b>Total energy used</b>	<b>3,175</b>	<b>2,413</b>	<b>2,373</b>
MWh per employee	22	21	20

We have chosen not to report energy consumption per unit of production or value added because most of our products are made to customer specifications. Instead we monitor the use of energy per employee.

## Materials

### Total materials consumption

The main materials used in ABB's products, by weight, are steel, copper, aluminum, mineral oil and various plastics. The diversity of ABB's product range, however, means that aggregate reporting of materials consumption is not meaningful. However, consumption is monitored for individual products, and it is a corporate objective to minimize materials use. Some business areas have, for example, managed to reduce the use of basic materials, such as steel and copper, by up to 20 percent at the same time as the efficiency of the products has increased.

### Use of recycled material

For the first time, we have collected figures to show how much material we recycle in-house, and then reuse in our products and processes, instead of sending it for disposal. More than 7,500 tons of material were recycled in this way in 2001, including packaging material, thermoplastics, wood, solvents and oil.

## Use of packaging material

The use of packaging material is not currently aggregated at corporate level. However, we intend to report on the use of packaging material in coming years.

For internal reporting, we intend to refer to the EU Directive 94/62/CE on packaging material and packaging waste.

## Use of hazardous materials

ABB follows or exceeds the definitions of hazardous waste set by individual countries.

It is an ABB corporate objective to phase out the use of these hazardous substances, which are recorded on ABB's list of "restricted" substances. Each business area sets targets for this. Priorities for replacement are set using criteria such as the environmental aspects of alternatives, the risk of the substance escaping into the environment, how hazardous the substance is, whether we can use the substance under strict control and if there are technically acceptable alternatives.

In these tables we list materials and substances used in our own production or used by suppliers according to our specification.

## Lowering environmental impact

By steadily reducing the environmental impacts of our operations, we improve working conditions and help raise the quality of life.

## Environmental performance continued

### “Restricted” organic substances used in production (tons)

	1999	2000	2001
PVC resin			
For cables and molding	10,228	1,382	<b>1,043</b>
Phthalates (DEHP, DOP)			
Softener for PVC	2,709	88	<b>39</b>
Phthalates (DIDP)			
Softener for PVC	1,417	96	<b>7</b>
Organic lead			
Stabilizer in plastics	65	8	<b>2</b>
Chloroparaffin <C14			
Softener/flame retardants	103	1	<b>&lt;1</b>
Chloroparaffin C14–17			
Cutting fluid	n. a	<1	<b>&lt;1</b>
PBB and PBDE			
Flame retardants in plastics	77	25	<b>8</b>
Insecticides			
Control of insects	0.7	0.7	<b>&lt;1</b>
Fungicides			
Control of water fungi	1.3	1.3	<b>3.5</b>
Nonylphenoletoxylate			
Degreasing agent	1.7	<1	<b>&lt;1</b>
Polyurethane			
Coating, paints, adhesives	n. a	715	<b>927</b>
Epoxy (low molecular)			
Coating, paints, adhesives	n. a	117	<b>424*</b>
Epoxy (high molecular)			
Molded parts	n. a	586	<b>1,114*</b>

\* The increase in 2001 over 2000 was caused by changes in the product mix.

### “Restricted” metals and inorganic substances (tons)

	1999	2000	2001
Lead			
Submarine cables	4,586	2,974	<b>1,500</b>
Other products, e.g. counterweights in robots	1,381	2,780	<b>2,037</b>
Cadmium			
Rechargeable batteries	1.3	1.9	<b>2</b>
In lead alloy	3.6	2.5	<b>3</b>
CdO plating on contactors	0.2	0.4	<b>&lt;1</b>
Mercury			
Measuring instruments for the medical industry	0.012	0.032	<b>0.027</b>
SF <sub>6</sub> Insulation gas (inflow to ABB facilities from the suppliers of the gas)*	n. a	331	<b>457</b>
SF <sub>6</sub> Insulation gas (outflow to customers)	n. a	301	<b>403</b>

\* The quantity constituting the difference between inflow and outflow is safely stored at ABB manufacturing sites.

### Products in use containing hazardous organic substances

	1999	2000	2001
No. of transformers with PCB oil	57	47	<b>64†</b>
No. of capacitors with PCB oil	5,318	4,212	<b>3,056</b>
Mercury in welding machines (kg)	16	16	<b>16</b>

† New data has shown that another 41 transformers with PCB are in use. However, the program to replace all PCB transformers continues. As can be derived from the figures, we have eliminated another 24 PCB transformers.

The quantity of PCB oil still in use in transformers and capacitors was 120 tons in 2001. There is an ongoing program to replace it.

### Water consumption

	1999	2000	2001
Sanitary water and water for process cooling (ktons)	7,355	6,044	<b>5,390</b>

The figures above are the amounts of water bought from water companies. ABB’s manufacturing processes do not use a significant amount of water, and no water source is significantly affected by our use of water.

## Emissions

### Greenhouse gases (ktons)

	1999	2000	2001
CO <sub>2</sub>	1,173	964	910
SF <sub>6</sub> (in CO <sub>2</sub> equivalents)	498	385	501

CO<sub>2</sub> emissions are calculated on the basis of our in-house use of energy for production, lighting, heating and air-conditioning. SF<sub>6</sub> emissions are estimated as leakage of five percent of all gas used by ABB (see page 14 under “outflow” of SF<sub>6</sub> gas). The CO<sub>2</sub> equivalent for SF<sub>6</sub> is 24,900. The “outflow” quantity depends on the manufacturing output of equipment such as switchgear, containing SF<sub>6</sub>. In 1999, we set a target to reduce ABB’s own greenhouse gas emissions by one percent per annum over the next five years. Three years into this program, we are well ahead of this target. However, the figures for 1999 and 2000 are not comparable with the figures for 2001 because the base for our reporting has been changed to cover more than manufacturing sites.

### Ozone-depleting substances (tons)

	1999	2000	2001
CFC class II			
Customer installations/products	48	40	40

CFC class I is banned in ABB products and for the service of customer installations. Some CFC class II is still used in air-conditioning equipment and for the service of customer installations. We aim to phase this out. All CFCs are handled according to well-defined procedures in each site’s environmental management program.

### Substances forming ground level ozone (tons)

	1999	2000	2001
VOC	1,276	1,261	1,204
VOC <sub>Cl</sub>	149	157	143

The use of chlorinated VOC – one of the major substances forming ground level ozone – will be phased out. We now also use water borne paint as much as possible to reduce emissions even further.

The current reporting system does not distinguish between the various types of VOC and VOC<sub>Cl</sub>. Therefore, it is not meaningful to convert the information into ethane equivalents as required by GRI. The major constituents of VOCs are, however, xylene, thinner and perchloroethylene.

## Effluents

### Discharge of water

#### Recipient (% of total discharge)

	1999	2000	2001
Public sewer	n.acc.	n.acc.	63
Water body	n.acc.	n.acc.	37

In spite of the fact that ABB’s manufacturing operations do not use water in their processes, some facilities discharge water from processes. Typically, the water comes from surface treatment plants, cooling water and test plants. As seen in the table, more than 60 percent of the effluents (counted as number of plants) discharge to public sewer systems.

We also own and operate wastewater treatment plants (wwtp). We have 52 such plants to treat process water before it is discharged to the recipient. The local environmental management systems control the operation of all these plants.

## Waste

For hazardous waste, we use well-established and officially recognized definitions, such as the EU definition. Hazardous waste is sent only to officially authorized disposal agents.

ABB stores hazardous waste such as slurries, spent oil and batteries in countries without disposal facilities until permanent disposal is available.

### Hazardous waste sent for disposal (tons)

	1999	2000	2001
Solid	5,652	4,278	3,753
Liquid	5,295	4,343	5,216

### Hazardous waste in temporary storage for future disposal (tons)

	1999	2000	2001
PCB-contaminated waste (oil and products)	29	30	32
Other hazardous waste	n.a	n.a	60

Storage of PCBs is subject to control both by environmental agencies and environmental management programs on site.

## Environmental performance continued

### Non-hazardous materials and substances sent for recycling (tons)

	1999	2000	2001
Solid	210,316	107,650	<b>106,998</b>
Liquid	2,995	2,025	<b>2,615</b>

Solid materials are mainly steel, copper, and aluminum. Liquid materials are mainly mineral oils. This includes material from the "take-back" programs we have set up in some countries for old products.

### Disposal methods for other non-hazardous wastes (in percentage of waste quantity)

	Recycling	Incineration	Landfill	Other
Wood	51	21	24	4
Plastic	30	19	49	2
Paper	78	6	15	1

Total quantities of these wastes are not aggregated at corporate level. The figures represent the disposal method as a percentage of the total of non-hazardous wastes.

### Transportation

#### Percent of total number of journeys, by type

	Road	Rail	Sea	Air
Business travelling	55	8	n.a	37
Materials from suppliers	77	6	9	8
Delivery of finished products	71	5	15	9

It is too early to interpret the statistics accurately because this is the first time we have calculated data on transportation types. However, the trend is clear. Many ABB facilities have identified the transportation of goods and people as a significant environmental aspect and have established programs to reduce emissions from transportation.

### Suppliers

Major suppliers of direct materials and services (those that go directly into manufacturing) must:

1. Have implemented an environmental policy.
2. Have identified the significant environmental aspects of manufacturing the products they supply to ABB.
3. Ensure that all operations and processes comply with environmental standards and legislation.
4. Have in place the basic elements for continuous improvement of environmental performance.

Beyond these basic criteria, ABB favors suppliers who have implemented environmental management programs, in particular those with ISO 14001 certification.

### Products and services

Life Cycle Assessments (LCAs) performed on ABB products that generate losses when used by our customers show that the overwhelming proportion of their contribution to major environmental concerns is caused by energy use and losses during their working lives. An example of a typical pattern for an ABB product such as an alternating-current machine is:

### Environmental impact

	% from manufacture	% from use
Global warming	0.08	99.92
Acidification	0.04	99.96
Ozone depletion	0.10	99.90
Formation of ground level ozone	0.30	99.70
Eutrophication	0.07	99.93

ABB publishes Environmental Product Declarations (EPDs) for a growing number of core products. An EPD quantifies a product's environmental performance over its entire lifecycle, based on a formal LCA according to the ISO 14025 standard. In some countries, for example Italy and Sweden, external assessors have certified our EPDs.

To date, around 50 EPDs have been published. They can be found on the sustainability pages at [www.abb.com](http://www.abb.com).

## Compliance

### Incidents

ABB's environmental management program, in force at 531 sites worldwide, includes mechanisms for reporting incidents with potential environmental impacts. During 2001, 66 such incidents were reported: 41 relating to spills of oil or chemicals, 12 fires, 11 discharges of contaminated water and two gas leaks.

The table below shows samples of the types of incidents reported.

Date	Location	Description	Action taken
26 January	Colombia	Oil residues inside a tank caught fire during welding repairs.	New procedures to improve cleanliness in this type of activity.
11 May	France	Leakage of about 10 liters of NaOH.	Fitting of NaOH-resistant gaskets; containment bath installed.
26 June	Singapore	Coolant spillage in machine shop.	Block off machine location to avoid spillage.
11 September	Brazil	Tank damage released about 400 liters of acid wastewater.	Some of the liquid was collected, area was decontaminated and tank repaired.
14 September	U.S.	Assembly error in test lab released approx. 130 kg of SF <sub>6</sub> to the atmosphere.	Updated work procedure to prevent error in future.
18 September	Turkey	A truck damaged four transformers, causing oil leakage.	Decontamination of affected area.
12 October	Germany	Fire in casting resin production area.	Fire extinguished with the help of ABB fire brigade.
15 October	Peru	Small oil leaks discovered in three condensers.	Condensers removed and repaired.
29 November	Canada	Dropped transformer caused oil leak near storm drain.	Decontamination; storm drain protected by recently installed drain shield.

### Penalties

The following penalties for environmental infringements by ABB companies were reported during 2001:

Location	Description
Brazil	A calcinatory was installed in 1999, but decommissioned by ABB's own decision.
Sweden	Fine of \$ 500 for late reporting of cooling media to local authorities.
Sweden	Fine of \$ 3,000 for late reporting of major changes to production lines to the local environmental authority.
Venezuela	Inquiry into unlicensed disposal of semi-solid waste in 1996. Case settled in 2001 with no fines.

# Economic performance

## ABB's economic performance in 2001

Indicators with established Group targets	Targets	Actual
Annual revenue growth (local currencies)	6%	8%
Profitability (EBIT as a proportion of revenues)	4–5% (9–10% by 2005)	1.2%
Net debt reduction in Q4 2001 (\$ millions)	500	2,000
Annual cost savings (\$ millions)	500 (by end 2002)	300* (at end 2001)

\* based on workforce reduction of 7,200, out of planned total reduction of 12,000.

### Overview

ABB is on track in terms of its operations and financing, after a demanding year in 2001. We are in a solid financial position and will meet our business objectives.

Earlier this year we obtained a \$ 3 billion credit facility commitment from leading banks, which assures greater flexibility and ends concerns about our liquidity. We also launched convertible and straight bond issues strengthening our position.

The company began the largest transformation in its history in 2001. We have realigned all business activities around customer groups and simplified our organization in all markets.

We sharply reduced the number of operating companies; and to further reduce costs, we implemented a program to increase efficiency and productivity, with the aim of cutting our workforce by 12,000 by end-2002. We are on track to achieve our targets.

For 2002, revenues are expected to be flat in comparison to 2001. EBIT margin for the full year 2002 is expected to be in the range of 4–5 percent. EBIT and net cash from operations are expected to be stronger in the second half of 2002 than in the first half.

In 2001, we continued our program to apply value-based management throughout our organization. As a decentralized company, it is very important for ABB to be able to understand and compare the efficiency of capital utilization and value creation across all our operating units.

Value-based management gives us this information. It allows us to optimize value drivers, and increase our cash.

These programs were already showing fruit by the end of the year. In the last quarter of 2001 we reduced net debt by \$ 2 billion; and by year-end we had reduced employee numbers by 7,200. Productivity, in terms of revenue per employee, increased slightly in 2001.

Our order intake was stable, and revenues increased by three percent over the year (measured in local currencies, the increase was eight percent). Our cash flow from operations more than doubled. However, the year ended with a net loss. Much of the loss was attributable to charges for restructuring costs, one-off costs related to projects and the insurance business, and provisions to cover expected claims related to the use of asbestos at one of our subsidiaries.

These claims stem from the use of asbestos as insulation material inside welded boilers. Combustion Engineering, a U.S. subsidiary, used asbestos until the mid-1970s. At the end of 2001, we took a charge of \$ 470 million, increasing our provisions to \$ 940 million to cover the expected claims against Combustion Engineering. There were 94,000 claims pending at the end of the year. Combustion Engineering has intensified its efforts to settle valid claims and dispute those that appear invalid.

## Revenues and profits

### Consolidated financial overview

All figures in \$ millions unless otherwise stated	1999	2000	2001
Total revenues	24,356	22,967	23,726
Gross profit (net sales less cost of sales)	5,899	5,745	5,018
Gross margin (%)	24.2	25.0	21.1
Earnings before interest and taxes (EBIT)	1,122	1,385	279
Net income (loss)	1,360	1,443	(691)
Dividends (CHF millions)	900	900	0
Dividends per share (CHF)	0.75	0.75	0
Return on average net operating assets (%)	n.a.	10.0	2.0

### Consolidated revenues by region

All figures in \$ millions unless otherwise stated	1999	2000	2001
Europe	13,893	12,570	12,780
The Americas	5,675	5,702	5,944
Asia	2,763	2,770	2,686
Middle East and Africa	2,025	1,925	2,316

## Assets

All figures in \$ millions unless otherwise stated	1999	2000	2001
Total assets	30,578	30,962	<b>32,344</b>
Of which goodwill and other intangible assets, net	2,904	3,155	<b>3,299</b>
Market-to-book (%)	854.3	611.1	<b>525.6</b>

## Investments

All figures in \$ millions unless otherwise stated	1999	2000	2001
Research and development expenditure	865	703	<b>654</b>
Order-related development expenditure	1,212	985	<b>916</b>
Capital expenditures, excluding purchased intangible assets	666	485	<b>645</b>
Capital expenditures for acquisitions	1,780	896	<b>597</b>
Net debt/equity ratio	0.13	0.34	<b>2.02</b>
Debt servicing capacity (ratio of EBIT to net interest payments)	11.22	17.53	<b>1.19</b>

ABB does not account for investments in human capital (such as employee training and community education).

## Labor productivity

\$ thousands	1999	2000	2001
Revenue per employee	150.9	142.8	<b>151.3</b>

## Taxes

\$ millions	1999	2000	2001
Tax expense from continuing operations	343	377	<b>105</b>

## Number of employees

	1999	2000	2001
Number of employees	161,430	160,818	<b>156,865</b>

## Financial performance

Sound financial performance provides the necessary platform to consolidate our sustainability performance and to bring ABB's social performance up to the high levels achieved in the environmental field.



## Social performance

### Overview

Throughout the year, ABB has focused strongly on its social policy, launched in February. Under the supervision of a steering group, consisting of the “owners” of the 13 principles of the policy (the heads of the respective Group Functions – Human Resources, Corporate Communications, Sustainability Affairs, Supply Management and Legal and Compliance), ABB has laid the foundations for implementing the policy and producing guidelines and indicators to measure performance.

The company’s country sustainability controllers will coordinate implementation. We are conducting a series of regional meetings to appraise and train the company’s controllers in this role.

In addition, ABB’s country communication managers, supported by our sustainability controllers, have conducted 45 stakeholder dialogue sessions in 34 countries to get feedback on the scope of the social policy and on our plans for its implementation (see pages 28–31).

Last year, ABB reported social performance for the first time, with just three indicators covering occupational health and safety. This year health and safety has been extended to cover commuting and business travel.

ABB has also introduced several new social indicators – including some suggested by the Global Reporting Initiative (GRI). In some cases we report a range of figures for different countries or regions or make additional explanatory comments.

### Evidence of employee orientation to organizational vision

ABB’s organizational vision is set out in the document “ABB’s Mission and Values” published in 23 languages and on ABB’s Web site. This was first published when ABB was created in 1988 and is now in its third revision.

An introduction to ABB’s Mission and Values is part of the induction course for all new employees. All employees attend regular refresher courses, seminars and self-testing sessions, focused on local needs. We therefore believe that ABB has attained a high degree of employee orientation to its organizational vision, although we cannot quantify this at present.

### Ranking of ABB as an employer in internal and external surveys

ABB was ranked as an employer of choice in surveys during 2001 in nine countries (out of 41 countries sampled): Brazil, Denmark, Egypt, Finland, Ireland, South Africa, Sweden, Switzerland and the U.K. In the remaining 32 countries, no applicable ranking surveys were reported.



“Mission and Values” is a key policy document for ABB employees and is the subject of regular discussion.

## Job satisfaction levels

Job satisfaction surveys were conducted in 2001 among ABB employees in 21 countries (out of 42 sampled). In general, such surveys are conducted every two years, often by outside agencies. Where quoted, satisfaction levels ranged from 71 percent (Sweden) to 78 percent (India, conducted by Gallup) and up to 90 percent (China and Switzerland).

## Health and Safety

### Work-related

	2000 total	per employee	2001 total	per employee
Fatal accidents	2	0.000019	2	0.000013
Accidents resulting in hospitalization	475	0.0045	517	0.0036
Working hours lost due to illnesses and accidents	326,477	3.08	589,991	4.03

### Commuting and business travel-related

	2001 total	per employee
Fatal accidents	3	0.00002
Accidents resulting in hospitalization	48	0.00034
Working hours lost due to accidents	174,758	1.19

Note: Per-employee figures are calculated based on 105,711 employees in 2000, and 146,193 employees in 2001. We believe that data gathering was more comprehensive in 2001 than in 2000, which tends to inflate the figures in comparison with the previous year.

Two ABB employees died in work-related accidents in 2001 – one from a fall and the other from electric shock.

Three more employees lost their lives in travel-related accidents – two in road accidents and one in an aircraft crash.

We deeply regret all of these incidents. Our target remains to reduce the number of work-related accidents to zero.

## Safety on construction sites

In all of ABB's factories and workshops, safety managers work hard to prevent accidents and work-related illnesses of all kinds. In a factory environment, they can over time establish procedures, routines and understandings with staff – which make the job easier.

However, on construction sites, the working environment and members of the workforce change from day to day. This makes it very difficult to establish routines and best practices.

ABB Lummus Global in the Netherlands has commissioned researchers to study management and supervisory behavior, as well as their effect on safety performance, at one of its major construction sites at Maasvlakte, Rotterdam. The study aims to find ways to improve safety, based on behavior modification rather than rules and policing.

## ABB minimum wage as percent of national minimum wage

Country	Percent
Sweden	100
Switzerland	100
United Kingdom	100
Brazil	132
Poland	144
China	200
Saudi Arabia	200
Turkey	200
Egypt	500
Russia	500

## Ratio of lowest ABB wage to national legal minimum

Region	Spread of ratio (%)
Europe	100 to 500
North America	100 to 153
South America	113 to 141
Middle East and Africa	100 to 500
Asia	100 to 200

ABB pays all its employees at least the national legal minimum wage. In developing countries, ABB's minimum wage is up to five times the legal minimum. Figures for ABB's minimum wage as a percentage of the legal minimum are given above for a selection of countries.

## Non-discrimination

Percentage of women in ABB's senior executive, senior and middle management ranks.

The spread of figures for countries in each region are given below:

Region	Spread (%)
Europe	1 to 30
North America	1 to 8
South America	5 to 20
Middle East and Africa	1 to 15
Asia	2 to 21

Historically, men have dominated most long-established engineering companies at almost all levels, not just in the more senior roles. ABB is no exception to this pattern. In general, the proportion of women in senior roles at ABB also reflects the cultural norms of each country. However, there are a few surprises. Figures in percent for a selection of countries are given overleaf.

## Women in management jobs

Country	Percent
Japan	0
Benelux	1
Germany	1
South Africa	1
Brazil	7
Canada	8
Italy	8
Norway	9
Switzerland	10
Sweden	17
Thailand	20
Mexico	20
China	21
Malaysia	21
France	25
Romania	30

## Discrimination-related litigation

No instances of litigation against ABB for discrimination (racial, religious, gender, disability, union membership or political affiliation) were reported during 2001.

## Mentoring programs for minorities

In 2001, ABB participated in mentoring programs for minorities in eight countries:

Country	Program
Germany	For minorities
Hungary	Scholarships for minorities
Italy	Diversity management plan
Malaysia	National program
Norway	For short-stay foreign employees
South Africa	For minorities
Sweden	Originally for minorities, now for all employees on demand
Switzerland	Young people having difficulties finding an apprenticeship



## ABB's performance in sustainability ratings

A growing number of national and international authorities analyze companies' sustainability performance. Here we look briefly at how some of them rate ABB.

### Dow Jones Sustainability Indices (DJSI)

Launched in 1999, the DJSI was the world's first index comprising companies with superior sustainability performance, including economic, environmental and social aspects.

Right from the start, ABB was ranked top in its industry group in both the global Sustainability Group index and in the, later to appear, European DJSI STOXX index. In 2001 ABB further increased its scores and was ranked best in its group for environmental performance, social policy and corporate governance. But workforce layoffs were identified as a critical area.

[www.sustainability-index.com](http://www.sustainability-index.com)

### FTSE4Good

The FTSE4Good indices were launched in July 2001 to highlight the best performers in corporate social responsibility. ABB is one of some 250 companies in the FTSE4Good Europe Index and features in the FTSE4Good Global Index.

[www.ftse4good.com](http://www.ftse4good.com)

### Business in the Environment (BiE)

Business in the Environment (BiE) is the business-led campaign for corporate environmental responsibility, set up in 1989. BiE launched the annual Index of Corporate Environmental Engagement in 1996 to provide independent, comparable information on companies' environmental performance.

The BiE Index benchmarks companies against their peers and industries against each other, on the basis of their strategic environmental management and performance in key impact areas.

ABB first participated in the BiE Index in 2000 and immediately topped the General Industrial economic group: overall it ranked 22nd out of 184 companies. In 2001 ABB kept its economic group lead and improved its overall ranking to 14th out of 206 companies (of which 83 are in the FTSE100 index).

ABB's score of over 95 percent placed it well in front of its nearest competitor in the General Industrial group. It scored especially well in management, with big improvements in stakeholder communication and the supplier program.

[www.business-in-environment.org.uk](http://www.business-in-environment.org.uk)

## Number of stakeholder dialogues

Countries	Dialogues
34	45

See details in the chapter on stakeholder dialogue (pages 28–31).

## Support for community development

ABB companies in 26 countries reported support for community development in 2001.

Support and financial contributions ranged from working with and a \$ 1,000 donation to Mundo Libre, a Peruvian non-governmental organization that provides jobs for the homeless to the \$ 40,000 financial support given to technical universities in Romania to modernize their laboratories.

## Employees in the U.S. respond to September 11

In the wake of the devastation and suffering from the attacks of September 11, ABB's U.S. employees raised over \$ 300,000 in personal donations for the American Red Cross. ABB matched each dollar from personal contributions with a further two dollars, and added a further \$ 100,000, to bring the total donation to \$ 1 million.

## Customer satisfaction levels

Customer satisfaction is a primary goal and essential to long-term survival for any business in a competitive market.

Data on customer satisfaction is commercially sensitive, so only methodologies are given here.

Most ABB companies carry out traditional customer surveys through interviews every one to three years. These are often undertaken by external agencies.

In addition, ABB captures, tracks and analyzes all customer complaints in a single, global system (Customer Complaints Resolution Process) that uses ABB's internal network to help resolve problems quickly and efficiently. This allows us to monitor our successes and failures in handling customer problems.

This system gives us a basic indicator of customer dissatisfaction (and, by inversion, customer satisfaction). It also provides invaluable pointers for improvement.



### Sarasin Bank

The Sarasin Bank, based in Basel, Switzerland, assesses selected companies' environmental and social performance as a service for its clients.

In the latest assessment, ABB scores above the industry average for every aspect of environmental performance. On the social side it scores well in several categories, but is penalized for anti-trust investigations and for frequent reorganizations with layoffs of personnel.

w [www.sarasin.ch](http://www.sarasin.ch)

### Swedish Environment Fund

In 2001, ABB was ranked among the top 50 most sustainable corporations quoted on the Swedish stock exchange. The list is a joint venture between Banco Funds, which administrates the Swedish Environment Fund, and The Natural Step Foundation.

### Tata Electrical Research Institute (TERI)

A survey conducted by TERI in 2001 ranked ABB among the top five corporate environmental performers in India. TERI looked at organizational structure, environmental policies and auditing systems, target setting and training to improve environmental performance.

TERI concluded that companies that prioritized sustainable development were economically more successful than companies that sought merely to comply with regulations.

### Innovest

Innovest Strategic Value Advisors, headquartered in New York, analyzed ABB's environmental performance using its EcoValue'21 environmental rating model and determined that ABB will maintain its AAA eco-efficiency rating. Innovest finds that ABB appears to have developed a business sophistication that recognizes the triple bottom line and is making fundamental changes that are consistent with the kinds of environmental management techniques that Innovest feels ultimately yield lasting financial and environmental performance for ABB and its stakeholders.

Innovest also commented that by divesting itself of large-scale power generation and launching a new business unit based on small-scale alternative energy solutions, ABB has incorporated environmental values into its core business strategy. Its development of the Industrial IT strategy carries the potential to create eco-efficiency opportunities for ABB's customers. Of particular importance is the initiation of Life Cycle Assessments for all products under the Environmental Product Declarations program. This denotes a company taking a leadership role relative to its competitors in the sector.

w [www.innovestgroup.com](http://www.innovestgroup.com)

# Putting our special skills and knowledge to work

## Corporate activities

Sustainability is becoming an integrated part of ABB's strategic planning and our management systems. In 2002 and 2003, we will work closely with selected business areas to advance this process.

In 2001, we developed business plans for our sustainability controllers at business area and country levels. These will be implemented from 2002 onwards.

The new corporate R&D program "Sustainability and Global Change" was launched in 2001. It focuses on medium- and long-term sustainability issues affecting ABB's business.



## Our main priorities

- To integrate sustainability into all management systems
- To raise awareness and engage the commitment of every employee
- To extend our environmental management system to non-manufacturing activities
- To implement our social policy worldwide, with guidelines and performance indicators
- To help combat poverty through our "Access to Electricity" program



### Transportation

Vehicle emissions are a major contributor to global warming, not to mention their other impacts on the environment and health. ABB is now looking into its movements of goods and people around the world with a view to cutting costs and environmental impact. A pilot study, covering ABB's operations in Switzerland, will be made in 2002.

### Integrating sustainability

Sustainability is an integral part of ABB and its business. A new research and development program integrating sustainability was launched last year.

Maximizing the sustainability of our business requires understanding and active commitment from all ABB's employees – not just strategic planners and managers. In 2002–3, we will plan and launch a new internal awareness campaign to show that sustainability is everyone's business.

We also intend to start to work with key customers in selected industries, looking at sustainability throughout their respective supply chains. The objective is to build up a picture of the environmental, social and economic impacts of each industry segment, from primary production to disposal of products that are no longer in use.

These analyses will take some while, but as our pictures of each industry segment become clearer, we will share our understanding with customers and society at large. We hope this will lead to better-informed choices and more sustainable industries.

### The environmental bottom line

Almost all ABB's manufacturing and service sites now have environmental management systems implemented to the ISO 14001 standard. We will focus attention on the last few sites, with the goal of reaching 100 percent implementation.

In 2002, we will begin extending our environmental management systems to cover non-manufacturing activities, such as research and development, engineering and sales and administrative offices. We will also continue to implement unified systems for quality, environmental and health and safety management.

We will work closely with ABB's supply management teams to tighten our supplier selection criteria and ensure that key suppliers match our own environmental and social performance standards.

Our growing library of Environmental Product Declarations has been very well received, both internally and by customers. We hope to accelerate the publication of declarations in 2002 and 2003.

We will continue to eliminate unwanted and hazardous materials in our products, and increase the use of recycled materials.

## Outlook for 2002 and 2003 continued

### The economic bottom line

Improving our sustainability performance will also improve our economic performance. Many environmental improvement projects ultimately save money as well as the environment. Eco-efficiency in our products is something that more and more customers want and are prepared to pay for.

In 2002 and 2003 ABB personnel who have direct contact with customers will receive extra sustainability training. They will learn how to use sustainability arguments to communicate the benefits of our products, systems and projects. Our Environmental Product Declarations are important tools in these efforts.

### The social bottom line

The implementation of our social policy is a priority, following its publication and the first rounds of stakeholder consultation in 2001. We will develop guidelines for the worldwide application of each of the 13 principles of the policy. We will also develop social indicators in order to measure our performance. The advice and suggestions from the stakeholder dialogue sessions will help us in this work.

ABB has formed an internal steering group to monitor the implementation of the social policy. This group can mobilize all necessary resources to ensure rapid and full-scale action.

There are new group-wide guidelines for occupational health and safety, including a “zero-target” policy for serious and fatal incidents, and improved reporting procedures. These will be implemented at all ABB sites during 2002.

The program of stakeholder dialogues, initiated with the launch of the social policy in 2001, will be continued and expanded to cover other topics in 2002.

### Common efforts and communication

Among the most promising of ABB’s common efforts activities is the “Access to Electricity” program we launched in 2001. Lack of basic infrastructure – for which electricity is vital – today keeps around 2 billion people trapped in poverty.

ABB has core technologies and competencies that can help in development projects to ease this form of poverty. In the coming years we intend to put significant effort and resources into this program.

We are now defining and agreeing objectives, together with our prospective partners in the program. Before the end of 2002, we hope to have signed formal agreements with the partners. We will then create a business plan.

We will select sites for pilot projects in 2003 and start work on the ground as soon as possible.

ABB chairs the greenhouse gas reduction program organized by the World Energy Council (see pages 38–39). We will continue to support this work and the knowledge base of greenhouse gas reduction projects and opportunities it is building.

Finally, we will increase communications about our efforts – mainly by providing more news and information on our corporate Web site.

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 [www.abb.com](http://www.abb.com)



# How do you give a global corporation a social conscience?

“We have thousands of suppliers in hundreds of countries. Can we really ask them all to meet the same set of social standards? And how are we supposed to check that they do?”

“How far are we expected to go to protect human rights in a country where the government doesn’t?”

“It would be unthinkable for a woman to work in an ABB factory in this country. So how do we prove that we don’t discriminate on grounds of gender?”

**At the beginning of 2001, ABB published the first version of its corporate social policy. Simultaneously, we launched our most ambitious program yet of stakeholder consultation.**

There followed several months of focused debate on five continents, as we road-tested the policy and considered how to implement it.

Some tricky moral dilemmas emerged, as the moral certainties of ABB’s new policy came up against some of the gray areas of the real world.

Most countries where ABB has a major presence took part in the global consultation. ABB managers and workers met local stakeholders in 34 countries. The range of stakeholders represented was impressive – including national and international non-governmental organizations (NGOs), trade unions, central and local government, academics, the media, religious groups and business partners.

## **From paper to practice**

ABB intends to implement the policy throughout its global organization and by doing so help raise quality of life wherever we have a presence. We realize this will take time. We are at the start of a long journey, but our plans are laid.

The policy (see page 50 for the complete text) was published in February 2001 to stand alongside ABB’s environmental policy, itself nearly a decade old. The policy defines standards and goals for us to achieve and we are now developing guidelines and indicators to measure our performance.

ABB’s social policy is drawn from unimpeachable sources: the United Nations Universal Declaration of Human Rights, the International Labor Organization’s fundamental principles on rights at work, the OECD Guidelines for Multinational Enterprises, and the Social Accountability 8000 (SA 8000) standard, an auditable standard for the protection of workers’ rights developed by the Council on Economic Priorities Accreditation Agency.

## ABB's social policy

1. ABB in society
2. Human rights
3. Children and young workers
4. Freedom of engagement
5. Health and safety
6. Employee consultation and communication
7. Equality of opportunity
8. Mobbing and disciplinary practices
9. Working hours
10. Compensation
11. Suppliers
12. Community involvement
13. Business ethics

(See page 50 for the complete text)

### Commitment to dialogue

The first of 13 principles in the social policy commits ABB to open dialogue with stakeholders; it was therefore fitting to use stakeholder dialogue to evaluate the policy. The countries we visited were chosen to represent as diverse a range of culture, geography and development as possible.

Initially, we asked the discussions to focus on two main areas:

1. Does the social policy cover all the issues it should? What should be added and which issues are most important?
2. How do we put the social policy into practice? How can we measure compliance and progress?

After the first round of dialogue, countries could proceed to a second round, in which they were asked to identify the principles that should have the highest priority in their country and those where ABB was most vulnerable to criticism. By the end of 2001, 11 countries had progressed to this second stage.

### Countries participating in stakeholder dialogue

Europe	Africa/Middle East	Americas	Asia/Pacific
Austria	United Arab Emirates	Argentina	Australia
Czech Republic	Egypt	Brazil	China
Estonia	South Africa	Canada	Japan
Finland		Colombia	South Korea
France		U.S.	Malaysia
Germany		Venezuela	Singapore
Greece			Thailand
Hungary			
Italy			
Latvia			
Norway			
Poland			
Portugal			
Romania			
Sweden			
Switzerland			
Turkey			
United Kingdom			

Countries highlighted have completed a second round of dialogue.

### Variety of participants

Countries were encouraged to hold the stakeholder dialogues as round-table discussions, with an independent facilitator. This was the most common format, though input also came from one-to-one meetings, emails and exchanges of letters.



Above:  
Roundtable dialogue on our social policy with stakeholders in Sweden – a country where ABB is playing a leading role in several initiatives, including the United Nations Global Compact.

Below:  
Another form of stakeholder dialogue, this time in Austria, where the ABB employees at the venue were invited to witness the dialogue and participate in the discussions.

# Stakeholder dialogue continued

ABB employees, including senior managers and operational staff, were always involved in the dialogues. Indeed, in one country all employees at the venue witnessed the dialogue as a participating audience. An average of three external stakeholder groups were represented at each meeting.

## The right scope?

Almost all the consultation dialogues – 30 out of 34 – concluded that the scope of ABB's social policy was right; it did not need to be extended or reduced. But in four countries, suggestions for expanding the policy were made. The issues that were raised included:

- Assessments of the direct and indirect social impacts of products and services
- Policies for working in zones of conflict
- Protection of indigenous peoples whose communities and ways of life are threatened by development
- Abuse of human rights by security forces assigned to protect ABB's property and employees
- Standards for corporate governance
- Public reporting of all taxes and fees paid to government officials and departments
- The social policy should apply to joint ventures and minority investments
- Permanent, full-time employees should be protected against being replaced by lower-paid casual employees with less or no employment rights

Some of the stakeholder dialogues concluded that the social policy was too inward looking, too focused on employee matters. They recommended more consultation with local communities and concrete commitments to define and participate in projects for the benefit of the local communities.

The dialogues themselves generated many invitations for ABB to join various local initiatives.

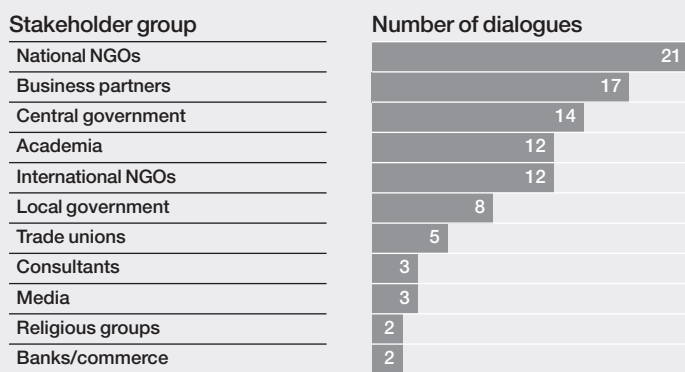
## What's important?

In the first round of stakeholder dialogues, all 13 principles of the social policy drew comments – some many more than others. The most discussed principle was community involvement, followed by health and safety and equal opportunities. Working hours and compensation drew the least comments (see graph 2).

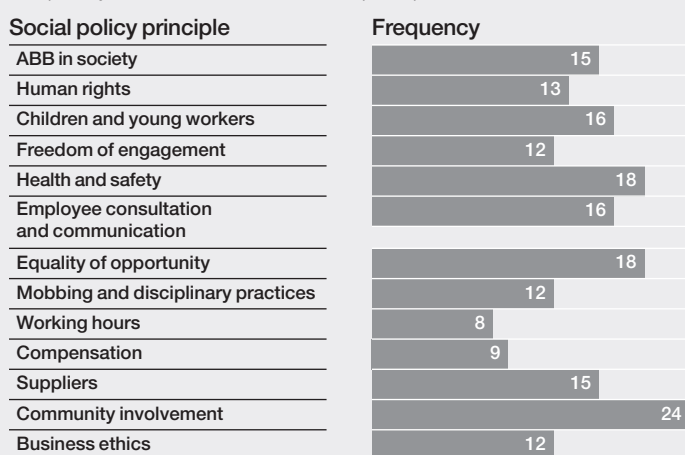
In the second round of dialogue, stakeholders were asked which of the principles should receive the highest priority in implementation and which were the ones on which ABB was most vulnerable to criticism (see graph 3).

While the sample size is small (based on second round dialogues in 11 countries to date), it is notable that the principle of greatest concern was the social

**Graph 1**  
External stakeholder groups and frequency of participation

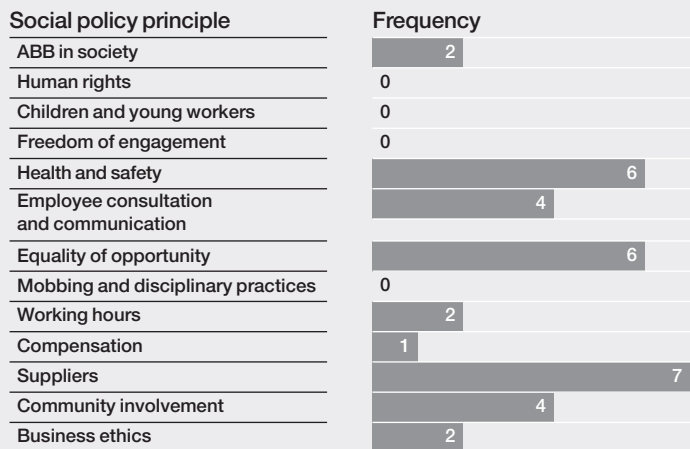


**Graph 2**  
Frequency of comments on individual principles



**Graph 3**

Which principles should be given the highest priority by ABB?



performance of ABB's suppliers, rather than ABB itself. This was followed by health and safety and equality of opportunity – areas which ABB has already prioritized for closer attention.

### How to measure performance?

When it came to putting the social policy into practice, almost all the dialogues revealed the need for a clearly defined and planned implementation process. The social policy needs support from the top and the principles need to be integrated into organizational structures and business processes. In only two countries was it considered necessary to adapt the policy to local conditions.

Measurement of performance was the most frequently raised concern. Quantifiable indicators must be defined to gauge performance and year-on-year improvement. The current lack of such indicators was perceived as a policy weakness.

Reporting should be done country-by-country to be meaningful; the diversity of the countries in which ABB operates would make it very difficult to consolidate data into global indicators.

Hand in hand with quantifiable indicators was the need for objectives and targets for each principle in the social policy. Other comments included the need for annual reports and external audits.

**Graph 4**

Comments on reporting



### Keep talking

Our first experiment in stakeholder dialogue on a global scale has been very valuable. All parties have appreciated the opportunity to get involved.

The comments on the social policy itself will serve as the basis for a second version of the policy, planned for 2003.

The number of comments on implementation, measurement and reporting also indicate that stakeholders want to see verifiable reports of ABB's social performance and check what progress is made over time. A number of projects are now being initiated as a result of these comments. Specialized teams, led by the respective group function owners of the social policy principles, are developing implementation guidelines and relevant indicators to measure continuous performance improvement.

Stakeholder consultation on the social policy will be completed in all of the 43 countries initially invited to participate. In 2002, we will also begin round-table stakeholder dialogues about ABB's environmental policy and our "common efforts" participation.

Finally, our experience affirms that stakeholder dialogue is a vital part of a company's social policy. By addressing the concerns of stakeholders, it confers and strengthens the social license to operate – a crucial factor in achieving sustainability.

## The role of eco-efficient products

# Getting more from less

Everything ABB does amounts to meeting customers' needs in new ways that deliver better performance while using less energy, less raw materials and creating less waste. Continuous improvement in these areas is necessary to raise the living standards of people throughout the world while protecting the environment.

Much of ABB's research and development focuses on new technologies that reduce environmental impact – particularly those that help curb CO<sub>2</sub> emissions. Equally important is continuous improvement to raise the environmental performance of existing products.

However, making products that deliver more from each unit of input with less environmental impact is not enough. The products must also offer high economic performance over their complete life cycles. Only if they save time, labor and capital will they replace traditional, less eco-efficient products.

Each working day, ABB manufactures nearly one million products, ranging from simple switches to sophisticated industrial robots. All are closely linked to the extraction of primary energy and the generation, transmission, distribution and use of electricity.

Eco-efficiency affects the entire industrial process from product design and material selection through manufacturing and distribution to waste management. The greatest environmental impact – often 99 percent or more – usually occurs from energy consumption during the useful life of the product. Therefore, continuously increasing the electrical efficiency of our products – delivering more to society from each unit of energy – is a principal aim for ABB.

The following examples illustrate how new ABB technology contributes to reducing environmental impact.

### Wind power comes of age

Once dismissed as a fringe technology, wind power is becoming a commercially viable, middle-of-the-road source of electricity.

Fifty years from now, as much as 50 percent of all electrical power may come from renewable sources such as biomass, solar energy and wind power. The European Union has committed to generating more than 20 percent of its electricity from these sources by 2010.

Wind power is by far the most mature of these sources. Denmark already gets almost 15 percent of its electricity from wind, with a goal of 50 percent by 2020. In the U.S., wind generates less than one percent of the nation's electricity. However, in 2001, nearly 1,700 MW of new wind power capacity was installed. This included more new wind capacity, 915 MW, in a single state, Texas, than had ever been installed in the entire country in a single year.

The technology has improved dramatically during the past few years. Electricity is already being produced for as little as four to five cents per kWh. By comparison, electricity from coal costs three to four cents per kWh, five to six cents per kWh from oil and three to five cents per kWh from natural gas.

Increasingly, megawatt-class wind turbines are erected in offshore, utility-scale wind farms. Since the output of such farms considerably exceeds the local power demand, their impact on the quality of the grid is becoming a major issue for utilities as well as consumers of electricity.

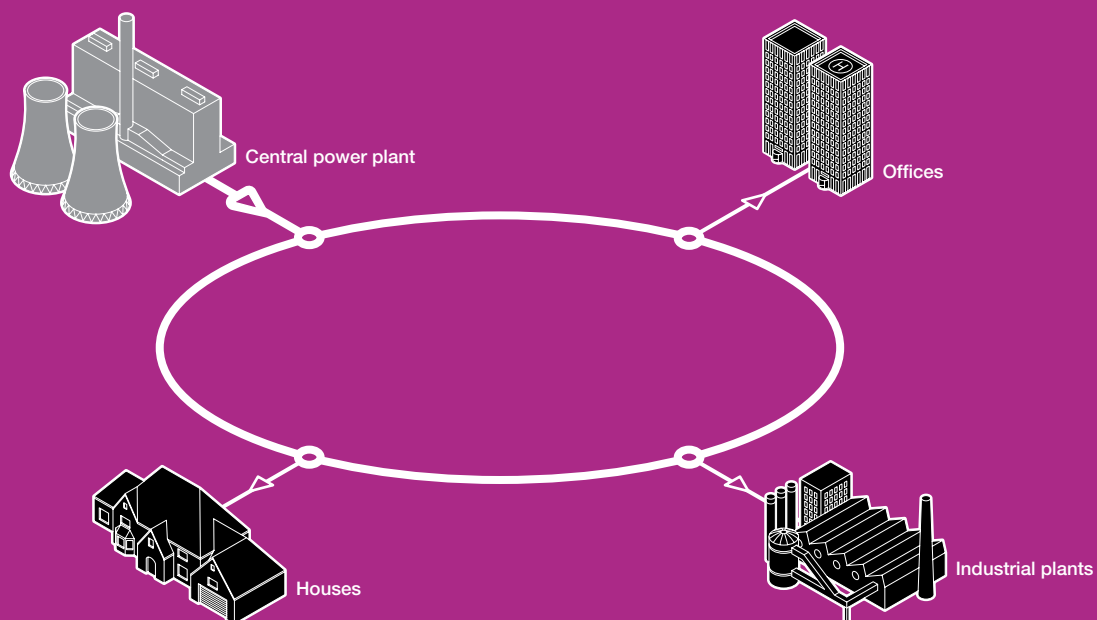
To maximize return on investment, wind power will have to be built for a service life of at least 40 years. Components that are subject to high fatigue and wear have to be replaced or refurbished after a predicted service life. However, major parts can be built for a service life that exceeds 40 years.

### A fast-growing business

For the past 20 years, ABB has been a leader in developing the new technologies that make wind power increasingly competitive with conventional power. Much of the research and development is conducted in close cooperation with major suppliers of wind turbines. This has made ABB by far the world's largest supplier of components for wind technology, with a product range that includes all electrical equipment required.

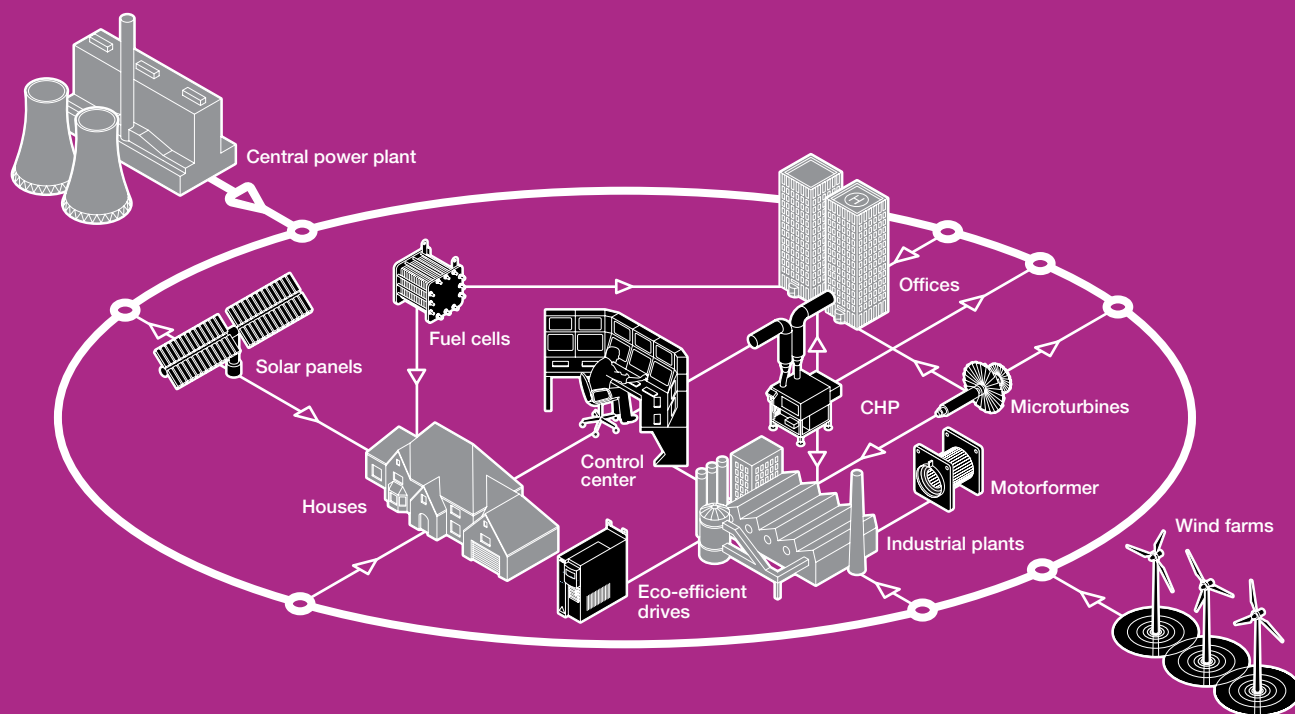
Wind Center, ABB's center of excellence for wind power, is located in Denmark, the leading nation in the development and use of wind power. About 50 percent of all wind turbines are manufactured in Denmark. Wind Center supports and coordinates research and development in other ABB countries.

## Conventional central power supply



Electricity from large power plants is transmitted and distributed, often over significant distances, to supply the centers of population.

## Distributed power generation solutions



Small-scale, distributed and renewable sources of electricity and combined heat and power (CHP) installations, can be located close to the consumers and provide utilities with a cleaner, and more flexible power supply mix.

## The role of eco-efficient products continued



### Copenhagen harbor

ABB has supplied generators and other electrical equipment and acted as general contractor for the Middelgrunden wind farm, located in shallow water just two kilometers from Copenhagen harbor. The 20 x 2 MW wind turbines provide 40 MW of clean power for the city of Copenhagen.

Twenty-seven ABB plants throughout the world supply customers with, among other things, generators, transformers, control systems, cables and substations. Advanced power electronics for conversion of the electricity to the required voltage and frequency is an ABB specialty, and the new HVDC Light technology transmits power to the grid with low losses. Over the past few years, ABB's wind power business has been growing on average by 25 percent per year and the growth rate is accelerating.

### Microturbines for distributed power production

Deregulation is under way and monopolies are dissolving in the electrical utilities industry. Demands for lower emissions are increasing. Power quality and reliability of supply are becoming more important. So are speed and ease of construction and short payback times.

This creates a demand for small-size power plants to supply local needs, for example in areas not connected to power grids. However, such distributed plants can also be connected into micro-grids, monitored from a single center and serve users at other locations.

Microturbines, fuelled by natural gas, are ideal for such applications. Turbec, an independent company established by ABB and Volvo Aero, is a world leader in microturbine technology.

A microturbine is a combination of a small gas turbine and a direct-driven generator, both mounted on the same shaft. An integral power converter changes the electricity generated into the required voltage and frequency. An exhaust gas recuperator improves the efficiency of the system. Hot gases leaving the turbine can heat water or air for heating or cooling.

Turbec supplies complete 100 kW combined heat and power plants, ready to run, measuring only one by two by three meters (3 x 6 x 9 feet). These small-scale plants achieve a total efficiency of up to 80 percent, with 50 percent of the energy going to heat production and 30 percent to electricity production. Harmful emissions are low and so is noise, making it possible to install them almost anywhere.

Typical applications include continuous power production for hospitals, hotels, schools and housing complexes. Turbec microturbines also provide standby power and peak shaving. In addition, they can improve the capacity, quality and reliability of weak grids.

## Case study

### Feeding four million cucumbers

The world's first greenhouse installation of a microturbine combined heat and power solution began operation in Mörap, Sweden, in September 2001. The greenhouse is 23,000 m<sup>2</sup> and produces four million cucumbers per year.

CO<sub>2</sub> is an indispensable ingredient for greenhouse plant production. Revenue increases by approximately 20 percent when concentrated CO<sub>2</sub> is added to the environment. Growers have long used gas boilers or diesel engines to produce CO<sub>2</sub>, but both have disadvantages.

Gas boilers provide flue gases that can be released directly into the greenhouse. However, when the need for CO<sub>2</sub> is highest, the need for heat is lowest. Therefore, an excess of heat must be produced to provide sufficient CO<sub>2</sub> during warm, sunny periods. This heat must either be stored at considerable expense or simply released and wasted.

All combined heat and power solutions minimize heat storage and waste because excess energy is used to produce electricity. However, diesel engines produce high levels of NO<sub>x</sub> and CO. Besides the detrimental effects these emissions have on the environment, they are damaging to greenhouse plants. Greenhouse owners must therefore install expensive gas-cleaning equipment. The exhaust gases from Turbec microturbines can be used without cleaning.

The output of microturbines is better matched to the demands of the greenhouse than it would be with gas boilers because microturbines produce both electricity and heat. Often, if more electricity is produced than the greenhouse can use, it can be sold to the utility at a profit. Moreover, local production of heat and power is efficient and eliminates the transmission losses associated with centralized power generation.

While suitable for many applications, microturbines are in many ways ideal for use in greenhouses because heat and power, as well as the CO<sub>2</sub> produced, can be used efficiently on site.

### Variable speed drives reduce CO<sub>2</sub> emissions

Households use about half the electricity generated in the world and industry uses the other half. In industry, electric motors are responsible for about 65 percent of industrial consumption.

Most motors that drive pumps, fans and conveyor belts are fixed-speed devices. They are designed for maximum capacity requirements and always run at full speed – although requirements are usually lower. The output of the pump or fan may be controlled by mechanical throttling. This is like controlling the speed of a car only by braking. The efficiency of such a system is poor.

Varying motor speeds to match process requirements raises system efficiency. In some cases, variable speed control can save as much as 70 percent of the energy. Less CO<sub>2</sub> is released into the atmosphere because less electricity needs to be produced.

Coal is the electricity fuel with the heaviest impact on the environment. When electricity consumption is reduced, environmentally responsible electricity suppliers take coal-fired capacity out of production. It requires at least 360 tons of coal to generate one GWh of electricity; the burning of one ton of coal produces about 2.3 tons of CO<sub>2</sub>. ABB drives reduce global CO<sub>2</sub> emissions by over 50 million tons every year. The reduction is equal to the annual CO<sub>2</sub> emissions of a city of six million inhabitants.



#### Microturbine

This Turbec microturbine at the Klitte and Lund Greenhouse helps produce almost five percent of Sweden's yearly consumption of cucumbers.

## The role of eco-efficient products continued



### New ACS 800-02 drive

This innovative drive, available in the 90–150 kW power range, is only one-sixth the size of comparable drives from other manufacturers. The reduction in size has been achieved by using new, advanced electronic components in combination with the latest insulation and cooling technologies.

### Variable speed compressors cut electricity consumption

Power System S.p.A. In Vicenza, Italy, manufactures screw compressors in the 4 kW to 315 kW power range. The ABB electric motors that drive the company's compressors are fitted with variable speed drives to save energy and improve performance.

Screw compressors, which use intermeshing rotors instead of reciprocating pistons, are widely applied to compress air. Many processes use compressed air round the clock. However, the demand often varies. Despite this, many compressors run at full speed even when no compressed air is consumed. Unloading devices suspend compression until more air is required. But the compressor still consumes energy.

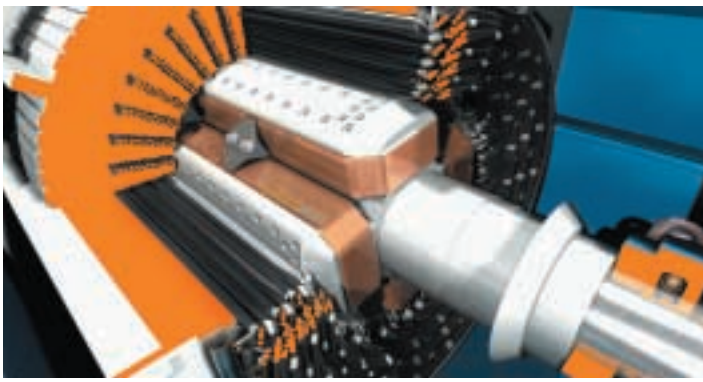
By using a variable speed drive for the electric motor, it is possible to supply the exact quantity of air required at any given time. This reduces electricity consumption. Field tests by Power System S.p.A. have shown that 35–40 percent can be saved using variable speed drives instead of conventional on-off devices. In addition, startup is smoother and wear on the mechanical parts is reduced, cutting maintenance costs.

Because less electricity is consumed to compress air, less needs to be generated and transmitted. This, in turn, reduces CO<sub>2</sub> emissions. Throughout the world and in most branches of industry, air compressors consume large quantities of electricity. Introducing variable speed drives can contribute considerably to protecting the environment.

### Innovative high-voltage motor reduces operating costs and improves environmental performance

The basic design of large electric motors that drive compressors, pumps and fans has not changed much since they were introduced more than a century ago. All have used conventional windings in the form of rectangular copper bars. Improvements in insulation technologies have offered only limited opportunities for increasing voltage ratings.

Raising the voltage would bring many benefits. The efficiency would increase and the motor could be connected directly to the electric network, greatly simplifying the installation. This would have both economic and environmental advantages.



#### **Motorformer – significant savings**

In ABB's new Motorformer, cables insulated with crosslinked polyethylene (XLPE) replace the square, epoxy-insulated conductors used in conventional electric motors. The cooling ducts shown in this cross-section are also made of XLPE. Most of the materials in the Motorformer can be easily recycled.

A number of ABB innovations have led to the introduction of the world's first high-voltage motor. Instead of conventional stator windings, it uses high-voltage cable insulated with crosslinked polyethylene (known as XLPE or PEX). This makes it possible to increase the voltage in the windings so that power can be taken directly from the high-voltage grid.

Motorformer, as the new motor is called, can be designed for voltages up to 150 kV. Conventional motors cannot be connected directly to these voltages. Instead, the voltage must be stepped down by transformers. The Motorformer eliminates the need for transformers, medium-voltage switchgear and other ancillary components normally used with large electric motors. This reduces system losses – often by as much as 25 percent.

#### **Important savings**

The Motorformer will save significantly on operating costs over its working life, in contrast to large motors which often operate continuously and use great quantities of energy. Fewer components mean that the costs of servicing, maintenance and spare parts are reduced. Motorformer also takes less space than conventional motors.

An added benefit is that the Motorformer can produce reactive power continuously to support the network. The reactive power generated in alternating-current networks causes instability and losses of active power. Reactive power cannot do useful work, but is necessary to build up magnetic fields, for example during startup of motors. However, transporting reactive power over transmission lines reduces their capacity for transporting active power and increases system losses. Reactive power from the Motorformer can support the startup of other large motors in the area, thus improving network efficiency.

The environmental benefits are considerable. For example, replacing a conventional 20 MW motor with a Motorformer in continuous operation for 20 years on a European Electricity Mix would reduce CO<sub>2</sub> emissions by approximately 7,500 tons. The elimination of oil-filled power transformers also contributes to reducing environmental impact and the risk of fire.

## Common efforts

# Working together to address global problems

“Greenhouse gas emissions threaten climate change. One-third of the world’s people have no access to basic services. Industrialization in developing countries often means poor working conditions and can pose new environmental threats.”

“Global corporations are often criticized for aggravating global problems. But they can also provide many of the skills and resources that can solve them.”

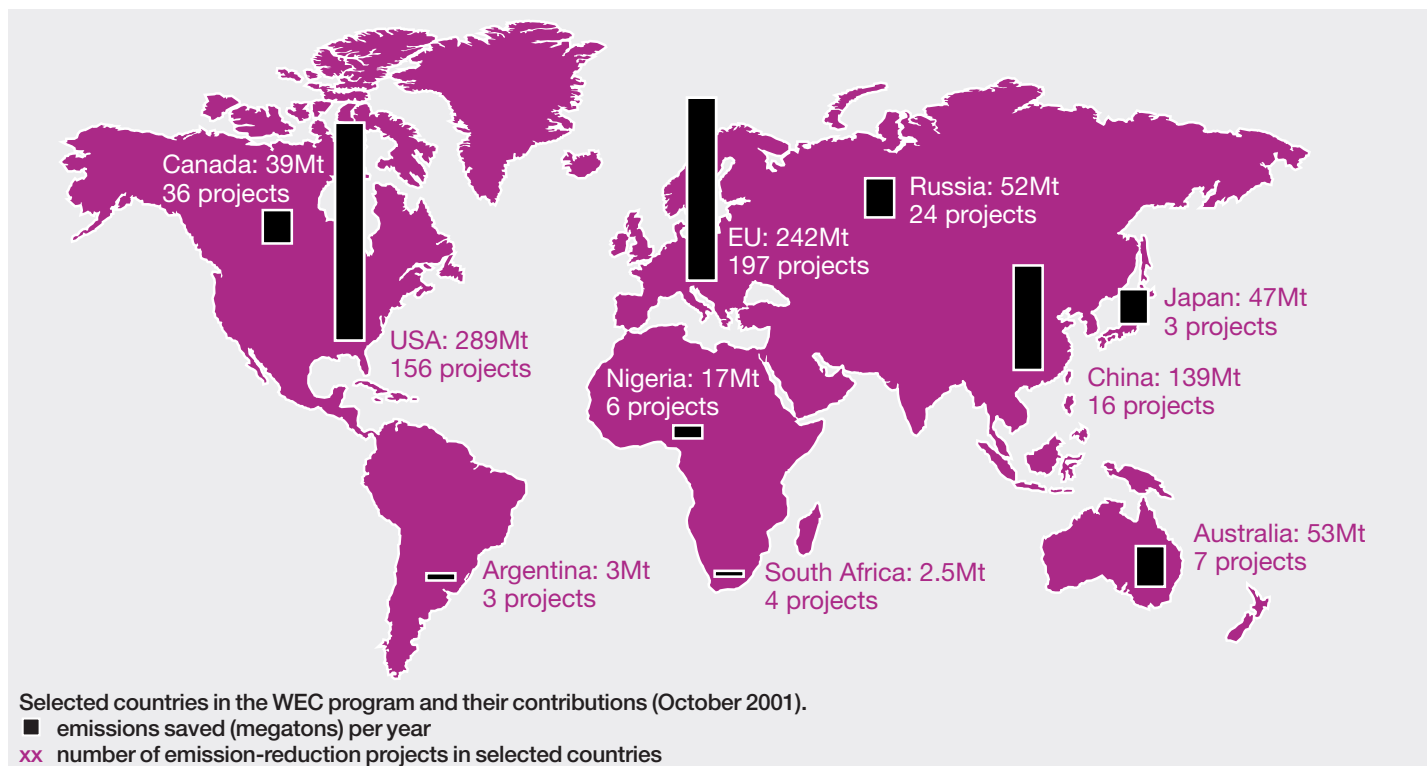
At the corporate level, ABB is involved in a number of global and regional collaborations: working together to solve these problems.

### From talk to action: taking billions of tons a year out of the global greenhouse

In 1998, ABB made a proposal at the international congress of the World Energy Council (WEC): set a target to reduce greenhouse gas emissions, and then take actions to meet it.

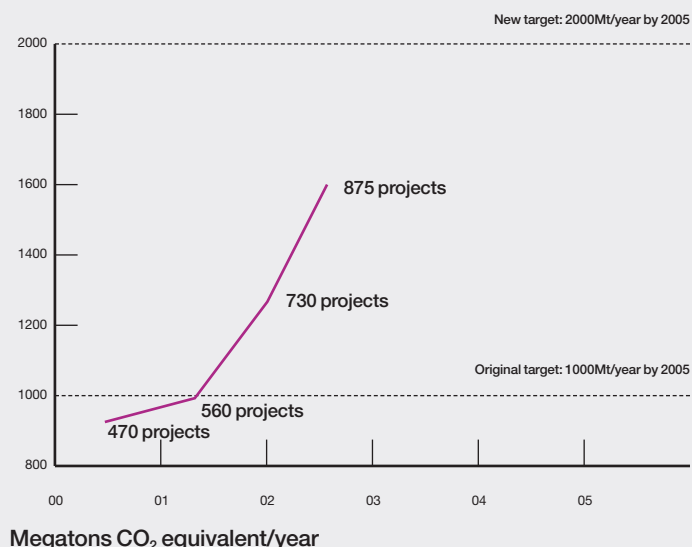
The WEC Pilot Program on Greenhouse Gas Emissions Reductions began work, under ABB’s leadership, in February 1999. It reached its initial target, to demonstrate a one-billion-ton (CO<sub>2</sub> equivalent) annual reduction by 2005, well ahead of schedule in April 2001. The target has been revised upwards to two billion tons annually by 2005, though even this now seems modest. By the start of 2002, annual savings had reached 1.6 billion tons (see page 39).

One of the most valuable outputs of the WEC program is its database – a registry of nearly 900 emissions-reduction projects in 100 countries.



### The World Energy Council's greenhouse gas program

Number of emission-reduction projects and amount of emissions saved in megatons/year



#### CETP Forum

The CETP Forum where Industry and academia come away from entrenched positions and meet with stakeholders to explore new solutions.

Accessible on the worldwide web, the database allows ideas to be shared and opens for inspection the achievements of individual companies, as well as the global energy industry.

The project was praised by Klaus Töpfer, executive director of the United Nations Environment Program, in his message to climate-change negotiators in Bonn on June 29, 2001. "We must do more, we have to do more. But the march to a less polluting world has begun," he said.

[www.worldenergy.org](http://www.worldenergy.org)

### Generating greener electricity in China

Rapid economic growth means China's demand for electricity is soaring. The country has huge coal reserves – but burning coal is one of the most environmentally damaging ways to generate electricity.

In 1999 ABB, together with the Alliance for Global Sustainability (see page 54), launched its biggest-ever study of sustainable development, called the China Energy Technology Program (CETP). Its aim was to analyze the true, cradle-to-grave impact of a range of power generation options, focusing on the needs of Shandong, a rapidly developing coastal province neighbored by Beijing to the north and Shanghai to the south.

The CETP involved some 70 scientists, engineers and academics from three continents, as well as local stakeholder representatives. After nearly three years' work, it presented its main conclusions in March 2002. They will be published as a book and a DVD. The DVD will allow users to inspect the results interactively, and see how different factors can influence a given environmental scenario.

### The China Energy Technology Program: main conclusions

1. It is feasible, and economically and socially justifiable, to generate more electricity with less air pollution and associated damage to health and the environment.
2. There are cost-efficient ways to cut air pollutants and stabilize greenhouse gas emissions.
3. A more sustainable electricity supply industry requires the use of improved technologies, fuel treatment and diversification, and demand-side management.

The CETP provided a platform to explore various options and trade-offs for sustainability, based on stakeholder preferences. This groundwork can be further exploited for a variety of applications, in China and elsewhere.

[www.cetp.ch](http://www.cetp.ch)

## Common efforts continued

### The United Nations Global Compact

ABB supports the United Nations Global Compact, intended to promote nine principles in the areas of human rights, labor and the environment. ABB was one of the inaugural companies at the launch of this initiative in 2000. The company sees the Global Compact as a key to influencing globalization and helping society understand the role industry has in sustainable development. ABB has started to identify and focus on projects that meet the Global Compact criteria and has included stakeholders to help decide which principles of the Global Compact can be applied most effectively. For example, ABB posted a case story on the UN's Global Compact Web site describing its ongoing work to move young people away from criminal behavior through the 'Conquest for Life' project in Johannesburg, South Africa. ABB is also starting an HIV/AIDS project this year under the South African government's "HIV/AIDS Partnership" program to provide education, care and support for the communities in which ABB operates. And, ABB participated in the UN Policy Dialogue on the role of the private sector in zones of conflict.

ABB managers in Germany, Italy, Poland, South Africa, Sweden and Switzerland are helping drive several other initiatives at the national and regional level. The goal is to bring together core groups of business leaders to promote the Global Compact in the business community and society and to exchange ideas and share experiences on how the principles can be best applied.

 [www.unglobalcompact.org](http://www.unglobalcompact.org)

### Bringing electricity to the world's poorest communities

Global poverty is one of the greatest threats to world stability. The world's richest countries promise help. But getting results means a steady commitment of resources, and consistent attention from governments, business and non-governmental organizations.

Basic infrastructure – like clean water, reliable energy and communications networks – is a prerequisite for poor communities to begin the journey to prosperity.

In recent years, ABB has developed small-scale, sustainable power generation technologies that are ideal for many of the world's poorest communities, many of which lie beyond the reach of electricity grids.

This is the background to ABB's "Access to Electricity" project, which aims to make a contribution in bringing a sustainable supply of electricity to the estimated two billion people living without electricity.

The program started in the second half of 2001. Basic studies were supported by ABB's power transmission and distribution experts. In the next stage ABB will combine corporate and local resources to team up with international organizations, development agencies and non-governmental organizations. This team will recruit partners in an effort to electrify selected areas in the developing world.

### Clean energy and the protection of biodiversity

In May 2001, ABB signed a three-year cooperation agreement with the World Wide Fund for Nature (WWF). The agreement recognizes both parties' common interests: ABB wants to promote its small-scale, distributed and clean energy solutions; and the WWF wants to protect biodiversity through new, less polluting energy policies.

ABB will provide funding and other resources. The first three joint projects have already started:

- Support of a pan-European campaign to promote clean and renewable energy sources and cogeneration
- Foundations for clean energy promotion in Poland
- Participation in the WWF's Mekong River initiative, to incorporate alternative energy solutions in sustainable development plans for the region

Future joint activities aim to reduce ABB's ecological impact and create new opportunities to promote clean, renewable and sustainable energy solutions. We hope to extend the cooperation to explore sustainable development goals and move toward long-term cooperation under the WWF's Conservation Partnership scheme.

 [www.panda.org](http://www.panda.org)



#### Case study

#### An earthquake in India – ABB provides help

A devastating earthquake rocked Gujarat, northwestern India, on January 26, 2001. One of the main electricity substations serving the region of Kutch was badly damaged – especially its control room and emergency power supplies. The Gujarat Electricity Board (GEB) could not provide vital power for rescue efforts and medical centers.

ABB was one of the first companies to respond to GEB's call for assistance. ABB and GEB engineers worked together to restore supplies with minimal delay, five days earlier than first hoped and before the monsoon rains arrived.

ABB service engineers were deployed throughout the region, equipped with reserves of spare parts. An ABB company doctor, with essential medicine, was assigned to the area and ABB India donated shelters and materials to facilitate rehabilitation.

Individual employees throughout the country donated cash, clothes, medicines, utensils, and food. Moreover, every ABB employee in India voluntarily contributed one day's wages to the earthquake relief fund.

#### Keeping climate change on everyone's agenda

Based on today's best knowledge, ABB shares the view that climate change poses a real threat to the world. Greenhouse gas abatement is the biggest single environmental challenge today (see our position statement on page 60).

We need to keep these issues high on everyone's agenda. One way ABB does this is through its involvement in the Business Environmental Leadership Council, part of the Pew Center on Global Climate Change.

#### Corporate research into sustainability

In 2001, ABB launched a new corporate Research and Development program, called "Sustainability and Global Change". The program involves six people and has an annual budget of \$ 1.2 million. This new program works closely with ABB's business units and external partners including universities, scientific institutions, non-governmental partners and other companies. It has four main goals:

1. To develop analytical methods and support tools for environmental impact assessments, which are now mandatory in all new product development projects at ABB
2. To examine the effects of sustainability issues on our business. For example, the program is studying the potential impact on ABB's business of the Joint Implementation Mechanism of the Kyoto Protocol
3. To support ABB's "Access to Electricity" initiative, working with development agencies and non-governmental organizations on sustainable electrification projects in the developing world
4. To collaborate with external organizations that research sustainability issues. These include the Alliance for Global Sustainability, the European Climate Forum, the International Energy Agency and the World Energy Council.

Based in the greater Washington, D.C. area, the Pew Center was founded in 1998 by the Pew Charitable Trust. It is dedicated to educating policymakers and the public about the causes and potential consequences of climate change, and encouraging curbs in greenhouse gas emissions.

The Pew Center is influential in the climate-change debate, thanks to its rolling program of workshops, media activities, reports and other publications. ABB is an active contributor to all these activities, serving as a case study in its report on corporate greenhouse gas reduction targets and providing input to other reports, especially those focusing on developing countries.

[www.pewclimate.org](http://www.pewclimate.org)

## Thousands of steps in the right direction

Continuous improvement projects per categories  
(in percentage of total number of projects)

Categories	Percentage of projects
Office	16
Production/shop	46
Education/training	5
Product development	11
Supplier	3
Packaging	3
Transportation	2
Travelling (business commuting)	3
Monitoring	3
Certification requirement	4
Other	4

In order to share information within the network of sustainability controllers, we have created a database for collection of typical improvement projects. Today, this database contains more than 1,000 projects.

### Improving environmental performance

At any given moment, there are between one and two thousand ongoing improvement projects at ABB. The impact of each individual project may be small. But together these projects have a huge effect on ABB's sustainability performance.

For seven years, ABB has systematically applied the ISO 14001 Environmental Management System throughout its organization. Much still remains to be done and it must be done through many small projects in a relentless process of continuous improvement.

ABB has more than 530 sites with Environmental Management Systems in place. Most are certified to ISO 14001. But in some ways, ABB is a fragmented organization. The average number of employees at each location is less than 200. Each site has its own, stand-alone EMS, adapted to the specific activities and environmental problems of each site.

Overall corporate objectives – such as reducing the use of hazardous materials, cutting energy consumption and lowering harmful emissions – are common to all EMSs. Beyond that, local environment managers are encouraged and expected to come up with solutions to solve their own problems.

### Small local initiatives; big global improvements

ABB's employees have seized the opportunity.

Since 1993, when we put our first EMS into effect, we have cut our use of solvents by 35 percent. Our output of hazardous waste has declined by 35 percent. The use of "restricted" materials and substances has been reduced substantially.

Environmental benefits often bring economic benefits too. More than 40 percent of the environmental projects have saved money – usually by cutting waste, using less energy or reducing transportation costs.

Continuous improvement projects per environmental concerns  
(in percentage of total number of projects)

Environmental concerns	Percentage of projects
Resource depletion	16
Global warming	46
Ozone depletion	6
Humantoxicity	10
Ecotoxicity (water and soil)	3
Ground level ozone	3
Acidification	2
Nutrification	3
Waste heat	3
Odor	3
Noise	4
Others	1



#### Case study

### A cleaner way to prevent corrosion

Metal components need to be protected against corrosion when they are stored or shipped. The normal way to do this is by applying a thin film of oil which needs to be washed off before the component is used again. Both the oil and the cleaning agents that wash it off are environmentally harmful.

ABB Turbo Systems AG in Baden, Switzerland, manufactures turbochargers for large diesel engines. The company found a new way to avoid the problem of harmful substances. Instead of being coated in oil, the parts are wrapped in paper or polyethylene foil that has been coated with a volatile corrosion inhibitor.

The corrosion inhibitor vaporizes from the inside of the wrapping, and coats all surfaces of the part with a protective layer just one molecule thick – so thin that the parts no longer need cleaning before use.

### Sharing the secrets of success

With so many local initiatives, the possibilities for the cross-fertilization of ideas are enormous.

To make sure this happens, ABB set up a database in 2001 to store details of all improvement projects and make them available to all sites. Around 1,000 projects have been logged in the database so far.

On these pages we look in more detail at several of the improvement projects under way at ABB sites around the world.

### Creative thinking eliminates waste wood in Egypt

ABB Arab S.A.E., based in an industrial suburb of Cairo, employs more than 1,000 people in the manufacture of a wide range of electrical equipment, from circuit breakers and load-break switches to wiring accessories and lighting fittings. Like any factory, the site is constantly receiving deliveries and shipping finished products.

Mohamed Gaber El-Kabany is in charge of shipping and packaging. Noticing the amount of wooden crates and pallets that accumulated from incoming deliveries, he suggested a simple environmental improvement: the in-house carpentry department could break up and reuse the waste packaging from incoming deliveries.

Now, the factory recycles almost all wooden packaging, making anything from new crates and pallets for shipping finished products, to office shelves, fences and even decorative plant containers. The factory needs to buy less wood for its own packaging needs.

“This is, of course, in line with our environmental policy of conserving natural resources,” says El-Kabany. “It costs us virtually nothing, since we already have all the tools we need; and it gives our carpenters the satisfaction of finding creative uses for the wood.”

### Cleaning up wastewater in Colombia

ABB Coltavira S.A. a company with 250 employees in Bogotá, Colombia, manufactures water meters.

Analyses in February and March 2001 showed that industrial wastewater from the site failed to meet ABB standards. It was too alkaline and contained excessive amounts of suspended solids.

In April and May, a wastewater purification plant was built. Wastewater from the site now comfortably meets all requirements—legal requirements as well as ABB standards. Suspended solids have been reduced by 99 percent.

Studies are now under way to reduce water contamination before the water enters the purification plant and to reuse the purified water, cutting consumption of fresh water.

## Environmental awards to promote continuous improvement continued



### Case study

#### How to keep warm in Singapore: use a blanket!

To protect the inner working surfaces of valves and wellheads against corrosion, they are coated with a special alloy – a process that involves heating the product to 150°C and keeping it at that temperature continuously for up to one week.

The products are heated using a liquid petroleum gas torch, or an electric induction coil. Both methods consume prodigious amounts of energy.

Challenged to find ways of saving energy, the welding-shop team at ABB Vetco Gray, Singapore, came up with a simple idea: wrap the products in blankets to keep them warm! After six months' experimentation with different types of blanket, they found the optimal solution: a homemade thermal blanket that cuts heating time and energy consumption by 20 percent.

### Valves that saved 16 million liters of water

When environmental managers at ABB Varennes, Canada, a manufacturer of high-voltage transformers, were looking to cut water consumption in the factory, they found one major culprit: high-frequency welding machines. These machines are water cooled, and the water runs continuously as long as the machines are turned on, whether or not they are in use.

The solution was simple, cheap and highly effective: the company spent \$ 300 installing solenoid valves to shut off the water when the machines were not in use. Water consumption was cut by 29 percent – almost 16 million liters of water a year, saving almost \$ 3,000 a year.

### A replacement for chlorinated solvents? Try water...

If you need to clean grease off metal parts, chlorinated solvents do the job very well. But in other respects it is pretty nasty stuff: a volatile organic compound that contributes to ground level ozone formation, and is very harmful if inhaled.

Engineers at ABB Medición S.A., a manufacturer of water meters in Renteria, Spain, tested several alternatives in an effort to achieve the same cleaning result but with reduced environmental impact. Edurne Ijalba, Continuous Improvement Manager, explains: "We evaluated several alternatives and decided on the one with the least environmental impact: hot water. We specified water cleaning for a new machining center that we were buying anyway, and converted five other machines to water cleaning."

"The total cost was nearly \$ 50,000; but at the same time we were able to change our processes and workflow, which will save us nearly \$ 17,000 per year. And our emissions of chlorinated solvents are now zero."

### Taking full "cradle-to-grave" responsibility

Recycling of electrical and electronic equipment at the end of its working life is already mandatory in some countries, and the list is growing all the time. In Finland, ABB Product Service has set up a recycling program for variable speed drives and motors, well in advance of legal requirements.

Redundant equipment is collected from the customer, and dismantled. Reusable parts are set aside; recyclable components are sorted and delivered to specialist recycling companies. As well as doing this work itself, ABB has set up a nationwide network of companies authorized to dispose of ABB products.

ABB has also prepared detailed recycling instructions for each of its products to encourage widespread adoption of recycling procedures.

# Environmental Management Awards



**Award winner,  
Mark Czernuschka (left)**  
If you can save some 35 tons of waste, then you stand a good chance of being an award winner.

## Overview

The ABB Environmental Management Awards are given to individuals whose initiatives have led to significant improvements in environmental performance. These awards were introduced in 1999 to get all employees involved in environmental matters – not just those who work in sustainability affairs.

Projects from all parts of the ABB world were submitted to a jury of ten environmental specialists. Their judgments were based on innovativeness, technology level and results achieved. The jury did not receive any information about the country of origin or the person responsible for the project.

The awards will be made every two years, with prize money of \$ 30,000 shared between the winners. The award distributed in 2001 acknowledged initiatives made during the years 1999 and 2000 and the next award will be distributed in the spring of 2003 to cover initiatives during this ongoing period of two years. Seven people shared the prize money this time, but it is up to the prize jury to decide how many winners there will be next time.

## New zinc-plating process

Atef Darwish, ABB Metals and Plastics Manufacturing, Ramadan City, Egypt.

Atef Darwish was behind a change in the electroplating process used to coat metal supports for switchgear cabinets with zinc.

The new process improves product quality, and saves on hazardous chemicals: annually, 600 kg of sodium cyanide, 300 kg of zinc oxide and 500 kg of sodium hydroxide will be saved.

Last but not least, the new process is much less hazardous for operators.

## Recycling of waste board

Mark Czernuschka, ABB Pucaro Elektro-Insulierstoffe, Roigheim, Germany

Boards coated with PVA (polyvinyl acetate) are used as insulation between the stator winding and the iron core of some electric motors. The coating made the boards impossible to recycle, so some 35 tons of waste board had to be disposed of as landfill every year.

Mark Czernuschka found that by heating the board in a pulp boiler under high pressure, all the board could be recycled. Since October 2000, all waste board has been recycled.

## Environmental awards to promote continuous improvement continued



**Award winner, Denise Chaves (right)**  
Substantial material and transportation costs were saved by Denise Chaves and her team in the use of imported pressboard and insulation material. A good example of the optimization of resources.

### A new generation of soft-starters for motors

Sören Kling, ABB, Västerås, Sweden

Sören Kling was given the task of developing a new family of soft-starters, ranging from 18 to 245A, with improved environmental performance. Soft starters are devices that start, run and stop electric motors using power semiconductors to reduce starting current.

Using new design rules and ideas, he was able to develop soft-starters that were smaller, and consumed less energy than their predecessors. Moreover, the new soft-starters contain a higher proportion of recyclable material than before.

### Cutting paint-shop emissions

Anders Allander, ABB Motors AB, Västerås, Sweden

Anders Allander was asked to cut emissions of volatile organic compounds (VOCs) from the machines division of ABB Motors. His improvements included new methods of impregnation, more efficient painting equipment, new cleaning processes, a change to a water-based priming system and employee education.

VOC emissions have been cut by almost 90 percent over four years – from 13.3 tons per year to just 1.2 tons.

### Improved utilization of materials

Denise Chaves, ABB Ltda, Guarulhos, Brazil

ABB in Guarulhos imports nearly 400 tons of pressboard and insulation material from Sweden every year. After a study found that 35 percent of this material was wasted, Chaves headed a team looking for ways to cut waste.

The project led to changes in manufacturing processes and equipment, and improved operator training. The result is an annual saving of 52 tons of material and savings of \$ 220,000 for the material, plus the cost of transportation from Sweden to São Paulo.

### A new line of circuit breakers

Renato Dosmo, ABB SACE, Bergamo, Italy

Renato Dosmo was the chief developer of the new "Tmax" line of circuit breakers with 690V rated voltage and up to 250A rated current.

The new range uses 50 percent more recyclable plastics. The reduction in materials used cuts CO<sub>2</sub> emissions by 37 percent.

Lower internal resistance in the products themselves means huge energy savings for customers. Over their ten-year working lives, the Tmax circuit breakers made by ABB in 2001 will save 150,000 MWh of electricity, equivalent to 76,500 tons of CO<sub>2</sub> emissions.

ABB regrets to announce that Mr. Dosmo was killed in an airplane crash at Milan's Linate airport in October 2001.

### Applying lifecycle assessment to product design

Lennart Karlson, ABB, Västerås, Sweden

Under the leadership of the Corporate Research Center in Sweden, Lennart Karlson advanced the implementation of the concept of Life Cycle Assessment (LCA) at ABB. His studies showed that by far the greatest environmental impact of our products – and thus the greatest potential for improvement – occurred during their working lives, rather than in manufacture and disposal.

Karlson was a key figure behind the establishment of an LCA competence center at Chalmers University in Gothenburg in 1996. Within ABB, he launched an education program that resulted in more than 85 LCA studies of ABB products, an important precursor of ABB's environmental product declarations. He helped create software tools for designers, to calculate the lifetime environmental performance of new products on the drawing board.

Lennart Karlson has also vigorously promoted LCA outside ABB, at conferences and seminars in Sweden and other countries, and has published several papers on LCA.



**Award winner, Italy**  
**the late Renato Dosmo (center)**

The new "Tmax" line of circuit breakers contributes twice – by using 50 percent more recyclable material and lowering its energy losses.

# Policies and organization

## ABB's sustainability policies

Sustainable development is integral to all aspects of our business. We strive to balance economic, environmental and social priorities to create value for all our stakeholders. Our goal is to continuously improve our own social and environmental performance, and to take initiatives that improve quality of life in the communities and countries where we operate.

We create value for society by:

- Taking part in initiatives that foster economic, environmental, social and educational development
- Offering our customers eco-efficient products that reduce environmental impact over their complete lifecycles
- Sharing our latest technologies with developing countries
- Ensuring that all our operations and processes comply with applicable environmental standards and legislation. Specifically, every operating unit must implement an Environmental Management System that continuously improves its environmental performance
- Choosing suppliers who have sustainability policies and systems similar to our own

ABB's commitment to sustainability is further elaborated in the group's environmental and social policies, which apply to all employees.

## A special global network to support ABB's strict business ethics compliance program

ABB aims to achieve the highest international standards of ethical behavior and integrity.

Business ethics belong to ABB's core set of values and guiding principles. Our policy on business ethics is incorporated in our Mission and Values statement published in 23 languages and on our Group Web site. It is also incorporated in ABB's Business Ethics Standards, publicly available in ten major languages and in ABB's new social policy.

## Global support network

ABB's board of directors and executive committee have designated the Group Function – Legal and Compliance to implement and oversee business ethics within ABB and to manage a global network to ensure compliance. Compliance officers have been appointed at Group headquarters, area counselors have been located in the U.S. and Australia, and local counselors in 63 countries advise and monitor local organizations. In addition, ethical coordinators have been established in all of ABB's business divisions to identify critical issues and develop programs to address them.

This global network distributes information and guidance, fosters internal dialogue, and supports ethical education and training. In the last few years, training programs covering approximately 50 percent of ABB employees have been held in countries where ABB has major activities.

An additional section relating to lenders and export credit agencies has been added to ABB's business ethics policy, and specially trained compliance officers are responsible for certifying all necessary disclosures in this area.

## Access for employees

ABB employees have access via the Group's global intranet to a full scope of information, guidelines, documents, forms and useful agreements covering all aspects of ABB's business ethics compliance program. A 24-hour response helpdesk and details of the compliance counselor network for consultation or questions are also provided.

## External liaisons

ABB is a group contributor and donor to Transparency International, the coalition against corruption. The ABB Group also liaises with the Basel Institute on Governance, and for several years ABB in Germany cooperated with the Center for Business Ethics in Konstanz, Germany.

## Environmental policy

ABB is a signatory to the International Chamber of Commerce Business Charter for Sustainable Development, and in 1992 adopted the 16 principles of the Charter as its group-wide environmental policy.

### 1. Corporate priority

To recognize environmental management as among the highest corporate priorities and as a key determinant to sustainable development; to establish policies, programs and practices for conducting operations in an environmentally sound manner.

### 2. Integrated management

To integrate these policies, programs and practices fully into each business as an essential element of management in all its functions.

### 3. Process of improvement

To continue to improve corporate policies, programs and environmental performance, taking into account technical developments, scientific understanding, consumer needs and community expectations, with legal regulations as a starting point; and to apply the same environmental criteria internationally.

### 4. Employee education

To educate, train and motivate employees to conduct their activities in an environmentally responsible manner.

### 5. Prior assessment

To assess environmental impacts before starting a new activity or project and before decommissioning a facility or leaving a site.

### 6. Products and services

To develop and provide products or services that have no undue environmental impact and are safe in their intended use, that are efficient in their consumption of energy and natural resources, and that can be recycled, reused or disposed of safely.

### 7. Customer advice

To advise and, where relevant, to educate customers, distributors and the public in the safe use, transportation, storage and disposal of products provided; and to apply similar considerations to the provision of services.

### 8. Facilities and operations

To develop, design and operate facilities and conduct activities taking into consideration the efficient use of renewable resources, the minimization of adverse environmental impact and waste generation and the safe and responsible disposal of residual wastes.

### 9. Research

To conduct or support research on the environmental impacts of raw materials, products, processes, emissions and wastes associated with the enterprise and on the means of minimizing such adverse impacts.

### 10. Precautionary approach

To modify the manufacture, marketing or use of products or services or the conduct of activities, consistent with scientific and technical understanding, to prevent serious or irreversible environmental degradation.

### 11. Contractors and suppliers

To promote the adoption of these principles by contractors acting on behalf of the enterprise, encouraging and, where appropriate, requiring improvements in their practices to make them consistent with those of the enterprise; and to encourage the wider adoption of these principles by suppliers.

### 12. Emergency preparedness

To develop and maintain, where significant hazards exist, emergency preparedness plans in conjunction with the emergency services, relevant authorities and the local community, recognizing potential trans-boundary impacts.

### 13. Transfer of technology

To contribute to the transfer of environmentally sound technology and management methods throughout the industrial and public sectors.

### 14. Contributing to the common effort

To contribute to the development of public policy and to business, governmental and intergovernmental programs, and educational initiatives that will enhance environmental awareness and protection.

### 15. Openness to concerns

To foster openness and dialogue with employees and the public, anticipating and responding to their concerns about the potential hazards and impacts of operations, products, wastes or services, including those of trans-boundary or global significance.

### 16. Compliance and reporting

To measure environmental performance; to conduct regular environmental audits and assessments of compliance with company requirements, legal requirements and these principles; and periodically to provide appropriate information to the Board of Directors, shareholders, employees, the authorities and the public.

 [www.abb.com/sustainability](http://www.abb.com/sustainability)

## Social policy

ABB's social policy was adopted in February 2001. It draws on four sources: the United Nations' Universal Declaration of Human Rights, the International Labor Organization's fundamental principles on rights at work, the OECD Guidelines for Multinational Enterprises and the Social Accountability 8000 (SA 8000) standard, an auditable standard for the protection of workers' rights developed by the Council on Economic Priorities Accreditation Agency.

### 1. ABB in society

To contribute within the scope of our capabilities to improving economic, environmental and social conditions through open dialogue with stakeholders and through active participation in common efforts.

### 2. Human rights

To support and respect the protection of internationally proclaimed human rights.

### 3. Children and young workers

To ensure that minors are properly protected; and as a fundamental principle, not to employ children or support the use of child labor, except as part of government-approved youth training schemes (such as work-experience programs).

### 4. Freedom of engagement

To require that all employees enter into employment with the company of their own free will; and not to apply any coercion when engaging employees or support any form of forced or compulsory labor.

### 5. Health and safety

To provide a safe and healthy working environment at all sites and facilities and to take adequate steps to prevent accidents and injury to health arising out of the course of work by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment.

### 6. Employee consultation and communication

To facilitate regular consultation with all employees to address areas of concern. To respect the right of all personnel to form and join trade unions of their choice and to bargain collectively. To ensure that representatives of personnel are not the subject of discrimination and that such representatives have access to their members in the workplace. To make sure, in any case of major layoffs, that a social benefits and guidance plan is in place, and already known to employees or their official representatives.

### 7. Equality of opportunity

To offer equality of opportunity to all employees and not to engage in or support discrimination in hiring, compensation, access to training, promotion, termination or retirement based on ethnic and national origin, caste, religion, disability, sex, age, sexual orientation, union membership, or political affiliation.

### 8. Mobbing and disciplinary practices

To counteract the use of mental or physical coercion, verbal abuse or corporal/hard-labor punishment; and not to allow behavior, including gestures, language and physical contact, that is sexual, coercive, threatening, abusive or exploitative. To develop and maintain equitable procedures to deal with employee grievances, and disciplinary practices.

### 9. Working hours

To comply with applicable laws and industry standards on working hours, including over-time.

### 10. Compensation

To ensure that wages paid meet or exceed the legal or industry minimum standards and are always sufficient to meet basic needs of personnel and to provide some discretionary income. To ensure that wage and benefits composition are detailed clearly and regularly for workers, and that compensation is rendered in full compliance with all applicable laws and in a manner convenient to workers. To ensure that labor-only contracting arrangements and false apprenticeship schemes are not used to avoid fulfilling ABB's obligations under applicable laws pertaining to labor and social security legislation and regulations.

### 11. Suppliers

To establish and maintain appropriate procedures to evaluate and select major suppliers and subcontractors on their ability to meet the requirements of ABB's social policy and principles and to maintain reasonable evidence that these requirements are continuing to be met.

### 12. Community involvement

To promote and participate in community engagement activities that actively foster economic, environmental, social and educational development, as part of ABB's commitment to the communities where it operates.

### 13. Business ethics

To uphold the highest standards in business ethics and integrity and to support efforts of national and international authorities to establish and enforce high ethical standards for all businesses.

# Business ethics

## From ABB's Missions and Values statement

ABB expects all its employees to uphold the highest standards of ethical behavior and integrity. We believe that ethical and economic values are interdependent and that the business community must always strive to operate within the accepted norms established by national and international authorities.

High business ethics and integrity ensure our credibility. All ABB companies and employees have to conform to the laws and regulations of the countries in which they operate and must fulfill their obligations in a reliable manner. They must insist on honesty and fairness in all aspects of their business and expect the same from their partners.

ABB shall also responsibly comply with the business principles guiding our company activities and relationships worldwide.

The ABB Group subscribes to the basic principles in the International Chamber of Commerce (ICC) Rules of Conduct, 1999 revised edition, and the OECD Convention from 1997.

In implementing this policy, ABB employees are to:

- Apply "zero tolerance" in ensuring strict adherence to local and international laws and regulations, as well as to ABB Group Ethical Standards
- Ensure all ABB business transactions are fully and fairly recorded according to the company's accounting principles
- Ensure continuous training and awareness for employees on how to handle ethical issues, as well as timely advice and guidance
- Regularly monitor ethical conduct and ensure that accessible systems are in place for employees or others to report potential violations

 [www.abb.com/sustainability](http://www.abb.com/sustainability)

## No gray areas

Our policy on business ethics forms part of ABB's "Mission and Values" statement, distributed to all ABB employees (the policy is reprinted on the left).

Monitoring of ABB's compliance is the responsibility of the Group Function – Legal and Compliance, supported by local counselors in 63 countries. One of these is Rudolf Zimmermann, Senior Vice-President, General Counsel at ABB in Germany. We asked him about his activities to ensure the highest possible standards.

Q: ABB in Germany is currently very active in promoting its business ethics compliance. Why?

Mr. Zimmermann: We've learned our lesson. Unfortunately several corruption scandals have involved ABB in Germany. This has made it necessary for us to strengthen and highlight the ABB Group's strict ethical commitments that we regard to be so important and fundamental for "our license to operate". Throughout the Group, ABB follows a "zero tolerance" approach concerning business ethics violations. And we do not tolerate "gray zone" behavior.

Q: What are you doing to raise awareness about business ethics?

Mr. Zimmermann: Awareness among our 18,000 employees in Germany has been raised through education and information. Executive endorsement is also supporting a program over several years in which we systematically update and educate management at all levels. Special attention is being given to managers whom we consider are working in "risk areas".

Through meetings and our employee publications as well as via intranet, we have informed all employees about ABB's strict compliance program and the consequences for anyone who violates laws or ABB rules.

Q: What's next on your agenda?

Mr. Zimmermann: Fighting corruption and outdated business practices has to be an on-going activity. Keeping our ethical performance at a high level needs more than individual campaigns. So we will need to continue providing information and education on what we are doing to combat violations and violators.

We intend to issue a general policy on sponsoring and contributions and we will strive for external certification of our ethics management program.

We will also aim for more external engagements, with non-governmental organizations and universities, through which we can obtain fresh input and inform our key stakeholders about our ethical views and compliance programs.

## Policies and organization continued

### Sustainability Affairs organization

ABB's Sustainability Affairs organization comprises some 600 people, located in more than 50 countries. Not all of these people are working full-time on sustainability activities – many having additional, but often related, roles. The diagram shows the overall reporting structure; the six main elements are described below:

### Sustainability Advisory Board

Founded in 1992 and chaired by ABB's CEO, this is a panel of independent experts, meeting two or three times a year, which offers objective advice on ABB's sustainability management program. In 2002, it is being reconstituted with new members to achieve better diversity and a balance of environmental, social and economic skills.

### Group Function – Sustainability Affairs

Reporting directly to the CEO, the staff runs ABB's sustainability management program, as well as training programs to increase social and environmental awareness and proficiency.

### Business area sustainability controllers

There are 23 controllers, one for each relevant business area. Their tasks include the development of Environmental Product Declarations; the implementation of environmental and social goals and programs, including actions to mitigate the impacts of products and services; education and training of personnel; and reviewing environmental and social performance.

### Country sustainability controllers

Nearly 50 country sustainability controllers are responsible for establishing and communicating ABB's social and environmental policies, programs and procedures to all facilities within their countries. They also commission independent social and environmental audits, and prepare performance reports. Other duties include promoting eco-efficient technologies and developing country-specific education and training programs.

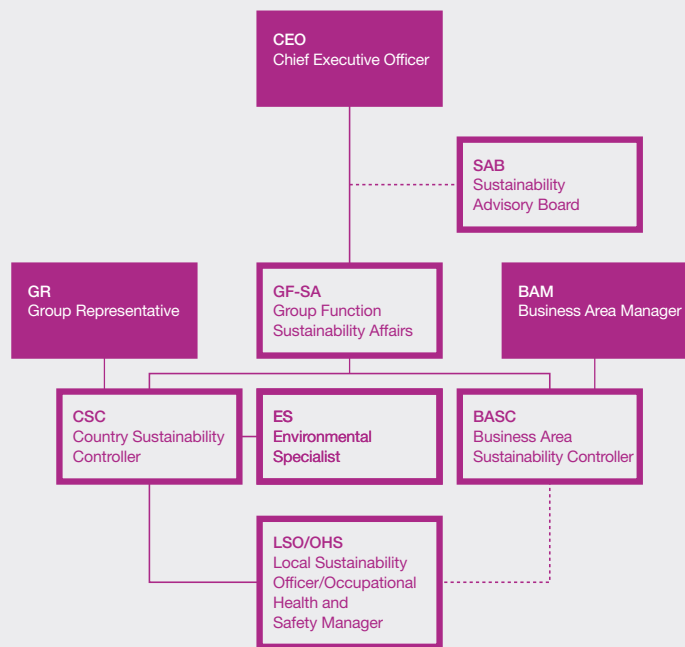
### Environmental specialists

In some countries, environmental specialists are employed to work alongside the country sustainability controllers.

### Local sustainability officers

Some 500 local sustainability officers, located at the ABB facilities, are responsible for local environmental management programs. This includes developing manuals, planning improvements and reporting environmental and health and safety performance. On many sites, they also have the role of Occupational Health and Safety managers tasked with implementing local occupational health and safety systems, as required by ABB's social policy.

Sustainability Affairs organization



## Business Area Sustainability Controllers

Utilities		
Utility Automation	Klaus Oeder	
Utility Partner		•
Utility Power Systems	Rolf Bogren	
Industries		
Automotive Industries	Michael Larsson	
Building Systems	Roberto Fazio	
Logistic Systems		•
Marine and Turbocharging	Ismo Haka	
Paper, Printing, Metals and Minerals	Ken Morris	
Petroleum, Chemical and Life Sciences	Odd Natvik	
Telecom and Product Manufacturing Industries		•
Oil, Gas and Petrochemicals		
Downstream/Upstream	Dave McGinigal	
Power Technology Products		
Distribution Transformers	Reiulf Wilhelmsen	
High-Voltage Technology	Kjell G Pettersson	
Medium-Voltage Technology	Thor Endre	
Power Transformers	Kjell Magnusson	
Automation Technology Products		
Control and Force Measurement	Doug Lincoln	
Drives and Power Electronics Systems	Timo Miettinen	
Electrical Machines	Anders Allander	
Instrumentation and Metering	Doug Lincoln	
Low-Voltage Products	Georg Pauli	
Robotics		•
Financial Services		
Equity ventures	Tony Shea	
New Ventures		
	Christian Lindner	
• Denotes position vacant		

## Country Sustainability Controllers and Environmental Specialists

Country	Sustainability Controller	Environmental Specialist
Argentina	Justo Gonzalez Litardo	
Australia/New Zealand	Peter Kinsey	
Austria	Petra Thanner	Erwin Wippel
Benelux	Joost Kuijpers	
Brazil	Carlos-Roberto Hohl	Manoel Siqueira
Canada	Andre K Baby	Grazyna A Momot
China	Paul Chan	ShiWen Zheng
Colombia	Albert Tibavizco	
Czech Republic	Frantisek Dobes	
Denmark	Hans J Knudsen	
Egypt	Hassan Sharawi	
Estonia	Liis Metusala	
Finland	Sakari Hakkarainen	
France	Valérie Rimonteil	
Germany	Udo Weis	Helmut Sogl
Greece	Tonia Petrovits	
Gulf Area	Gary Foote	
Hungary	István Horváth	
India	Sanjeev Nagpal	
Ireland	Tom O'Reilly	
Italy	Antonio Giacomucci	
Japan	Masaru Uetsuka	
Latvia	Visvaldis Lacis	
Malaysia	Leong-Seng Ng	
Mexico	Mario Martinez	
Norway	Nils Borstad	Ivar Bjorseth
Peru	César Fernández	
Poland	Andrzej Brzozowski	Piotr Ciechanowski
Portugal	Joao Oliveira	
Romania	Rares Lutia	Sabine Simon
Russia	Paul Baumgartner	Alexander Burov
Saudi Arabia	Abdalkareem Alhooshan	
Singapore	Boon Eng Ong	
South Africa	Clive Govender	
South Korea	Kyeong-Hee Lee	
Spain	Roberto Sellés	
Sweden	Gunnel Wisén-Persson	
Switzerland	Remo Kuery	Jakob Weber
Thailand	Manoonsak Siamwalla	
Turkey	Refik Can Erkök	
United Kingdom	John Watson	
USA	David Onuscheck	
Venezuela	Coral Lombana	

## Policies and organization continued

### Common efforts

Listed below are some of the principal associations and initiatives with which ABB is involved in the area of sustainability.

#### Alliance for Global Sustainability

Formed in 1994 by the Massachusetts Institute of Technology, the Swiss Federal Institutes of Technology, and the University of Tokyo, to work on integrated aspects of environmental and sustainability problems through research, education and global outreach. Chalmers University of Technology, Gothenburg, Sweden recently joined the alliance. ABB serves on the management board of the alliance and has led its largest program to date – the two-year China Energy Technology Program, which was completed in 2001.

<http://globalsustainability.org>

#### Business Council for Sustainable Energy, Washington D.C., U.S.

Created in 1992 by senior executives in the U.S. energy industry, the BCSE promotes clean energy technologies and works on climate change, market access, international financing, energy-tax policy, and research and development issues. ABB is an associate member.

[www.bcse.org](http://www.bcse.org)

#### Business for Social Responsibility, (BSR), U.S.

ABB is a member of BSR – a global partner for responsible business leaders. With more than 1,400 member and affiliated companies worldwide, BSR helps businesses achieve commercial success in ways that respect ethical values, people, communities and the environment. Member companies have access to practical information, research, education and training programs, as well as technical assistance and consulting on all aspects of corporate social responsibility. BSR helped to facilitate the two rounds of ABB's stakeholder dialogue in the United States.

[www.bsr.org](http://www.bsr.org)

#### Environmental Protection Agency (Naturvårdverket), Stockholm, Sweden

ABB is a board member of this governmental authority, which coordinates and promotes environmental work. It has adopted 15 specific environmental quality objectives that it aims to achieve by 2020. The objectives have been formulated through cooperation between elected representatives, public authorities, industry and environmental organizations, and adopted unanimously by the Swedish Parliament.

[www.internat.environ.se/index.php3](http://www.internat.environ.se/index.php3)

#### CPM, (Centrum för Produktrelaterad Miljöanalys), Chalmers University of Technology, Gothenburg, Sweden

CPM is a national competence center, dedicated to sustainable product development. It is jointly funded by industry, VINNOVA (the Swedish Agency for Innovation Systems), and Chalmers. ABB is a board member.

[www.chalmers.se/Home-E.html](http://www.chalmers.se/Home-E.html)

#### e-mission 55, Bonn, Germany

e-mission 55 is a business initiative calling for an international political framework for climate protection, and for the speedy ratification of the Kyoto Protocol. It also advocates tools such as emissions trading. The name comes from the Kyoto Protocol's "magic" figure: to come into force, it needs to be ratified by at least 55 industrialized countries that account for at least 55 percent of greenhouse gas emissions. ABB is one of over 170 companies which are signatories.

[www.emission55.com/start.htm](http://www.emission55.com/start.htm)

### International Energy Agency, Paris, France

An agency established in 1974 within the framework of the Organization for Economic Cooperation and Development. ABB provides the vice-chairman of its greenhouse gas research and development program.

[www.iea.org](http://www.iea.org)

### International Organization for Standardization (ISO), Geneva, Switzerland

Responsible for standardization in all fields except electrical and electronic engineering. ABB's corporate staff for sustainability affairs is a member of Technical Committee 207.

[www.iso.ch/iso/en/ISOOnline.opennerpage](http://www.iso.ch/iso/en/ISOOnline.opennerpage)

### Pew Center on Global Climate Change, Washington D.C., U.S.

Established in 1998 by the Pew Charitable Trust to bring a new cooperative approach and critical scientific, economic and technological expertise to the global climate change debate. ABB is one of nearly 40 companies in its Business Environmental Leadership Council.

[www.pewclimate.org](http://www.pewclimate.org)

### Prince of Wales International Business Leaders Forum, London, U.K.

ABB is a principal supporter of this educational charity, set up in 1990 to promote responsible business practices that help to achieve social, economic and environmentally sustainable development, particularly in new and emerging market economies.

[www.iblf.org](http://www.iblf.org)

### United Nations Global Compact, New York

ABB was one of the 50 companies that supported the inaugural launch of the Global Compact in New York in July 2000. The Compact is a platform for encouraging and promoting good corporate practices and learning experiences in the areas of human rights, labor and the environment.

[www.unglobalcompact.org](http://www.unglobalcompact.org)

### World Business Council for Sustainable Development, Geneva, Switzerland

Established in January 1995, the WBCSD (of which ABB is a member) is a coalition of 150 international companies drawn from more than 30 countries and 20 major industrial sectors, and united by a shared commitment to sustainable development via the three pillars of economic growth, ecological balance and social progress.

[www.wbcsd.ch](http://www.wbcsd.ch)

### World Energy Council, London, U.K.

A non-governmental energy-policy forum founded in 1923. Its objective is to promote the sustainable supply and use of energy for the greatest benefit of all. ABB provides the chairman of the steering committee for its Greenhouse Gas Emissions Reduction Program.

[www.worldenergy.org/wec-geis](http://www.worldenergy.org/wec-geis)

### World Wide Fund for Nature (WWF), Geneva, Switzerland

One of the world's largest and most effective organizations devoted to the conservation of nature, operating in around 100 countries and supported by nearly five million individuals. ABB started three joint projects with the WWF during 2001: on cogeneration in Europe; clean energy in Poland and the sustainable use of the resources of the Mekong river.

[www.panda.org](http://www.panda.org)

### World Economic Forum Corporate Citizenship Statement, New York

At the World Economic Forum's meeting in New York in 2002, ABB was one of 36 international companies to sign a corporate citizenship statement making responsible behavior and close links with all stakeholders a core part of business activities.

[www.weforum.org/pdf/CSR/Final\\_Statement.pdf](http://www.weforum.org/pdf/CSR/Final_Statement.pdf)

### CSR Europe, Brussels, Belgium

Corporate Social Responsibility Europe, founded in 1997 by its current president Etienne Davignon, is a network of 50 multinational companies whose aim is to plan, inform, and develop social sustainability activities. ABB serves on the Board of Directors and is actively involved in several of the organization's activities, such as the CSR Europe Academy, Lifelong Learning, Diversity, and as a steering committee member coordinating members' responses to the European Commission's Green Paper "For a European framework on CSR".

[www.csreurope.org](http://www.csreurope.org)

# Sustainability management systems

## Beyond manufacturing

ABB began implementing the ISO 14001 standard for Environmental Management Systems seven years ago. By the end of 2001, 531 manufacturing and service sites – out of a total of 550 – had implemented the ISO 14001 standard.

Two new countries, Iran and Vietnam, joined ABB's sustainability program in 2001. In Vietnam, ABB's manufacturing facility for distribution transformers has started to implement Environmental Management Systems. In Iran, we have already obtained our first ISO 14001 certificate.

We now plan to extend ISO 14001 to all our facilities, not just those that handle physical products. Naturally, we will have to adapt the model for different types of operation. In an research and development organization, for instance, we may focus on the environmental performance of products under development. In an administrative office, we may look at the environmental aspects of internal communication – such as travel.

## Up and down the supply chain

ABB applies the same principles to its main suppliers as it does to itself. We favor suppliers who are committed to continuously improving their environmental performance and who are certified to ISO 14001 or its equivalent.

During 2001, ABB introduced mandatory checks on environmental impacts at a very early stage in all new product development. These include, for example, comparing the lifetime environmental performance of the product with those of existing products, and assessing the product's content of materials that might harm the environment.

## Social policy: it applies to suppliers too

ABB's social policy (see page 50) requires major suppliers to prove that they meet the same social policy standards as ABB. Though we already check suppliers' environmental and quality standards, social policy is a new area for ABB, and we felt we needed to learn from a more experienced company.

adidas-Salomon AG is the world's second-largest sporting-goods company. Like ABB, it is ranked top in its sector by the Dow Jones Sustainability Index.

adidas-Salomon outsources production to 570 factories worldwide, many in the developing world. But the company strongly believes that "outsourcing supply does not mean outsourcing moral responsibility."

In 2001, ABB benchmarked with adidas-Salomon, looking at its relations with outsourcing suppliers in the Asia-Pacific region. The study examined four main areas:

1. Organizational competence: Who is responsible for social policy? Are they the right people, and are they properly trained about the policy?
2. Supplier qualification and monitoring: Are suppliers informed of the social policy? Are they trained and helped in other ways to meet the standards? How is their performance checked? And how far up the supply chain does monitoring extend?
3. Guidelines for suppliers: What guidelines on the social policy are suppliers given? Are they based on established international standards (e.g. ILO standards)?
4. Audits and reporting: Are suppliers regularly audited on their social performance? If so, where is the information published? Are the audits external or internal?

The study revealed a number of areas where ABB can learn from adidas-Salomon. They included training buyers, communicating social policy standards to suppliers, helping suppliers reach the required standards and auditing their performance.

Commenting on the study, Kurt Trippacher, Manager ABB Group Processes Supply Management, said: "Good social performance, just like quality and environmental performance, is an integral part of our supply management strategy. Customers and investors must know that we will not risk ABB's reputation for short-term savings."

The exercise was also praised by Bill Anderson, head of standards of engagement for Asia-Pacific at adidas-Salomon. "We feel privileged to be chosen as a benchmark company," he said. "We hope that by openly sharing information on our own policies, we can act as a compass point for ABB's sustainability journey."

## Breakdown of sustainability costs

Estimated costs (\$ millions)

01	32
00	32
99	32

ABB Sustainability Affairs network

01	12
00	10
99	5

Maintenance of ISO 14001

01	1
00	n.a
99	n.a

Stakeholder dialogues

01	5
00	7
99	12

Implementation of ISO 14001

01	4
00	4
99	2

Development of EPDs/LCAs

## ISO 14001 implementation

In this context, a site is an organization, or a part of an organization, having its own, stand alone Environmental Management System. A typical site is an organization performing manufacturing or service in its own or rented premises. We also include laboratories and full-service activities among our sites.

## Integrated management systems

In 2001, ISO 9001:2000, the latest version of the established quality standard, became available. It shares the same basic principles as the ISO 14001 environmental management standard and as such supports the development of combined or integrated management systems.

We are encouraging our facilities to produce integrated management systems for environment (ISO 14001), quality (ISO 9001) and occupational health and safety (OHSAS 18001). In 2001, the number of sites using integrated systems grew from 70 to 80. Some of these have been externally certified.

Integrated management systems are most common at ABB facilities in Germany, Sweden, The Netherlands, United Kingdom, and the U.S.

## ISO 14001 implementation

Country	2001 "ISO" sites
Argentina	8
Australia/New Zealand	21
Benelux	24
Brazil	8
Canada	7
Czech Republic	4
China	13
Colombia	3
Denmark	24
Egypt	3
Estonia	2
Finland	29
France	13
Germany	35
Greece	2
Hungary	6
India	12
Italy	27
Japan	2
Latvia	3
Malaysia	1
Mexico	2
Norway	35
Peru	1
Poland	10
Portugal	2
Romania	2
Russia	4
Saudi Arabia	1
Singapore	3
South Africa	8
South Korea	2
Sweden	84
Switzerland	55
Thailand	4
The Gulf region	6
Turkey	2
United Kingdom	36
U.S.	25
Venezuela	2
<b>Total</b>	<b>531</b>

# Stakeholder relationships

In the past, ABB has not formally defined groups of stakeholders beyond those with which it has a direct financial relationship: namely, customers and suppliers, employees and shareholders.

More recently, the debate on globalization has focused corporations' attention on their responsibilities to the broader community. ABB has responded in both formal and informal ways, engaging in dialogues with a variety of interest groups.

In February 2001, ABB launched its social policy (see page 50). The first and fundamental principle of this policy commits ABB to open dialogue with stakeholders, to respond to their concerns and to contribute, as far as we can, to improving economic, environmental and social conditions.

## First formal dialogue

The social policy also provided the first opportunity to attempt a group-wide, systematic opening of dialogue – about the social policy itself.

At the end of January 2001, ABB sites in 43 countries were invited to participate; 34 had been able to do so by the end of the year and 11 of these had progressed to a second round of dialogue.

ABB set the agenda. Its specific aims were:

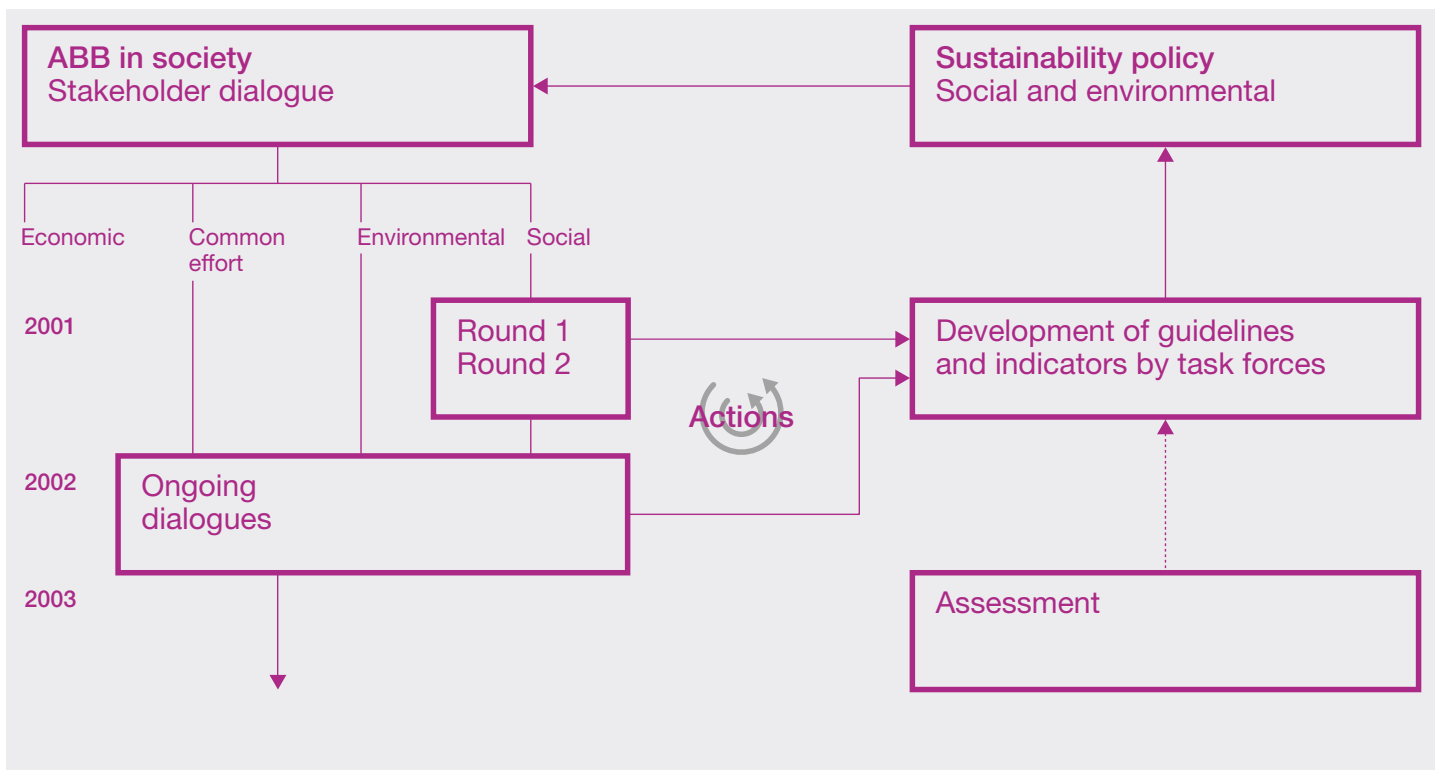
1. To gather comments from stakeholders on the policy, as input for further development
2. To help establish a clear plan for implementing the policy
3. To develop our social reporting mechanisms, as well as suitable indicators to measure performance against each of the policy's principles.

The dialogue itself and its results are reported in detail on pages 28–31. Briefly, a wide variety of stakeholders took part and the quality of the output was high.

## Broadening the scope

Our positive first experience with such wide-scale stakeholder consultation has made us keen to do more. During 2002, we have been holding similar round-table discussions on ABB's policies and strategies relating to environmental management and common efforts. We see this process developing into ongoing dialogue on a regular basis to address concerns, based on a moving agenda of sustainability issues of mutual interest to the stakeholders involved.

The development of specific guidelines and indicators will be entrusted to specially constituted task forces, acting on the output of these discussions. The output will feed back into the revision process for our social and environmental policies. The overall process is shown in the diagram opposite.



#### Round-table dialogue

The round-table dialogue is a procedure to consult ABB's stakeholders and address their concerns on sustainability issues. Feedback from these dialogues is used to update guidelines and performance indicators, as well as ABB's social and environmental policies.

#### Ensuring success

We are committed to regular dialogue and to developing meaningful relationships with our stakeholders.

One of our top priorities this year will be to prove this commitment by dealing effectively and promptly, at all levels, with the action points that arise from these discussions. These dialogues can grow and flourish only if all participants see their expectations being met.

#### Sustainability Advisory Board

Since its formation in 1992, the members of ABB's Sustainability Advisory Board (see page 52) have been a highly experienced and influential group of stakeholders and stakeholder representatives.

The board is a panel of independent experts, chaired by ABB's CEO, which meets two or three times a year to offer objective advice and opinions on ABB's sustainability management program.

In 2001, the board was dissolved and will be reconstituted in 2002 to include new members with an expanded range of skills and experience in the environmental, social and economic fields. This will enable it to play an important role in ABB's management of its broader sustainability performance.

# ABB's position on climate change and global warming

The United Nations' Intergovernmental Panel on Climate Change is convinced that man-made emissions of greenhouse gases – mainly carbon dioxide – are influencing the global climate. In the Kyoto Protocol, agreed by 173 governments in 1997, industrialized countries agreed to cut their greenhouse gas emissions. Meanwhile, global emissions are steadily increasing, mainly due to the use of fossil fuels to meet the growing demand for energy.

ABB shares the UN's concern about global warming and is committed to the pursuit of emission reductions. We see greenhouse gas abatement as the biggest single environmental challenge facing governments, industry, and society today and we are striving to provide solutions to help support the aims of the Kyoto Protocol. We regard the Kyoto Protocol as an important initial step in lowering greenhouse gas emissions and stabilizing global temperatures. Curbing these gases will address many of society's unsustainable issues – environmental, economic, and social.

ABB believes that technical solutions as well as market instruments, such as the Flexible Mechanisms provided for in the Kyoto Protocol, are both needed to bring emissions under control. To help customers meet their emission-reduction commitments, ABB will explore new opportunities that the Kyoto Flexible Mechanisms may open.

The involvement of business and industry is essential for providing a cost-effective route to this goal. Society and consumers, too, are part of the problem and must be encouraged to exercise their influence to become part of the solution.

ABB has also joined "e-mission 55" – an international initiative of more than 170 businesses backing the Kyoto Protocol. This signals ABB's clear commitment to climate protection. We join with our peer companies in calling on the governments of the world to ensure the immediate entry into force of the Kyoto Protocol. This will require ratification by at least 55 countries responsible for 55 percent of the carbon dioxide emissions from industrialized countries.

At the international congress of the World Energy Council (WEC) in September 1998, ABB initiated a global project to reduce greenhouse gas emissions by one billion tons annually by the year 2005. Progress is publicly reported on the WEC Web site by a database of identified greenhouse gas reduction projects worldwide. The one billion ton target has been reached and raised to two billion tons. This initiative moves the agenda from talk to action and raises public awareness.

In 1999, we set a target to reduce ABB's own greenhouse gas emissions by one percent per annum over the next five years. Three years into the program, we are well ahead of this target.

ABB's greatest contribution is through the high environmental performance of its products over their complete life cycles. Using life cycle assessments, ABB supplies products and systems that require less material, have higher efficiencies and consume less energy, which means less greenhouse gas emissions – particularly during long operating lifetimes. Applying ABB's advanced industrial information technology for the control of integrated systems, electrical power grids, industrial processes and buildings, allows emissions to be reduced further.

By divesting its power generation activities, ABB shifted its focus from traditional large-scale power plants to the supply of electrical equipment and control systems for renewable and small-scale distributed power generation as a growth opportunity that complements existing power markets. These include the electrical equipment for wind turbines, microturbines, low emission fuel cells, and distributed applications of combined heat and power plants. They will help provide power supply utilities with a cleaner product mix and make a valuable contribution to preparing for the carbon-restrained world of the future.

# ABB's position on SF<sub>6</sub>

Sulfur hexafluoride (SF<sub>6</sub>) is a man-made gas. It is used in electrical equipment and also in applications including arc furnaces, window insulation, car tires and sports shoes. It is one of the six greenhouse gases listed in the Kyoto Protocol.

The amount of SF<sub>6</sub> that escapes to the atmosphere is minute, compared with emissions of carbon dioxide (the main greenhouse gas). Even though SF<sub>6</sub> has a global warming potential some 25,000 times greater than carbon dioxide, SF<sub>6</sub> probably accounts for only about 0.1 percent of mankind's contribution to the greenhouse effect.

Like many other manufacturers, ABB uses SF<sub>6</sub> as an insulator in high-voltage electrical equipment. The gas has excellent insulating and arc-quenching properties, which enable much more compact equipment designs than would otherwise be possible. Land use, energy consumption, losses and waste are all considerably reduced, while recyclability is increased.

Our Life Cycle Assessments indicate that with proper precautions, these advantages outweigh the environmental impact of leakages of SF<sub>6</sub> to the atmosphere.

In normal use, our products emit hardly any SF<sub>6</sub>. The gas is contained in closed systems – in many cases sealed for life. Our current products guarantee leakage rates below 0.5 percent per year and the next generation should lose less than 0.1 percent per year.

Accidental escapes of SF<sub>6</sub> – due to mistakes during manufacturing, installation, maintenance and decommissioning – are a bigger problem than leaks. To minimize them, ABB uses strict tracing and inventory systems and efficient handling procedures, in line with the recommendations of environmental agencies. To this end, ABB plays a leading role in the international organizations responsible for developing guidelines for SF<sub>6</sub>, including CIGRE, CAPIEL and NEMA. We also take back old products for dismantling and recycling under controlled conditions.

ABB has continuing research programs into alternatives to SF<sub>6</sub>, and we make SF<sub>6</sub>-free products available whenever feasible.

## References:

"SF<sub>6</sub> in the Electric Industry, Status 2000"  
(Cigré Study committee No. 23) P.O'Connel et al,  
Electra No. 200, February 2002, pp 16–25

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 [www.cigre.org](http://www.cigre.org)

"Recommendations for SF<sub>6</sub> gas handling"  
(Cigré Study committee No. 23)

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 [www.cigre\\_SC23.org/SF6/Index](http://www.cigre_SC23.org/SF6/Index)

"Environmental Sustainability Dossier"  
CAPIEL, September 2001

# ABB’s sustainability progress assessment

Our reporting is inspired by the proposals of the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines, June 2000. We have carried out a progress assessment to promote continual improvement in ABB’s sustainability performance, using those GRI indicators measurable and relevant to ABB’s activities. This looks first at whether we have enough data to fulfill the GRI indicator information and whether we have a process in place to use this information effectively. We have taken a further step by checking the existence of ABB improvement targets and assessing to what degree these are being met.

The basis for this assessment and the supporting results has been ABB’s sustainability reporting system at site, country, and business area level and other ABB information sources (interviews, site visits, committees, stakeholder dialogues and the ABB Annual Report). The results were aggregated for the whole Group, assessed and cross-checked by the Group Function – Sustainability Affairs.

This system allowed us to present a summary of our findings and helped indicate gaps and future priorities.

## Environmental dimension

Here we summarize our findings on our progress according to the GRI’s nine environmental performance indicator groups, including sub-groups, measurable and relevant to our activities. Our actual performance is reported on pages 11–17.

GRI indicator groups	Progress
Energy	Good progress and improvement process established.
Materials	Good progress but reporting needs to be improved.
Water	Good progress but reporting needs to be improved.
Emissions, effluents, and waste	Good progress and improvement process established.
Transport	The baseline for reporting is not yet established.
Suppliers	The baseline for reporting is not yet established.
Products and services	Good progress but reporting needs to be improved.
Compliance	Good progress and improvement process established.

**Energy**  
ABB has a well-established system to monitor energy use and electricity purchased. However, the monitoring and reduction of fuel used for transportation needs to be addressed. For the energy group in GRI, it appears that ABB’s process system is reasonably in place.

**Materials**  
ABB has chosen to focus on materials that may have an adverse environmental impact, the use of recycled materials and use of packaging materials. However, it is not feasible to gather data worldwide to meet the GRI requirement to report total materials used.

**Water**  
ABB reports total water used for the manufacturing of products. This consumption, being low, does not significantly affect water sources. Since practically all water for ABB processes is supplied by the water utilities, reporting is limited to these sources.

**Emissions, effluents, and waste**  
ABB reports emissions of greenhouse gases as defined by the Kyoto Protocol. Emissions of ozone-depleting substances, as well as quantities and destinations of hazardous waste, are also reported. Major waste streams for regular waste, as well as the disposal methods, are identified. In this category, it appears that the progress system is reasonably in place.

**Transportation**  
The environmental aspects of ABB’s use of transportation represent a new reporting requirement. In 2001, ABB did not have all necessary procedures in place to provide this data – upstream as well as downstream of its facilities – and the baseline for reporting is not yet established.

**Suppliers**  
A system for monitoring the environmental performance of ABB’s suppliers was launched during 2001 and sufficient data to report performance is not yet available. However, many of the major suppliers have ISO 14001 in place. Nevertheless, ABB is not yet in a position to report on the GRI indicators for this category.

**Product and services**  
In order to describe the environmental performance of its products, ABB has a corporate objective to produce and publish Environmental Product Declarations (EPDs) for all core products. ABB has published approximately 50 EPDs but needs to maintain steady progress in meeting this objective in the coming years.

## **Compliance with international and legal requirements**

Starting in 2001, ABB has implemented a Group-wide system for reporting environmental incidents, as well as pending and/or incurred environmental penalties. ABB is therefore in compliance with the GRI reporting requirements for this category.

## **Economic dimension**

As a multinational enterprise with activities in over 100 countries, we have found it difficult to aggregate data to present the economic impacts of ABB's activities worldwide. Instead, we have selected indicators describing those aspects of ABB's economic performance for which we have established Group targets. A table of these results is shown in the "Economic performance" section on pages 18–19.

## **Social dimension**

In this section, we have summarized our findings on the scope of ABB's methodology for reporting its performance according to the GRI's 13 social performance indicator groups. ABB's actual social performance is reported on pages 20–23.

## **Quality of management**

Employee retention rates and job satisfaction levels are monitored regularly per country. ABB also participates in relevant employer-ranking surveys per country (nine in 2001). Employee orientation to organizational vision is well fulfilled by means of the ongoing program to promote ABB's Mission and Values group-wide. Data on employee engagement in shaping management decision-making is not available at Group level.

## **Health and safety**

A system was established in 2000 to gather work-related health and safety statistics per country. In 2001 it was extended to include travel-related incidents and to report and investigate serious incidents, for which the Group has a zero-target approach. ABB has now initiated research to improve health and safety performance on construction and customer sites. But no figures were available of investment per worker in illness and injury prevention.

## **Wages and benefits**

The ratio of ABB's lowest wage to the national legal minimum was monitored in each country. The ratio of lowest wage to local cost of living was not reported, nor were health and pension benefits provided to employees – considered to be difficult to report meaningfully from over 100 countries.

## **Non-discrimination**

Figures were collected per country of women in management positions. Discrimination-related litigation was monitored (none in 2001) and each country described any mentoring programs for minorities.

## **Child labor, forced labor, freedom of association**

Each country reported on any incidents of non-compliance with child labor laws or forced-labor grievances by employees (none in 2001 – not considered to be an issue within ABB's workforce). Procedures to check for abuses among ABB's major suppliers were introduced in 2001 and are to be further developed. ABB's social policy commits the company to consult with employees to address their concerns – also in non-unionized countries. No legal actions related to anti-union practices were reported. While employee grievance procedures are in place throughout the Group, the existence and effectiveness of staff forums are not evident.

## **Human rights, indigenous rights, security**

While there were no reported incidents of alleged human rights violations, indigenous rights protests or security force victims, there needs to be a systematic process in place to monitor organizational practices, to apply human rights screens in investment and country risk assessment and to represent indigenous interests in decision-making in areas with indigenous peoples.

## **Suppliers**

A system was introduced in 2001 – Suppliers Qualification Requirements (SQR) – to evaluate and select major suppliers and subcontractors on their ability to meet the requirements of ABB's social policy. However, regular auditing of these suppliers is not yet in place throughout the Group.

## **Products and services**

ABB's data gathering did not detect any significant social impact of products and services. However, definitions and data collection procedures need to be improved to raise accuracy and scope. A single, global system (Customer Complaints Resolution Process) tracks and analyzes all customer complaints – and, by inversion, customer satisfaction. In addition, most ABB companies carry out customer satisfaction surveys every one to three years.

## **Community development**

Support for community development is reported by country. In 2001, ABB companies in 26 countries submitted details, many stating the monetary value of their support. The reports indicate that the definition of community development needs to be clarified for next year's reporting, with a requirement for monetary value estimates in all cases. At the global level, ABB actively participates in several large international initiatives and contributes to their funding.

# Statement by Det Norske Veritas

## Scope and method of work

DNV has been engaged to review ABB's progress assessment as described above, and that the result presented on these two pages is based on collected information from relevant parts of the organization.

We have performed this task by sampling ABB's process. The information on which we have based our statement is gathered through desk-top studies as well as telephone interviews and meetings with Group Function Sustainability Affairs.

## Conclusions

ABB's decision to move towards the GRI Guidelines is valuable. Considerable efforts have now been made to implement thorough changes in ABB's reporting practices allowing the collection of aggregated and reportable data. ABB's sustainability network, and particularly the Business Area Sustainability Controllers, has faced new and demanding reporting requirements.

These efforts have resulted in the adoption of a substantially larger number of indicators, many related to social performance, of which several are presented in this year's Sustainability Report.

In addition to GRI's requirements, it is positive that ABB focuses on improvement processes and the achievement of targets. These additional steps increase the likelihood that information disclosed by the indicators will be actively used by ABB to promote sustainable operations.

Based on the information available to us, we would draw attention to the following shortcomings and improvement areas:

- Some inconsistencies in the selection, interpretation and scoring of the GRI indicators in the progress assessment, have been identified
- There is room for more in-depth quality assurance of the data on social performance. The social dimension, as it is presented, mainly focuses on baseline data and processes in place (with less information on targets set and reached)
- With ABB's increased focus on social performance there is a limitation that the system only includes countries with production sites, thereby excluding countries with potential importance for ABB's global performance, e.g. ABB projects in Nigeria and Angola
- The reporting from the Business Areas should be strengthened for next year to secure satisfactory attention to environmental and social aspects of ABB's products and services.
- To ensure a uniform understanding of the new indicators and further improvement of next year's process, we highly recommend that experience of the process is exchanged within the sustainability network
- By including economic indicators, ABB covers the entire triple bottom line. The choice of indicators, the processes and the assessment should be further elaborated and improved to better cover local economic effects of ABB's operations.

In total, we see satisfactory evidence that the information is collected from relevant parts of the organization and that the progress assessment is conducted according to ABB's process description.



Iain M. Light  
Chief Operating Officer  
Det Norske Veritas



Jon Jerre  
Project Manager  
DNV Consulting

# Glossary

This glossary contains terms used in this report. A more comprehensive glossary of terms relating to environmental and social performance can be found in the sustainability section of the ABB Web site.

 [www.abb.com](http://www.abb.com)

**Acidification.** Chemical alteration of the environment, resulting in hydrogen ions being produced more rapidly than they are dispersed or neutralized. Occurs mainly through fallout of sulfur and nitrogen compounds from combustion processes. Acidification can be harmful to terrestrial and aquatic life.

**Air pollution.** Accumulation in the atmosphere of substances that, in sufficient concentration, endanger human health or produce other measurable effects on living matter and other materials. Major pollutants include **carbon dioxide**, carbon monoxide, hydrocarbons, **nitrogen oxides**, particulates, sulfur dioxide, and photochemical oxidants, including **ozone**.

**Asbestos.** The name of certain silicate minerals when they occur in fibrous form. Asbestos fibers can be processed into materials that are uniquely resistant to fire, heat, and corrosion. However, asbestos's extremely fine fibers are easily inhaled, and exposure to them over a period of years has been linked to cancers. The manufacture, use, and disposal of asbestos are strictly regulated in most countries.

**Biodiversity.** The totality of genes, species and ecosystems in a region or in the world.

**Biomass.** A fuel produced by living organisms, for example, wood and timber waste. Cf. **fossil fuels**.

**Business ethics.** Moral principles concerning acceptable and unacceptable behavior by corporations and individual business people. Corporate executives are obliged to maintain a high sense of values and conduct honest and fair practices with all stakeholders.

**Cadmium, Cd.** A cumulatively toxic element used in the manufacture of batteries, for electroplating, in alloys (such as lead alloys), and in circuit-board contacts.

**Carbon, C.** A nonmetallic element found widely in nature. Carbon compounds make up approximately 18 percent of all living matter (the remainder being mostly water). During the past century, carbon-based fuels provided most of the world's energy needs.

**Carbon dioxide, CO<sub>2</sub>.** A colorless gas that occurs in the atmosphere as part of nature's cycle. Human activities, especially the burning of fossil fuels, can increase levels of carbon dioxide in the atmosphere, which is believed to affect the climate. Carbon dioxide is the primary greenhouse gas on account of the high volumes released.

**CFCs.** See **Freons**.

**Chloroparaffins or chlorinated paraffins.** Highly complex and stable organic compounds containing chlorine. Resistant to degradation and oxidation. They are used as softeners in plastics and rubber, as flame-retardants and as components of cutting fluids in metalworking. Harmful primarily to aquatic life.

**Climate.** The average weather (usually calculated over a 30 year time-span) for a particular region and period. Climate is not the same as weather; rather it is the average pattern of weather for a particular region. Weather describes the short-term state of the atmosphere.

**Climate change or global climate change.** Sometimes used to refer to all forms of climatic inconsistency; in other cases used as a synonym for **global warming**.

**Cogeneration or combined heat and power.** The process by which two different and useful forms of energy are produced at the same time. For example, the heat from fuel burned in a power station can first create steam to turn a turbine and generate electricity; and can then be used to warm or cool buildings.

**Corporate governance.** The system by which business corporations are directed and controlled. The governance structure specifies the distribution of rights and responsibilities among different participants (such as the board, managers, shareholders and other stakeholders), and spells out the rules and procedures for making decisions on corporate affairs.

**GF-SA (Group Function-Sustainability Affairs).** ABB's central sustainability staff, which reports directly to the CEO and is responsible for running ABB's sustainability management program.

**Eco-efficiency.** The combination of efficiency and ecological aspects in the pursuit of sustainable development. An environmental management program is an instrument for achieving eco-efficiency.

**Ecotoxicity.** The potential of a substance to harm ecosystems. Usually refers to the toxic effect on aquatic organisms based on maximum tolerable concentrations.

**Emission.** Release or discharge of any substances (usually effluents or pollutants) into the environment.

**Emissions trading.** A mechanism for reducing greenhouse gas emissions, proposed in the 1997 **Kyoto Protocol**. Emitters of a particular pollutant (most often carbon dioxide) are given permits to release a specified number of tons of the pollutant. These permits are issued by governments or trading agencies, in limited quantities corresponding to the desired level of emissions. Permit owners may keep them and release the pollutants, or reduce their emissions accordingly and sell the permits. The fact that permits have a value and can be sold or traded gives owners an incentive to reduce emissions.

**Environmental aspects.** Elements of an organization's activities, goods or services that can affect the environment.

**Environmental impact.** Any change to the environment, whether harmful or beneficial, resulting from an organization's activities, products, or services, or from human activities in general.

**Environmental management system (EMS).** A documented set of rules, processes etc. by which an organization runs its environmental policy. One of the main requirements for certification to ISO 14001.

**Environmental performance.** The measurable results actually attained by an organization through its environmental management system(s).

**Environmental product declaration (EPD).** A description of the aspects and impacts of a product, system or service over its entire life, from raw material extraction, through manufacturing and use, to end-of-life disposal or recycling.

## Glossary continued

**Epoxy.** A group of synthetic resins used in the manufacture of electrical insulating materials, adhesives, coatings and structural laminates. Low-molecular-weight epoxy resins may be skin sensitizers.

**Eutrophication.** Nutrient enrichment of bodies of water by nitrates and phosphates from organic material or surface runoff. This stimulates the growth of aquatic plants and can cause algal blooms that deoxygenate water and smother other aquatic life.

**Flexible mechanisms.** International instruments proposed in the **Kyoto Protocol**. They would allow credits for climate change mitigation, and permits for greenhouse gas emissions, to be traded between parties to the Protocol. See also **Emissions trading**.

**Fossil fuels.** Hydrocarbon-based fuels formed by the decomposition of (mainly prehistoric) flora and fauna. Examples include oil, natural gas, coal, tar sands and peat.

**Freons.** Also known as chlorofluorocarbons (CFCs), this is a group of halogenated hydrocarbons: hydrocarbons whose molecules have one or more hydrogen atoms replaced by halogens (chlorine and/or fluorine). Formerly used widely as coolants, and expanding agents in insulation foam. As they contribute to depletion of the ozone layer and the greenhouse effect, their use is now banned in many countries.

**Global Compact (UNGC).** A United Nations-sponsored platform for encouraging and promoting good corporate practices and learning experiences in the areas of human rights, labor and the environment. Its principles derive from the Universal Declaration of Human Rights, the International Labor Organization's fundamental principles on rights at work, and the Agenda 21 principles on the environment and development.

**Global warming.** The increase in the Earth's mean temperature that is, or is believed to be, occurring as a result of human activities affecting the Earth's atmosphere.

**Global warming potential (GWP).** An index that shows the relative effects of various **greenhouse gases** in increasing global warming. GWPs are calculated as the amount of infra-red radiation absorbed by one kg of a gas over a period of 100 years. The GWP of carbon dioxide is one; the GWP of sulfur hexafluoride is 24,900.

**Greenhouse effect.** The effect on the Earth's surface temperature of certain variable constituents of the lower atmosphere. The greenhouse effect keeps surface temperatures at a global average of around 15°C; in its absence, the global average would be below freezing. Environmental scientists are concerned that increases in the atmosphere's content of **greenhouse gases** (principally CO<sub>2</sub>), caused by human activities, could have a dangerous warming effect on the Earth's atmosphere.

**Greenhouse gases.** Gases that contribute to the greenhouse effect and global warming. The most significant are **carbon dioxide** (CO<sub>2</sub>), water vapor (H<sub>2</sub>O), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), **freons** (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and **sulfur hexafluoride** (SF<sub>6</sub>).

**Hazardous waste.** Waste requiring special disposal techniques. Definitions, regulations, and national standards vary from country to country.

**International Chamber of Commerce (ICC).** A non-governmental organization founded in 1919 to promote trade, investment and the free market system. The ICC helps the international business community develop solutions for environmental problems, while striving to ensure that intergovernmental organizations concerned with the environment consider business views.

**ISO 14000.** A series of international standards covering various environmental issues. They include ISO 14001, which specifies **environmental management systems**; and ISO 14040, which covers **Life Cycle Assessment**.

**Joint implementation.** Agreements made between two or more nations under the auspices of the Framework Convention on Climate Change to help reduce greenhouse gas emissions.

**Kyoto Protocol.** A legally binding agreement under which industrialized countries will reduce their collective greenhouse gas emissions by 5.2 percent. The agreement was reached in Kyoto on December 11, 1997, and has been amended in subsequent rounds of negotiation. It is now in the process of ratification.

**Lead, Pb.** A metallic element used in many industrial processes. Accumulates in biological systems and is linked to behavioral change, paralysis and blindness.

**Life Cycle Assessment (LCA).** A management tool for appraising and quantifying the total lifetime environmental impact of a product or activity, by analyzing the entire life cycle of the materials, processes, products, technologies, services or activities it involves. Life Cycle Assessment has three components – inventory analysis, impact analysis and improvement analysis.

**Mercury, Hg.** A heavy metal used in catalysts, instruments and in the paper industry, and released by the combustion of fossil fuels. Organic mercury compounds, such as methyl mercury, act as cumulative poisons that affect the nervous system.

**Nitrogen oxides, NO<sub>x</sub>.** Nitrogen forms a number of oxides such as nitrogen dioxide (NO<sub>2</sub>), nitric oxide (NO) and nitrous oxide (N<sub>2</sub>O). Human activities, primarily industrial processes and burning of fossil fuels, release large amounts of nitrogen oxides into the atmosphere. They contribute to acidification, eutrophication and the formation of smog and ground level ozone.

**Nonylphenoletoxylates.** Complex hydrocarbons used in industrial cleaning and degreasing, paint manufacture and cutting fluids. May be harmful to aquatic life.

**OECD.** The Organization for Economic Cooperation and Development has 30 member countries that together produce two-thirds of the world's goods and services. The organization offers governments a setting in which to discuss and develop economic and social policy.

**Ozone, O<sub>3</sub>.** A form of oxygen with three oxygen atoms in its molecules. The upper atmosphere's ozone layer protects life against harmful ultraviolet radiation, while ground level ozone is a pollutant that is harmful to plants and animals, and can cause breathing disorders.

**Phthalates.** Salts or esters of the aromatic hydrocarbon phthalic acid group. Used as softeners in plastics. Up to half the weight of PVC can consist of phthalates. It is suspected that phthalates diffusing into the environment might harm living creatures' capacity for reproduction.

**Polybrominated biphenyls (PBBs) and Polybrominated diphenyl ethers (PBDEs).** Biologically persistent organic compounds containing bromine. They are used as fire and flame retardants in plastics, for example in housings for electrical equipment. Their negative aspects are similar to those of **PCBs**.

**Polychlorinated biphenyls (PCBs).** A group of biologically persistent organic compounds containing chlorine, PCBs are toxic to marine life. Formerly used in electrical transformers and capacitors for their insulating and fire-resistant properties, they are now being phased out and disposed of.

**Polyurethane.** A group of polymers used in products ranging from shoe soles to furniture upholstery, and from insulation foams to coatings, paints and adhesives. Some isocyanates used in the production of polyurethanes may cause allergic reactions and asthma. Polyurethanes are relatively stable compounds, but when broken down they emit aromatic amines, which can cause cancer.

**Polyvinylchloride (PVC).** A plastic with a wide range of applications, used in pipes, profiles, bottles, cable insulation etc. Its environmental impact has been the subject of intense debate. Heavy metals may be discharged from stabilizers used in PVC items; and when PVC is burned, dioxins (some of which are highly toxic and cause skin disorders, cancer and gene damage) may be released.

**Primary energy.** Energy that has not undergone transformation. Sources of primary energy that can be transformed into electricity and heat include crude oil, coal, natural gas and water used to generate hydroelectric power.

**Recycling.** Reintroduction of used materials or liquid residual products into manufacturing processes. A natural part of resource conservation. Today, most products are designed and manufactured with recycling in mind.

**Renewable energy sources.** Energy sources that replenish themselves naturally within a short period, making them continuously available. Sources of renewable energy include hydroelectric power, geothermal energy, ocean thermal energy, wave power, solar energy, wind power, and biomass.

**Sulfur hexafluoride, SF<sub>6</sub>.** A gaseous insulator used in some electric circuit breakers, substation connections, transformers, and power cables. SF<sub>6</sub> is a potent **greenhouse gas**.

**Sustainability, or sustainable development.** Meeting the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development combines economic growth and increased prosperity with preservation of the environment and quality of life for people around the world. Sustainability is often said to have three interdependent dimensions: ecological, social and economic sustainability. Sometimes a fourth dimension – cultural sustainability – is added.

**Volatile organic compounds (VOCs).** Organic compounds that evaporate easily, contaminating closed surroundings and spreading in the open atmosphere. They are often directly or indirectly hazardous to the environment and to health. The largest releases of volatile organic compounds stem from combustion of fossil fuels. Other sources are solvents and paints. VOCs include toluene, xylene, styrene, naphthalene, and ethanol. VOCs that contain chlorine, such as trichloroethylene, are classified as chlorinated volatile organic compounds, VOC<sub>Cl</sub>.

## Further reading

Agenda 21: Program of Action for Sustainable Development and The Rio Declaration on Environment and Development (New York: United Nations Department of Public Information, 1992)

The Business Charter for Sustainable Development, ICC publication 210/356A, Paris: 1991

L.D. DeSimone and F. Popoff with the World Business Council for Sustainable Development, Eco-efficiency: the Business Link to Sustainable Development (Cambridge, MA: MIT Press, 1997)

S. Schmidheiny, R. Chase, and S. DeSimone with the World Business Council for Sustainable Development, Signals of Change – Business Progress Towards Sustainable Development (WBCSD, 1997)

The Sustainable Business Challenge Brief, WBCSD (Greenleaf Publications, 1998)

Corporate Social Responsibility (WBCSD, 1999)

Sustainability through the Market: seven keys to success (WBCSD, 2001)

The Business Case for Sustainable Development (WBCSD, 2001)

Global Reporting Initiative – Sustainability Reporting Guidelines, June 2000

EEC Council Regulation, No 1836/93, June 1993 (EMAS)

International Standard ISO 14001. Environmental management systems – specification with guidance for use

International Standard ISO 14004. Environmental management systems – general guidelines on principles, systems and supporting techniques

International Standard ISO 14040 – 42. Life Cycle Assessment

International Standard ISO 14025, Type III Environmental Declarations

ISO/TC 207/SC, Environmental performance evaluation, DIS 14031, November 1997

## Publications available from ABB

Energy – Statistics and Scenarios, (ABB, 1994)

Emissions and the Global Environment – Statistics and Scenarios, (ABB, 1994)

Renewable Energy – Status and prospects, (ABB, 1998)

China, Energy and emissions – Statistics and Scenarios, (ABB, 1997)

China – Shandong Province – Energy and Emissions, (ABB, 1999)

Alternative Energy Solutions (ABB, 2000)

Compendium of environmental knowledge (ABB, 2002)

## Environmental Management Program reports

Initial Review 1994 (ABB 1995/1)

Environmental Management Report 1995 (ABB 1996/1)

Environmental Management Report 1996 (ABB 1997/1)

Environmental Management Report 1997 (ABB 1998/1)

Environmental Management Report 1998 (ABB 1999/1)

Environmental Management Report 1999 (ABB 2000/1)

ABB Sustainability Report 2000 (ABB 2001/1)

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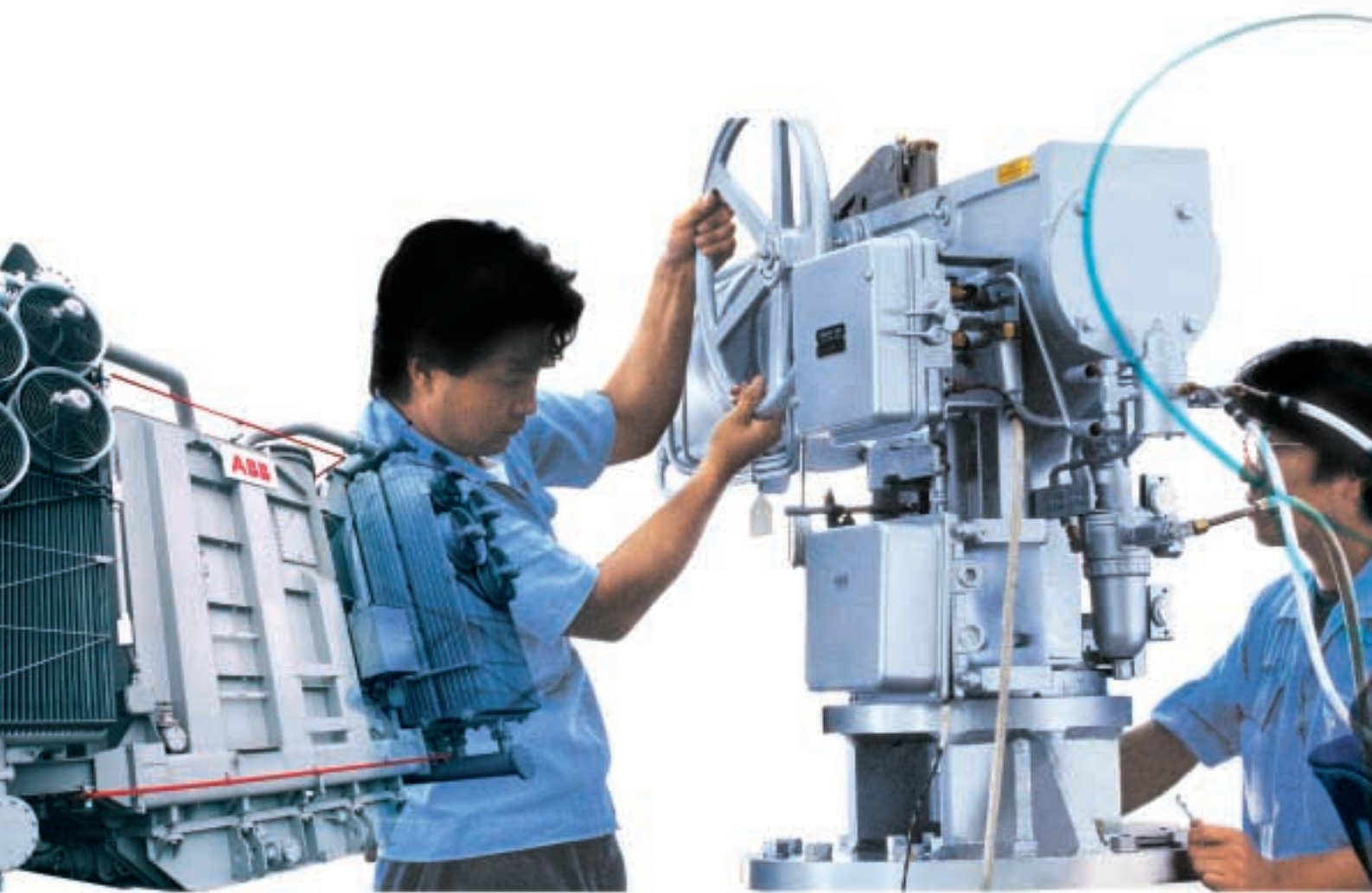


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