

ABB Group
Sustainability Performance 2009
GRI indicators

This is ABB

For ABB, sustainability is about balancing economic success, environmental stewardship and social progress to benefit all our stakeholders.

Sustainability considerations cover how we design and manufacture products, what we offer customers, how we engage suppliers, how we assess risks and opportunities, and how we behave in the communities where we operate and towards one another, while striving to ensure the health, safety and security of our employees, contractors and others affected by our activities.

ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 117,000 people.

Contents

01	Contents
02	Strengthening our performance
04	Key GRI indicators
04	Energy efficiency and climate change
05	Managing environmental impacts
06	Product innovation
07	Health and safety
08	Human rights
10	Sustainability in the supply chain
11	Working in the community
12	GRI standard disclosures
12	Organizational profile
14	Report parameters
15	Governance
16	Commitments to external initiatives
17	Stakeholder engagement
17	Other performance indicators
22	Summary of main performance indicators
26	Independent verification of main performance indicators
27	GRI content index table

While this report provides certain information with respect to ABB products, services, technologies and standards of conduct, its contents must not be construed as constituting an expressed or implied warranty or representation.

Strengthening our performance

ABB launched a series of sustainability objectives in late 2009, designed to strengthen the company's environmental, health and safety, social, human rights and security performance.

These [objectives](#), which cover the next two years, reflect ABB's sustainability priorities across the full range of business processes.

The Sustainability Affairs function carried out wide ranging dialogue and mapping in 2009, mainly with internal stakeholders – including country sustainability controllers, key business managers, and top management – as well as some external stakeholders. The result is a series of objectives and processes for achieving them with full management buy-in.

The objectives focus on three main areas: Raising ABB's environmental performance and lowering impacts; improving the management of health and safety, social, environmental and security risks in company operations and projects; and ways of improving sustainability performance in the supply chain and in company acquisitions.

The environmental objectives for 2010–11 include plans to ensure that all manufacturing sites reduce their use of energy by 2.5 percent annually; coordinated efforts to monitor the environmental impact of goods transport and business travel; and continuing measures to phase out the use of hazardous substances in ABB's products and processes.

ABB has already embedded the assessment of environmental, social, human rights, security, and health and safety risks in its project risk management process in order to better manage sensitive projects. A second category of objectives is defining ways to strengthen these processes.

In recent years, ABB has developed its security capability significantly in an attempt to reduce exposure to potential dangers around the world, particularly in sensitive countries and regions. Major advances have already been achieved. ABB is now seeking to strengthen its rapid response capability particularly in high-risk countries, and to increase due diligence on all security companies to ensure they meet ABB and relevant international standards.

A further key area of focus has been ABB's supply chain. The company is increasing monitoring of its key potential and existing suppliers to ensure they meet national and international sustainability standards.

A further objective is to extend the existing social, environmental, human rights, health and safety and security risk assessment in merger and acquisition processes.

An occupational health and safety (OHS) plan for 2008–2011 was established after a third-party review in 2007. The eight elements of the OHS plan are re-affirmed within the 2010–2011 sustainability objectives.

The focus areas of the objectives were determined using a risk and opportunity assessment across ABB's business processes to ensure that sustainability efforts fully focus on helping ABB do better business.

For ABB, sustainability considerations are an integral part of its business operations and offerings. Recurring references to sustainability issues, particularly energy efficiency – through

which many of our energy-intensive customers can help to mitigate climate change – are included in the ABB Annual Report Operational section.

In this sustainability review for 2009, we concentrate, as in 2008, on reporting against the [Global Reporting Initiative's](#) (GRI) indicators. Our self-declared level of application of the GRI Guidelines is B. The GRI indicator numbers are shown alongside each item and a table of numerical performance indicators covering the last three years is included (pages 22–25). These indicators have been verified by the independent verification body Det Norske Veritas.

The reporting boundaries encompass all manufacturing facilities, comprising approximately 360 sites in 54 countries. ABB's non-manufacturing organizations are also included, although these have only limited environmental impact.

This report focuses on the seven key areas where ABB believes it can make a difference: Energy efficiency and climate change, managing environmental impacts, product innovation, health and safety, human rights, sustainability in the supply chain, and working in the community.

In some areas, ABB believes it has robust policies and results; in other areas it is still work in progress. ABB is nonetheless committed to advancing its own processes and performance, and lowering its impacts, and is working hard to achieve these goals.

Sustainability Objectives 2010–2011

1. All sites to reduce use of energy by 2.5% annually
2. Develop guidelines to monitor the environmental impact of transport of goods
3. Monitor and reduce environmental impact from business air travel
4. Phase out the use of hazardous substances in ABB's products and processes
5. Ensure that environmental and health and safety aspects are considered in product development
6. Early assessment of social, security, OHS and environmental risk in ABB's project risk management process, to better manage sensitive projects
7. Due diligence on all security companies according to ABB standards
8. Ensure rapid response capability and enable ABB in risk-rated countries to prepare and respond to potential threats
9. Develop ABB travel system into a more supportive system for ABB
10. Continue to pursue the eight elements of the Occupational Health and Safety Plan 2008–2011
11. Increase monitoring of key potential and existing suppliers to ensure they meet national and international sustainability standards
12. Extend social, environmental, human rights, and health, safety and security risk assessment in merger and acquisition processes.

Key GRI indicators

Energy efficiency and climate change

EN4 Indirect energy use (Gigawatt-hours – GWh)

	Used by ABB			Losses at utilities			Total use of energy		
	2009	2008	2007	2009	2008	2007	2009	2008	2007
District heat	259*	250*	223	39	37	33	298	287	256
Electricity	1,321*	1,323*	1,264	1,824	1,627	1,746	3,144	2,950	3,010

District heat and electricity are the main categories of indirect energy used by ABB. Indirect energy use is defined in this table as the energy losses incurred by the utilities supplying ABB's energy.

EN3 Direct energy use (Gigawatt-hours – GWh)

Primary fuel	2009	2008	2007
Oil (11.63 MWh/ton)	87	104	103
Coal (7.56 MWh/ton)	0	0	0
Gas	415	416	437
District heat	259*	250*	223
Electricity	1,321*	1,323*	1,264
Total energy used	2,082	2,093	2,027

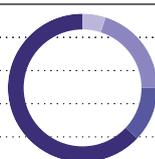
Due to a heterogeneous product mix comprising thousands of different sized products, ABB does not report energy consumption per unit of production. Instead, ABB monitors the use of energy per employee.

Megawatt-hours (MWh) per employee

2009		18
2008		18
2007		18

Direct energy use by type for 2009

Oil	4%
Gas	20%
District heat	12%
Electricity	64%



EN16 Greenhouse gas emissions (kilotons)

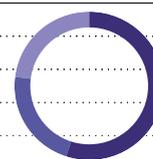
	2009	2008	2007
CO ₂ from use of energy	863*	859	835
SF ₆ (in CO ₂ equivalents)	263	406**	398
CO ₂ from transport by own fleet***	350	350	350

Carbon dioxide (CO₂) emissions calculations are based on in-house energy use for production, lighting, heating and air-conditioning, and include indirect emissions at utilities where ABB buys power.

The total amount of ABB's greenhouse gas emissions, based on the WBCSD/WRI Greenhouse Gas Protocol (Scope I and II), is estimated to have been approximately 1.5 million tons in 2009 for the whole ABB Group.

Greenhouse gas emissions by type for 2009

CO ₂ from use of energy*	58%
SF ₆ (in CO ₂ equivalents)	18%
CO ₂ from transport by own fleet***	24%



EC2 Financial implications of climate change

Climate change is of strategic importance for ABB's customers in the utility and industry sectors, and ABB's greatest contribution to the reduction of greenhouse gases is through the products it supplies to them. This business opportunity has a positive influence on ABB's financial results. ABB's own climate risks are small since its facilities are not located in areas expected to be significantly affected, and its CO₂ emissions are low.

EN18 Greenhouse gas reduction initiatives

ABB is continuing its internal energy efficiency program, saving costs and reducing emissions. ABB's target is to reduce global energy consumption per employee by 2.5 percent per year for 2010 and 2011. To further support this program, ABB has set a target for improving energy efficiency in its buildings by 2.5 percent from 2009 to 2010.

ABB executives take part in global initiatives on climate change such as the electrical utilities working group of the World Business Council for Sustainable Development (WBCSD) and the 3C (Combat Climate Change) initiative launched by the Swedish utility Vattenfall. During 2009, ABB signed the Energy Efficiency in Buildings Manifesto of the WBCSD.

* The figure is based on reported data from 85 percent of employees and an assumed energy use of 3 megawatt-hours (MWh) per employee for district heat and 12 MWh per employee for electricity for the remaining 15 percent of employees.

** Result re-stated due to incorrect reporting in 2008. Result originally reported as 357.

*** Estimated figures.

Managing environmental impacts

EN1 Use of hazardous substances (tons)

	2009	2008	2007
Phthalates – softener for PVC	16	25	43
PBB and PBDE – flame retardants in plastics	3.1	2.3	0
Lead in submarine cables	3,600	6,596*	4,750
Organic lead in polymers	24	36	n.a.
Lead in other products, e.g. backup batteries and counter- weights in robots	313	354**	346
Cadmium in rechargeable batteries	4.7	6.4	21
Cadmium in industrial batteries delivered to customers	2.2	2.0	0.4
Cadmium in lead alloy***	2.5	5.3*	3.5
Mercury in products delivered to customers	0.011	0.015	0.013
SF ₆ insulation gas (inflow to ABB)	962	987**	909
SF ₆ insulation gas (outflow from ABB)	951	969**	892

* Increase due to higher business volume

** Result re-stated due to incorrect reporting in 2008. Results originally reported as 318 (lead in other products), 1200 (SF₆ inflow) and 1184 (SF₆ outflow)

*** In 2009, another 50 kg of Cadmium in other uses.

As part of its sustainability objectives 2010–2011, ABB will reinforce its efforts to phase out hazardous substances in its products and processes.

EN2 Percentage of materials used that are recycled input materials

The lead used as counterweights for robots and the cadmium used in industrial batteries are recycled materials.

EN8 Water consumption (kilotons)

	2009	2008	2007
Purchased from water companies	3,300*	3,100*	3,186
Groundwater extracted by ABB**	2,900	2,700	2,800
Surface water extracted by ABB**	2,700	2,800	2,300

* The figure is based on reported data from 85 percent of employees and an assumed water consumption of ten tons/year/employee for the remaining 15 percent of employees.

** Estimated (rounded) figures

EN19 Emissions of Volatile Organic Compounds (tons)

	2009	2008	2007
Volatile Organic Compounds (VOC)	782	909	850
Chlorinated Volatile Organic Compounds (VOC-Cl)	5	6	13

The major constituents of VOCs and VOC-Cl are xylene, thinner and perchloroethylene.

EN20 Emissions of NOx and SOx (tons SO₂ and NO₂)

	2009	2008	2007
SOx from burning coal	0	0	0
SOx from burning oil	64	76	76
NOx from burning coal	0	0	0
NOx from burning oil	48	57	57
NOx from burning gas	90	90	94

These figures are for fossil fuels consumed in ABB premises for heating and process purposes.

EN22 Waste (kilotons)

	2009	2008	2007
Waste sent for recycling	118	139	126
General waste sent for disposal	29*	35	38
Hazardous waste	6	7	6

* The figure is based on reported data from 85 percent of employees and an assumed waste output of 0.28 tons/year/employee for the remaining 15 percent of employees.

The main waste streams at ABB organizations are wood, paper, oil and plastic. ABB's aim is to reduce the amount of waste sent to landfill and to increase its use of materials which are recycled or made available for reuse.

EN23 Numbers of significant spills

	2009	2008	2007
Oil spills	8	3	6
Chemical spills	0	0	1
Emissions to air	4	1	2
Others	0	0	3

Adequate decontamination procedures were implemented to prevent any permanent contamination of soil and water due to these spills. Corrective actions, such as improved control systems, have been taken to reduce the risk of future spills.

EN28 Significant fines for non-compliance

During 2009, no significant fines for non-compliance were reported.

Product innovation

PR1 Health and safety impacts of our products

ABB products generally help improve users' health and safety. They do this, for example, by improving industrial environments (automation control products), reducing exposure to aggressive, repetitive or hazardous operations (robotics), and reducing potential explosions, fire risks and oil pollution (oil-free capacitors and cables). Products with a potentially negative impact are those that could contribute to global warming (leak of SF₆ gas from substations), require deforestation and present a visual impact (transmission lines), cause losses of energy (most electrical products), or cause electrocution if misused.

PR2 Number of non-compliance incidents relating to product health and safety

All countries in ABB's sustainability management program are asked to give details of any non-compliance incidents, including those concerning health and safety impacts of products and services. No such incidents were reported for 2009.

PR3 Product and service information

ABB's goal is to produce environmental product declarations (EPDs) for its core products. They describe and quantify the environmental impact and performance of ABB products through every phase of their life cycles, covering raw material extraction, component manufacture, transportation and use over their full operating lifetime. They also contain recovery, recycling and disposal instructions for when the product has completed its useful life. The EPDs are published on ABB's Web site and help customers to select products that will raise their own environmental performance. ABB also engages with customers with particular reporting needs, such as [Abengoa](#), to ensure clarity and completeness of environmental data.

PR5 Customer satisfaction

ABB compiles, validates, tracks and analyzes all customer complaints in a single, global system that helps resolve problems quickly and efficiently. This system – the Customer Complaints Resolution Process (CCRP) – gives a basic indicator of customer satisfaction. It also provides valuable pointers for improvement. The CCRP system is applied in 50 out of 54 countries and regions.

ABB's divisions, business units and account managers measure customer satisfaction each year, identifying the links between customer loyalty and business growth. In addition, most ABB companies carry out customer surveys every one to three years. To monitor customer satisfaction for projects, ABB in the Benelux countries has implemented a process in which the client completes a standardized questionnaire evaluating ABB's performance when each project is finished. Results are discussed with the client and aggregated in a database for benchmarking.

In many countries, ABB also carries out satisfaction surveys with other stakeholder groups, such as suppliers, authorities and trade unions.

PR6 Adherence to marketing communication regulations PR7 Non-compliance concerning marketing communications

This is not an issue for ABB, which works in the field of advanced technologies and does not supply to the consumer product market.

EN26 Initiatives to mitigate environmental impacts of products and services

ABB has Group-wide mandatory sustainability checks in place, to be applied in conjunction with the development of new products and projects, to mitigate their environmental impacts. ABB has set a sustainability objective over the next two years to reinforce the full application of these sustainability checks in product development. Further information is given later under GRI indicator 4.11 on page 16.

EN27 Percentage of products reclaimable after use

ABB products contain mostly steel, copper, aluminum, oil and plastics. Approximately 90 percent of the material is reclaimable after the end of a product's useful life. ABB enhances the ability to recycle by designing products that can be dismantled more easily, and by providing users with recycling instructions.

Health and safety

LA6 Percentage of total workforce represented in health and safety committees

Health and safety consultation is an integral part of ABB's commitment to introduce into all businesses occupational health and safety management systems based on OHSAS 18001 and the International Labour Organization (ILO) guidelines. The form of health and safety consultation with employees varies according to local requirements, and includes health and safety committees and employee forums.

At Group level, ABB has a standing Occupational Health and Safety (OHS) committee chaired by an Executive Committee member whose mandate covers all employees.

LA7 Injuries, lost days, diseases and fatalities

	2009	2008	2007
Employee work-related fatalities	1	2	4
Incident rate	0.01	0.02	0.04
Employee work-related serious injuries	27	38	28
Incident rate	0.23	0.32	0.25
Employee business travel fatalities	1	2	4
Incident rate	0.01	0.02	0.04
Employee business travel serious injuries	0	3	3
Incident rate	0	0.03	0.03
Contractor work-related fatalities	3	4	10
Contractor work-related serious injuries	11	16	16
Contractor business travel fatalities	0	1	3
Members of the public fatalities	0	1	1
Employee working days lost due to industrial incidents	7,633	16,877	18,929
Employee occupational health diseases (number of cases)	47	102	87
Employee total recordable incident rate	14.32	18.93	n.a.

In these statistics, "lost days" are calendar days, and are counted from the day after the incident. Total recordable incident rate includes the following incidents: Serious injuries, lost time incidents, medical treatment injury, occupational health diseases, restricted work day cases.

Figures for fatalities also include deaths occurring within one year as a result of injuries sustained.

Incident rates are according to the ILO rate per 1,000 employees.

As from 2008 ABB has shown the employee total recordable incident rate, which is the rate per 1,000 ABB employees of all workplace injuries and cases of occupational ill health that result in more than one day lost time. It includes cases where employees have been temporarily re-assigned and/or have received medical treatment which excludes first aid.

In 2009, ABB continued its focus on improving OHS processes and performance in key risk areas. Specialized programs in the substations and the transformer businesses included extensive management training sessions, implementation of upgraded safety instructions and site audits. New guidelines on electric arc flash protective clothing were rolled out, along with practical training sessions in all eight ABB regions globally. At country level, all ABB operations developed strategic OHS plans for 2010, including mandatory elements such as health and safety leadership and employee engagement programs.

LA8 Programs in place regarding serious diseases

In eight countries (Brazil, China, Estonia, India, Mexico, Philippines, South Africa and South Korea) ABB has programs in place to address HIV/AIDS. For example, ABB in Brazil runs an awareness and prevention program related to HIV/AIDS. The program includes presentations from external specialists, distribution of condoms and awareness campaigns. There is a HIV/AIDS company policy including no discrimination against HIV positive employees who receive full assistance and help to cover medical expenses. In 2009, ABB in India worked with the Confederation of Indian Industry and the National AIDS Organisation to develop a program that will be implemented in 2010.

At Group level, ABB has a program in place to deal with pandemic diseases, with pandemic plans and pandemic coordinators for all countries. The pandemic plans are an element of a country's overall crisis response plans. ABB has an online pandemic newsletter, which includes advice, hygiene recommendations and a description of symptoms of A(H1N1). The key reference point being used by ABB is the World Health Organization.

LA9 Health and safety topics covered in formal agreements with trade unions

This information is not recorded by the Group, but local legislation requires formal agreements in some countries, such as Germany and South Africa.

Human rights

LA10 Training/LA13 Women in management positions

All countries reported figures for the average hours of organized classroom training per employee per year, which excludes on the job training.

All countries and regions also reported figures for the percentage of women in senior executive, senior and middle management ranks.

ABB selects different countries to report on each year. Figures for these countries for both indicators are given in the table below:

	Training hours per employee			Percentage of women in management		
	2009	2008	2007	2009	2008	2007
Argentina	12	15	9	1	0.5	n.a.
Bulgaria	9	6	n.a.	35	40	n.a.
Estonia	9	16	n.a.	15	8	31
Finland	24	24	25	13	13	12
Germany	15	16	11	3	2	0
Indonesia	16	8	n.a.	3	1	n.a.
Kenya	16	n.a.	50	17	n.a.	0
Kuwait	20	100	n.a.	0	0	n.a.
New Zealand	16	16	28	5	5	35
Norway	10	10	15	18	19	17
Qatar	22	20	n.a.	17	20	n.a.
South Africa	40	40	16	14	14	15
South Korea	17	21	20	5	5	5
Spain	27	21	21	9	1*	1*
Turkey	21	14	n.a.	13	17	n.a.
US	25	25	20	1	2	2

* Note that these data represent only women in the senior executive.

LA12 Employees receiving performance reviews

ABB has a Group-wide policy to review at least annually the performance of every employee, providing opportunities to discuss work achievements, and provide feedback and coaching.

For the 2009 appraisal, ABB has launched a new, online tool in many countries. The new system is part of HR Group Tools that run on a common SAP platform and will provide a new way of identifying talent within the organization as well as managing performance and development. By the end of 2010, the roll out of the HR Group Tools will be complete.

At the same time ABB is introducing a new Talent Identification Process, a structured way of identifying talent within ABB at all levels of the organization. Through these new tools, ABB will now apply a common and more transparent approach to performance and talent management processes, to be applied at all locations and at all levels of the company.

HR1 Significant investment agreements that include human rights

ABB maintains and regularly reviews a list of sensitive countries where it has, or considers engaging in business operations.

Human rights, as well as legal, financial and security criteria, are included in risk assessments, and are among the factors in deciding whether ABB does business in a particular country.

Based partly or wholly on human rights considerations, ABB has not taken any business with Myanmar or North Korea for several years. ABB completed its withdrawal from Sudan at the end of June 2009, having taken no new business in the country since January 2007.

HR2 Screening of suppliers on human rights

ABB has incorporated social performance criteria, including human rights performance, into its suppliers' qualification process (SQP) requirements. SQP is used in ABB's purchasing contracts. To date, 32 countries apply the sustainability section of SQP for their key suppliers and approximately 1,000 SQP assessments have been carried out.

The human rights performance of key suppliers forms part of ABB's screening and auditing protocol.

HR4 Non-discrimination violations

All countries in ABB's sustainability management program are asked to report any incidents of discrimination. No incidents were reported in 2009.

HR8 Training of security personnel in human rights

Informal training on the human rights issues has been ongoing in 2009. Personnel in countries such as Brazil, Colombia, China, Philippines, Russia and Saudi Arabia are among those receiving such training. Formal training, based on the Voluntary Principles for Security and Human Rights, is planned for security personnel in 2010, to be completed in 2011. ABB requires due diligence on all security companies according to ABB and international standards and will establish standard operating procedures for security providers, to include instructions on human rights issues.

HR9 Indigenous rights violations

All countries in ABB's sustainability management program are asked to report any incidents of indigenous rights violations. No such incidents were reported in 2009.

Sustainability in the supply chain

EC6 Spending on locally-based suppliers

The table below gives an indication of ABB's highest purchases from outside suppliers, ranked by purchase value per country.

Worldwide, ABB's purchases from outside suppliers in 2009 totaled \$15,357 million.

Country	\$ millions
Germany	1,994
China	1,738
United States	1,199
Italy	1,165
Switzerland	1,118
Finland	1,109
Sweden	1,024
India	762
United Kingdom	494
France	294
Canada	287
Norway	257
Netherlands	229
Poland	224
Austria	211
Estonia	208
Brazil	201
Spain	199
Australia	180
Russia	177

Auditing of suppliers' sustainability performance

ABB's sustainability management principles also apply to its suppliers. For example, ABB favors suppliers who have implemented ISO 14001 environmental management systems and OHSAS 18001 or equivalent health and safety systems. Suppliers are required to identify the environmental aspects and the health and safety risks in the scope of their supply to ABB, including the roles of sub-suppliers. Suppliers are then required to address these aspects and risks with programs to continuously improve performance.

For the screening of key suppliers, ABB has developed a generic audit protocol in which environmental, human rights and social criteria are integrated, together with other performance indicators. The protocol is used for on-site audits by ABB personnel and also by the suppliers themselves in a self-assessment process (see abb.com/supplying to ABB).

About 50 percent of approximately 1,500 key suppliers are externally certified to ISO 14001 for their environmental performance and a further nine percent have implemented "self-declared" environmental management systems. More than 800 documented environmental audits of suppliers were performed during 2009.

ABB in India has developed a vendor "cluster" program, where vendors are selected to work closely with local ABB Operational Excellence functions to streamline processes and improvement management, with a view to better performance in quality, cost and on-time delivery, as well as environmental and safety performance. It is an intensive program, with improvement targets and timelines, together with monthly meetings to monitor progress. It is also a cooperative process in which vendors in the cluster take turns to host events at their facilities, providing benchmarking opportunities for the other participants in the program. The vendors receive measurable benefits such as process improvements and cost reductions. They also provide suggestions to ABB about how to better manage the supplier relationship, for example through better demand planning.

ABB's objective is to increase its monitoring of key potential and existing suppliers to ensure they meet national and international sustainability standards. During 2009, ABB initiated a pilot program of third party sustainability audits of suppliers in India and China. The aim was to road-test new Group-wide guidelines for auditors and managers for assessing suppliers' environmental, social, safety, security and human rights performance.

Working in the community

SO1 & EC9 Impacts of operations on communities

As part of its Social Policy, ABB is committed to promote and participate in community activities that foster environmental, social, economic and educational development in the communities where it operates.

During 2009, ABB companies in 43 countries supported community development projects, donating approximately \$4.6 million in funding and providing over 2,200 man-days of work on the part of employee volunteers. ABB's community work falls into two categories: Helping to raise educational standards in local schools and supporting the disadvantaged in areas where the company has operations. Schools and education are supported in such countries as Argentina, Brazil, China, Colombia, Egypt, India, Saudi Arabia, Singapore and South Africa. ABB's work with disadvantaged people varies widely. In Germany, Italy and the United Kingdom, ABB volunteers help participants in Special Olympics for people with intellectual disabilities; in Canada and the United States, employees raise funds in a variety of ways, including charitable events, and these are then distributed to a range of community projects and charities.

At a Group level, the ABB [Jürgen Dormann Foundation](#) for Engineering Education also supports promising students with financial needs in countries such as India, China, Mexico, Poland and Vietnam. ABB also supports a number of other organizations and programs. For example, ABB continues to be a member of the corporate support group of the Swiss-based International Committee of the Red Cross, and is a sponsor of the WWF.

EC8 Infrastructure investments

ABB's common effort contributions include a program of electrification projects in least developed countries called "[Access to Electricity](#)." ABB's first project was in a village in Tanzania, where ABB partnered with local authorities and the global conservation organization WWF. Electrification has led to economic, environmental and social gains over the last few years. Similar progress has occurred in a second project in western India where ABB has partnered with an NGO and state authorities to bring distributed solar power to a widespread desert community where, to date, about 7,000 people are benefiting from access to electricity through the project.

4.11 Precautionary approach

ABB has integrated Group-wide sustainability criteria into its risk assessment process for projects, as part of ongoing efforts to minimize potential negative environmental or social impacts. ABB assesses the consequences of its scope of work for such projects, comparing the potential negative impacts with alternative technical solutions. These assessments may cover issues such as land use, the visual appearance of a project, noise and material use, and indirect effects such as power losses in cables, overhead lines, transformers and other electrical equipment.

The project risk process may also require an appraisal of environmental or social impact assessments carried out by or for the customer for the overall project. These criteria include transparency and appropriate management of social and environmental risk, in compliance with applicable regulations and international agreements.

Similar environmental and social criteria are built in to the decision-making processes for the supply chain and the mergers and acquisitions process.

As part of efforts to identify and, if appropriate, mitigate potential risks at an even earlier stage than at present, ABB has set a sustainability objective for the next two years to work with ABB businesses to input sustainability perspectives as early as possible in the business process. Key sustainability issues also form part of a company-wide review of risk (the enterprise risk management project, led by the group treasury function) undertaken in 2009 and to be repeated in 2010.

Additionally, ABB has created a system for secure and safe travel, which includes the capability to respond to medical and security incidents. The travel security system is well integrated in the ABB crisis management system and ABB's objective is to further strengthen this system during 2010 and 2011. ABB's crisis management system was updated during 2009 and new procedures were rolled out and tested in all ABB regions. The objective for the next two years is to further develop ABB's global security network to ensure a robust rapid response capability and to enable ABB, especially in risk-rated countries, to prepare and respond to potential threats and incidents.

GRI standard disclosures

This section provides a selection of base information, defined by the Global Reporting Initiative Guidelines, comprising an organizational profile, report parameters, governance, commitments to external initiatives, stakeholder engagement and remaining sustainability performance indicators. Reference numbers are those used in the GRI Guidelines.

Organizational profile

2.1 Name of the organization

ABB Ltd is the parent company of the worldwide ABB Group.

2.2 Primary brands, products and services

ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. ABB's products, systems, solutions and services are designed to improve the reliability of electricity supply grids, raise industrial productivity and save energy.

The Power Products division manufactures the key components to transmit and distribute electricity, such as transformers, switchgear, circuit breakers and cables. The Power Systems division offers turnkey systems for power transmission and distribution grids, and for power plants. These include complete substations, as well as high-voltage alternating and direct current transmission systems, together with their automation and network management systems.

As at December 31, 2009, the automation businesses of ABB were organized in three divisions as follows: The Automation Products and Process Automation divisions manufacture a comprehensive range of energy-efficient products and integrated systems to improve customers' productivity and optimize control of their plants. Products include drives, motors and generators, low-voltage products, instrumentation and power electronics.

The Robotics division manufactures industrial robots, together with robot software, peripheral equipment and modular manufacturing cells for tasks such as assembly, painting and finishing, packaging and machine tending.

The automation divisions were reorganized as of January 1, 2010, as follows:

The Discrete Automation and Motion division includes products and systems targeted at discrete manufacturing applications, such as robotics and programmable logic controllers (PLCs), and providing motion in plants, such as motors and drives. These businesses help customers to increase the productivity and energy efficiency of their assets.

The Low Voltage Products division manufactures low-voltage circuit breakers, switches, control products, wiring accessories, enclosures and cable systems to protect people, installations and electronic equipment from electrical overload. The division further makes KNX systems that integrate and automate a building's electrical installations, ventilation systems, and security and data communication networks.

Process Automation remains unchanged except for the addition of ABB's instrumentation business, previously part of the Automation Products division. The main focus of this ABB business is to provide customers with products and solutions for instrumentation, automation and optimization of industrial processes.

ABB is a manufacturing and services group which outsources only some of its work (for example, information technology-support infrastructure).

2.3 Operational structure of the organization

At end 2009 at Group level, ABB comprised five power and automation divisions named in 2.2 above, supported by staff functions (such as sustainability affairs, corporate communications, controlling, legal and compliance, human resources, etc.), all reporting to a 10-member Executive Committee. The president of the Executive Committee is the Chief Executive Officer of the company. Also represented on the committee are the heads of the five divisions, the Chief Financial Officer and head of Global Markets, the head of Corporate Development, the head of Legal and Compliance and the head of Human Resources, who is also the Executive Committee member responsible for sustainability affairs.

As of January 1, 2010, the Executive Committee comprises 11 members, including a new head of Marketing and Customer Solutions and a head of ABB's Global Footprint and Cost program. There is no longer a head of Corporate Development on the Executive Committee.

The ABB Group comprises primarily operating companies, subsidiaries and majority-owned joint ventures, located worldwide and employed about 117,000 people as of December 31, 2009.

2.4 Location of headquarters

The headquarters of the ABB Group is located in Zurich, Switzerland.

2.5 Countries where the organization operates

The ABB Group of companies operates in around 100 countries. ABB's largest operations are in Australia, Brazil, Canada, Czech Republic, China, Finland, France, Germany, India,

Italy, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom and United States.

2.6 Nature of ownership and legal form

ABB is listed on the SIX Swiss Exchange and the exchanges in Stockholm and New York.

As of December 31, 2006, Investor AB, Stockholm, Sweden, held 166,330,142 ABB shares, representing 7.6 percent of the company's share capital and voting rights. This holding remained unchanged during 2007, 2008 and 2009. However, due to capital increases out of contingent capital, this quota abated to 7.1 percent as per end of 2009.

To the best of ABB's knowledge, as of February 18, 2010, no other shareholder holds 3 percent or more of ABB's shares.

ABB Ltd is the holding company for the entire ABB Group and is registered as a corporation (Aktiengesellschaft) in the commercial register of the Canton of Zurich, Switzerland.

2.7 Markets served

ABB's products, systems, solutions and services are supplied directly to many industries worldwide. These industries include: electric, gas and water utilities, oil, gas and petrochemicals, refining, automotive, railways, marine, foundry, cement, chemical and pharmaceutical, metals, minerals and mining, pulp and paper, power generation, commercial, industrial and residential buildings, food and beverages, packaging, material handling, consumer industries, telecommunications and data communication.

ABB also delivers its expertise to channel partners such as original equipment manufacturers, and engineering, procurement and construction companies.

2.8 Scale of the reporting organization

Number of employees worldwide at end 2009: 116,100

(119,393 end 2008).

Employees by region	2009	2008	2007
Europe	60,600	62,131	61,600
The Americas	17,100	19,974	18,829
Asia	29,900	29,084	25,245
Middle East and Africa	8,500	8,204	6,280
Total	116,100	119,393	111,954

Sales (revenues) for 2009: \$31,795 million

(\$34,912 million for 2008)

Sales by region	2009	2008	2007
Europe	41%	45%	45%
The Americas	19%	18%	18%
Asia	27%	26%	26%
Middle East and Africa	13%	11%	11%

Total capitalization on December 31, 2009, (short-term borrowings and current maturities of long-term borrowings plus long-term borrowings and total stockholders' equity including noncontrolling interest) was \$16.8 billion (\$14.1 billion end 2008).

Debt (short-term borrowings and current maturities of long-term borrowings and long-term borrowings) was \$2.3 billion (\$2.4 billion end 2008).

Equity (total stockholders' equity including noncontrolling interest) was \$14.5 billion (\$11.8 billion end 2008).

Total assets were \$34.7 billion (\$33.0 billion end 2008).

The single largest shareholder of ABB is Investor AB, Stockholm, with a shareholding of 7.1 percent, as detailed in 2.6 above.

Investor AB, Stockholm, an investment company, is a listed Nordic-based industrial holding company founded in 1916. At the end of 2009, Knut and Alice Wallenberg Foundation was the largest owner in Investor with a quota of 40.0 percent of votes and 18.6 percent of capital.

2.9 Significant changes in size, structure and ownership

There were no significant changes in size and structure during the fiscal year 2009.

As at January 1, 2010, ABB's Board of Directors comprised eight non-executive members, all men, of six nationalities.

As at January 1, 2010, the Group Executive Committee comprised the CEO, the Chief Financial Officer and nine other members, including one woman, of eight nationalities.

2.10 Awards received

During 2009, ABB received awards in 14 countries for its sustainability achievements. The programs awarded ranged from environment, health and safety leadership to corporate health, environmental management and corporate social responsibility. ABB also achieved certifications related to energy efficiency programs in a further two countries.

ABB in China was ranked in the "2009 Multinational Corporations Contribution in China Award List" for the second consecutive year and received the "2009 Multinational Corporations Contribution in China Special Award" for its sustained efforts in corporate social responsibility. These efforts include support for education, environmental protection, and social welfare, benefiting broad sections of society, including the elderly, the handicapped, the impoverished, university students and urban residents.

In Germany, ABB's health management system, Fit for Life, won the national Corporate Health Award 2009. A panel of experts selected the winners based on an analysis of quantitative and qualitative data from an annual health management survey of companies in Germany. The Fit for Life program, launched in 2007 at most ABB locations in Germany, includes regular medical checkups and support for a range of preventive measures.

ABB won the European Motor Challenge Award 2009 in the Endorser category, awarded by the European Commission during the sixth International Conference on Energy Efficiency in Motor Driven Plants, held in Nantes, France. The award recognized the contribution of ABB, and in particular the con-

tributions of ABB's Automation Products division in Italy, to the European Commission's Motor Challenge program, which was launched in 2003 to help companies improve energy efficiency in their motor-driven systems.

Report parameters

3.1 Reporting period

Calendar year 2009.

3.2 Date of previous report

April 2009, covering calendar year 2008.

3.3 Reporting cycle

Annual. Next report to be released in April 2011, covering calendar year 2010.

3.4 Contact point for the report

E-mail: sustainability.abbzh@ch.abb.com

Web address: www.abb.com/sustainability

3.5 Process for defining report content

ABB continues to report on the seven issues it considers material to its sustainability impacts, challenges and opportunities, namely: energy efficiency and climate change, managing environmental impacts, product innovation, health and safety, human rights, sustainability in our supply chain, and working in the community. The seven issues are not ranked in any order of priority.

The process for developing ABB's sustainability objectives for 2010–2011 involved a risk and opportunity assessment across ABB's business processes and included consultations with a wide range of internal stakeholders and some external stakeholders. This engagement confirmed the continuing relevance of the seven priority issues.

3.6 Boundary of the report

ABB's formal sustainability reporting system covers 110,000 employees in 54 countries and regions, including all countries where ABB has significant manufacturing and workshop operations. All ABB Group companies, wholly-owned subsidiaries and majority-owned joint ventures worldwide having significant sustainability impacts are included.

In all such countries where ABB entities have or could have significant sustainability impacts, ABB has appointed country/regional sustainability controllers responsible for ABB's sustainability management program and for gathering the data consolidated in this report.

The country/regional sustainability controllers are supported by about 360 local sustainability officers reporting confirmed data gathered through ABB's formal sustainability reporting system from 54 countries/regions, excluding any units being divested.

3.7 Limitations on the scope of the report

The report does not cover work carried out by ABB on its customers' sites. However, health and safety data covers all ABB employees wherever they work and all contractors for whom ABB is contractually responsible.

3.8 Comparability

The Sustainability Performance report covers all employees working in premises owned or leased by ABB. During 2009, there has been no change in ABB's portfolio of businesses that could significantly affect comparability of the data between this and the previous report.

The format adopted in the 2006 report to address the concepts contained in Version 3 of the GRI Guidelines, particularly the focus on those issues considered material to the sustainability impacts of the organization, has been maintained in this report to ensure consistency and comparability.

3.9 Data measurement

ABB uses three computerized data reporting questionnaires to measure and collect performance data throughout the Group via the ABB intranet – an annual social report from every country, an annual environmental report from every site, and a monthly health and safety report from every country.

The reporting scope is extensive, with data collected against defined performance indicators, which is consolidated and checked at country level and then against GRI definitions at Group level. Country sustainability controllers audit the data from each site.

Help texts are provided in the reporting questionnaires to define the data required and to ensure accuracy and consistency.

The data relating to social performance covers 95 percent of ABB employees, whereas data relating to environmental performance covers 85 percent of employees. The environmental performance of the remaining 15 percent of employees, located in non-manufacturing entities without significant impacts, is covered by estimated data. The estimates are based on assumptions of the levels of their main environmental aspects, such as the use of energy, water consumption and waste output per person, in comparison with similar premises. When we have made such an assumption, it is stated in the text.

3.10 Effect of restatement of information

In 2008, the amount of lead in other products was incorrectly reported as 318 tons. The correct figure for 2008 is 354 tons. Also in 2008, SF₆ gas emissions (357 kilotons CO₂eq), inflow (1,200 tons) and outflow (1,184 tons) were misstated, due to a reporting error. The correct figures for 2008 are 406 kilotons CO₂eq, 985 tons and 969 tons, respectively. The corrected data are shown in the table for EN1 on page 5 and for EN16 on page 4.

The number of ABB employees was around 117,000 in 2009, compared to around 119,000 in 2008, and the number of manufacturing sites and workshops covered by the sustainability management program was approximately 360 in 2009.

3.11 Significant changes

There were no significant changes during 2009 in the scope, boundary, or measurement methods applied in the report.

3.12 GRI content index

A table appears on page 27 of this report which identifies the page numbers of all the standard disclosure indicators required by the GRI Guidelines.

3.13 Independent assurance

ABB believes in the importance of independent external assurance to enhance the credibility of its Sustainability report. ABB's main environmental and social performance indicators have been verified by the independent verification body Det Norske Veritas (DNV) through a review of information in the ABB sustainability performance database and interviews at various levels of the company prior to publication. Their statement appears on page 26 of this report.

Governance

Corporate governance is covered in detail in the ABB Annual Report. The section below provides short responses to the GRI indicators on governance and gives cross-references to the appropriate parts of the corporate governance section in the Annual Report, wherever relevant.

4.1 Governance structure, including committees

See part 1 for ABB's principles and rules on corporate governance.

As at December 31, 2009, ABB's Board of Directors had eight non-executive members, all men, of six nationalities, as listed in part 5.2.

See part 1.2 and 5.1 for information on the Board of Directors' responsibilities and organization.

All board members are independent. The independence of directors is determined according to ABB Ltd's Related Party Transaction Policy which was prepared in accordance with the Swiss Code of Best Practice and the independence criteria in the corporate governance rules of the New York Stock Exchange.

See part 5.4 for information on ABB's two board committees.

4.2 and 4.3 Separation of Board of Directors and Executive Officers

Upon proposal by the Governance, Nomination and Compensation Committee, the Board appoints the members of the Group Executive Committee. The Board has delegated the executive management of ABB to the Chief Executive Officer (CEO) and the other members of the Group Executive Committee who are responsible for ABB's overall business and the day-to-day management of the Group.

As at December 31, 2009, the Group Executive Committee had ten members, including one woman, of eight nationalities, as listed in part 6.2. In addition, as of January 1, 2010, another individual was appointed Executive Committee member responsible for Marketing and Customer Solutions. See part 6.1 for information on the Group Executive Committee's responsibilities and organization.

4.4 Mechanisms for shareholders to give recommendations to the Board

See part 4 for information on shareholders' participation.

To provide a service to all shareholders, ABB's Investor Relations team maintains contact with shareholders by holding quarterly briefings in which senior management participates as well as providing and inviting feedback on an ongoing basis through the ABB Group Web site.

These facilities provide opportunities for shareholders and potential investors to express their views to ABB's management.

4.5 Linkage between executive compensation and performance

Executive compensation consists principally of a base salary and a performance bonus linked to individual areas of responsibility and Group performance. The criteria for both include the achievement of non-financial goals. In addition, executives receive company contributions to their pension plans and may participate in share-based programs to an extent that is also performance-driven.

See the Remuneration Report section of ABB's Annual Report for information on executive compensation.

4.6 Conflicts of interest

Prior to their appointment, all candidates for Board positions are required to declare any interests which could conflict with their duties as ABB Board members. Any such conflicts of interest are taken into account during the selection process, and in the deliberations of the Board when carrying out their obligations.

See part 5.3 for information on significant business relationships of Board members with ABB.

4.7 Expertise of Board members

In recommending a candidate for the Board, the Governance, Nomination and Compensation Committee is required to take into account each proposed director's experience, independence, compatibility with other directors, culture, other commitments and such other factors as the committee deems appropriate. The committee is responsible for maintaining an orientation program for new directors and an ongoing education program for existing Board members.

4.8 Business principles statements relevant to sustainability performance

Sustainability is one of ABB's core values. This is reflected in part by ABB's environmental, social, human rights, health and safety, and business ethics policies. These [policies](#) include references to international standards to which they relate.

ABB also has a business ethics Code of Conduct describing the behavior the company expects from its employees and stakeholders, based on the ABB principles of responsibility, respect and determination.

4.9 Board-level procedures for overseeing sustainability

The sustainability performance of the Group, namely its health and safety, social and environmental performance, is the responsibility of one of the Group Executive Committee members, to whom the head of ABB's Sustainability Affairs organization reports. A network of sustainability controllers worldwide report to the sustainability affairs management team. Sustainability risks and opportunities are also investigated in coordination with business divisions and other Group functions, e.g. internal audit, mergers and acquisitions (due diligence), site risk and insurance (real estate liabilities), and ABB's bid evaluation committee (customer and project risk assessments).

4.10 Processes for evaluating the Board's performance

Each Board committee is required to perform an annual review and self-evaluation of its performance, including a review of its compliance with its regulations. The reports from this process are then reviewed by the whole Board.

Commitments to external initiatives

4.11 Precautionary approach

ABB has Group-wide mandatory sustainability checks in place which are applied in the development of new products and projects. This precautionary approach is also integrated into the GATE model – a seven-step internal approvals process governing the development of new products and projects which requires documented assessment in the development phase of their life-long sustainability objectives and performance.

The GATE model requires consideration of an environmental and health and safety checklist for each new product and project, and provides the opportunity to correct deficiencies and adopt new designs. It also provides advice on how to reduce the use of unwanted substances and avoid other environmental and health risks. ABB's sustainability objectives 2010–2011 reinforce the full application of these checklists in product development.

Also backing up the GATE process is ABB's intranet-based sustainability toolbox which contains comprehensive information and guidance about sustainability criteria for new products and projects. For example, it contains information on restricted substances and relevant European Union directives, such as those on the restriction of hazardous substances (RoHS), on waste electrical and electronic equipment (WEEE), and on the European Union's REACH regulation on chemicals and their safe use. The toolbox also provides guidance on how to apply Life Cycle Assessments and environmental assessments to products and projects.

Sustainability criteria are also integrated into ABB's risk assessment process for projects, as part of ongoing efforts to minimize any potential negative impacts on the environment and local community. See section 4.11 on page 11 for more on risk assessment processes.

4.12 Externally developed charters, principles and initiatives

ABB subscribes to externally developed charters and principles for sustainability management. Applying such principles is helping ABB to make progress in core areas. These charters and principles include the ICC Business Charter for Sustainable Development which ABB signed in 1992, and ISO 14000 standards and technical reports.

ABB has adopted ISO 14001 for environmental management systems; ISO/TR 14025 for environmental product declarations; ISO 14040-45 for Life Cycle Assessments; and ISO 19011 for environmental auditing of organizations.

ABB has incorporated the principles of OHSAS 18001, the International Labour Organization (ILO) guidelines on occupational health and safety management systems, and the ILO Code of Practice on Recording and Notification of Occupational Accidents and Diseases into its health and safety program.

ABB facilities are encouraged to produce integrated management systems for environmental and quality issues, and for occupational health and safety. More than 240 sites now use integrated systems, several of which have been externally certified.

ABB is a signatory to the World Economic Forum's "Partnering Against Corruption Initiative" (PACI), signed by 128 companies committed to strengthening efforts to counter corruption and bribery. ABB was one of ten companies to also sign the forerunner of this initiative at the WEF's annual meeting in 2004 in Davos, Switzerland.

As a founder member of the United Nations Global Compact, ABB has been closely involved in its development. ABB's human rights understanding and work benefits from involvement in such organizations.

4.13 Memberships in associations

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

- Global Business Initiative on Human Rights, U.K.
- Chalmers University of Technology, CPM, Sweden
- CSR Europe, Belgium
- Global Reporting Initiative, GRI, Netherlands
- Hunger Project, Switzerland
- Institute for Human Rights and Business, U.K.
- International Committee of the Red Cross, ICRC, Switzerland
- International Institute for Management Development, IMD, Switzerland
- Swedish Standards Institute
- oikos International, Switzerland
- Pew Center on Global Climate Change, U.S.
- Transparency International, TI, Germany
- United Nations Global Compact, U.S.
- World Business Council for Sustainable Development, WBCSD, Switzerland
- World Childhood Foundation, Sweden
- World Economic Forum, Switzerland
- WWF, Switzerland

Stakeholder engagement

4.14 List of stakeholder groups

Main stakeholders engaged by the company in roundtable or bilateral dialogues include the following:

- Business partners (customers, suppliers, consultants, associations)
- Employees, employee representatives, trade unions
- Shareholders and investment communities
- Banks and creditors
- Central and local government in countries where ABB operates
- Local communities where ABB operates, society at large
- Non-governmental organizations
- Academia
- Media

4.15 Identification and selection of stakeholders

Stakeholders with whom ABB wishes to engage are organizations or individuals who may be affected by ABB's activities or whose actions may affect ABB. Also included from the groups listed in 4.14 above are those whose experience and expertise could provide a valuable input to the issues under discussion. Stakeholders wishing to participate in constructive dialogue with the company on particular issues of concern are given the opportunity.

4.16 Approaches to stakeholder engagement

ABB conducts formal engagement with stakeholders on two levels: At corporate level, and at country and site levels in countries and regions where ABB has significant operations.

The issues discussed at corporate level help to identify opportunities, challenges and weaknesses for the ABB Group in the field of sustainability and to set the future strategy.

Country-level stakeholder engagement is "issue-determined." The focus is on a sustainability issue that could affect ABB's activities in the country and where ABB's course of action could benefit from consultation with stakeholders. Typical issues include suppliers' and customers' sustainability performance and ABB's responsibilities to the local community. During 2009, stakeholders were actively engaged in 16 countries.

4.17 Key topics and concerns

During 2008, ABB commissioned the independent verification body Det Norske Veritas (DNV) to conduct interviews with individual stakeholders to get their views on how ABB's worldwide sustainability performance is perceived, and on how well ABB communicates with stakeholders and responds to their concerns. Key areas for improvement included the need for more specific information on health and safety goals and actions, and improved reporting on high-risk projects and initiatives on sustainability in the supply chain.

This feedback was incorporated into the 2009 process for developing ABB's sustainability objectives for 2010–2011, which also involved a risk and opportunity assessment across ABB's business processes and included consultations with a wide range of internal stakeholders and other external stakeholders. At Group level, ABB has now embarked on a process to communicate these objectives, both internally and externally, and to seek feedback on the issues addressed and the targets set.

The agenda for country-level stakeholder dialogues is set by the participants and focuses on ABB's activities in the country and the concerns of local communities. The outcome benefits ABB's awareness and strategic direction in the country and is fed back to the corporate sustainability affairs team to assess its relevance to the Group.

For example, ABB in Italy brought together a range of NGOs and social associations, as well as ABB employees at its Volunteering Day in November 2009, to discuss ABB's social commitment and the results obtained from ABB's corporate responsibility programs during 2009. The results of the discussion helped to guide programs and priorities for 2010. ABB in South Africa assembled a diverse group of internal and external stakeholders for discussions moderated by an independent consultant to analyze the current sustainability priorities and to provide recommendations for future focus. The results, while highlighting local issues, also corroborated the seven key areas where ABB has significant sustainability impact.

During 2009, ABB in Singapore convened informal employee engagement sessions. Six small group sessions took place, with the objectives to promote openness in the organization, build bridges between employees and management and to gather suggestions for improvement, to make ABB a better place to work.

Other performance indicators

Economic Performance Indicators

[EC3 Benefit plan obligations](#)

[EC4 Government financial assistance](#)

[EC5 Wage level ratios](#)

[EC7 Local hiring procedures](#)

As a multinational organization with operations on some 360 sites in more than 100 countries, ABB has difficulty in selecting appropriate countries and providing meaningful information for these indicators. In view of the adverse cost-benefit ratio in producing this information, ABB has decided not to report against these GRI economic performance indicators for the time being.

Environmental Performance Indicators

[EN5 Energy conservation and efficiency savings](#)

During 2009, ABB's energy consumption remained relatively unchanged at 18 MWh per employee, despite the disruption caused by the global economic downturn. Energy conservation and energy efficiency programs initiated throughout the Group in response to ABB's energy reduction target continued, with an emphasis on energy efficiency in buildings and focus on the 23 most energy intensive production sites. (See EN7 below).

EN6 Energy-efficient and renewable energy based products initiatives

ABB sees the development of energy-efficient products and renewable energy products as its most important contribution to climate change mitigation. It also recognizes the business opportunities for such products.

For example, recent ABB advances in high power conversion technology have increased the energy efficiency of aluminum smelters by 18 percent at two installations in the Middle East that are setting records for size and production capacity. ABB's groundbreaking technology enables the high power converters (also known as rectifiers) to convert and deliver substantially more power than was previously possible. As a result, each smelter requires only five rectifiers instead of the six that would have been necessary at the lower voltage limit, saving both significant costs and electrical energy.

ABB solutions are also enabling an innovative version of the waterwheel to generate electricity from a stream flowing through the Italian city of Turin, and deliver it safely and reliably to the local power grid. The technology that helps make this project possible is based on ABB regenerative drives that enable maximum power to be obtained whatever the volume or flow of water. When it is finished, the installation will consist of about 80 waterwheels, with a combined generating capacity of 2,650 kW, enough to power 2,500 Italian homes.

EN7 Indirect energy consumption initiatives

ABB continues its focus on energy efficiency in its own operations and has renewed its target to reduce energy consumption per employee by 2.5 percent per year in 2010 and 2011. ABB's operations in Sweden have been among the most active in [seeking energy savings](#), having identified 140 projects in technical and behavioral categories. With more than one-third of these projects now completed, energy savings equal to 4,150 tons of CO₂ emissions annually have been generated, reducing annual energy costs for ABB in Sweden by \$0.8 million. ABB in China launched a campaign in 2009 that has yielded hundreds of practical suggestions from employees on ways to save energy and costs in ABB's operations, from reducing the number of overhead lights, to turning off air conditioning half an hour before the work day ends.

EN9 Water sources affected by withdrawal of water

ABB's manufacturing processes do not use significant amounts of water. During 2009, ABB extracted approximately 2,900 kilotons of groundwater and 2,700 kilotons of surface water, mainly for cooling purposes. None of these extractions caused any significant changes to the water sources.

EN10 Water recycled and reused

The amount of water in closed-loop processes is mainly used in cooling systems, surface treatment processes and the production of electrical insulation paper.

Biodiversity

EN11 Land used in protected or high biodiversity value areas
ABB's manufacturing and workshop facilities are not located in, or adjacent to, protected areas or areas of high biodiversity value, as defined in internationally recognized listings or national legislation.

EN12 Significant impacts on biodiversity in protected or high biodiversity value areas

See EN11.

EN13–15 Biodiversity and protected habitats

ABB's manufacturing and workshop facilities are not located in, or adjacent to, protected areas or areas of high biodiversity value, as defined in national legislation or internationally recognized listings such as the IUCN Protected Areas Categories 1–4, world heritage sites or biosphere reserves. Nonetheless, some of our sites are working to contribute to local biodiversity. For example, [at Vadodara](#), the largest ABB manufacturing facility in India, three quarters of the 30 hectare campus is parkland, home to a flourishing population of plants and animals. The company recently carried out a biodiversity study in collaboration with a local university to monitor the site and plan for future developments. The study found more than 120 species of insects, reptiles, amphibians, birds and mammals living on the campus.

EN17 Other indirect greenhouse gas emissions

Indirect emissions from traveling, transportation, outsourced materials and emissions related to product use are not aggregated at Group level. ABB has now set an objective for 2010–2011 to establish a system to monitor the environmental impact of business air travel and to investigate the feasibility of implementing a system for internal compensation/offset of greenhouse gas emissions from business travel.

For core products, the greenhouse gas emissions throughout a product's life cycle are shown in its Environmental Product Declaration (published on www.abb.com/sustainability), see under indicator PR3 on page 6 for more information. More information on transportation of goods is provided under indicator EN29 below.

Effluents

EN21 Total water discharge by quality and destination

Approximately one third of ABB's manufacturing sites use water for process purposes. Of these, about 72 percent discharge process water to the public sewers. About 20 percent discharge process water via their own treatment plants. The remaining nine percent use water from local water sources, mainly for cooling water systems and test plants, which is then returned to these local water sources without any contamination.

EN24 Handling of hazardous waste

In 2009, ABB sent approximately 6,000 tons of hazardous waste for disposal, down some 20 percent from 2008 mostly due to decreased business volumes. This waste was mostly used for heat recovery at specialized plants. ABB follows legal regulations to transport and dispose of hazardous waste only through officially authorized disposal agents.

EN25 Water bodies/habitats affected by water discharges and runoffs

About 20 percent of ABB process plants discharge decontaminated water, via ABB's own treatment plants, to local water sources such as lakes or rivers, or they reuse the water. In China, Poland, Colombia and India, for example, water treated in ABB's own treatment plants is reused for local irrigation and in sanitary services.

A further nine percent use water from local water sources, mainly for cooling water systems and test plants, which is then returned directly to these local water sources without any contamination.

EN29 Significant environmental impacts of transportation

ABB estimates that 80–90 percent of deliveries of materials from suppliers and deliveries of ABB finished products to customers are made by road and sea. The remainder is shared between rail and air. Air transport of goods is low, but its environmental impact is higher than by land and sea.

ABB has set a sustainability objective for the next two years to develop and pilot guidelines to monitor the environmental impact of transport of goods. ABB will work closely with its freight forwarders and will build upon its work with Chalmers University, Gothenburg, to produce reliable data for emissions from different means of transportation for products and materials.

EN30 Environmental protection expenditure and investments

For 2009, ABB's expenditure on environmental management throughout its global sustainability affairs network was as follows:

	\$ thousands
Group level	8,300
Country level	5,100
Site level	3,850
Total	16,850

ABB limits the accounting of sustainability to the costs of implementing and maintaining environmental management systems to ISO 14001, health and safety management systems to OHSAS 18001, and running the sustainability network, including personnel costs and the cost of developing sustainability tools, education and training.

This does not include costs related to improvement projects. For example, the decision to invest in a new manufacturing process is the result of integrating many decisions in addition to environmental considerations.

Social Performance Indicators

Employment

LA1 Full-time workforce by region

See 2.8.

LA1 Part-time workforce by region

The following numbers of part-time employees are included in the total figures for 2.8.

For 2009, these figures are also shown as percentages of the total workforce in the countries covered by our social reporting system (95 percent of employees).

Part-time employees by region	2009		2008	2007
Europe	2,984	5%	3,392	3,160
The Americas	92	1%	173	145
Asia	268	1%	138	105
Middle East and Africa	112	2%	124	5
Total	3,456	3%	3,827	3,415

LA2 Rate of employee turnover by region

Rate of turnover of all employees, including part-time:

For 2009, the figures show the turnover number as well as the percentage of the total workforce in the countries covered by our social reporting system (95 percent of employees).

Turnover by region	2009		2008	2007
Europe	5,985	10%	10%	10%
The Americas	3,826*	23%	19%	16%
Asia	2,943	11%	11%	11%
Middle East and Africa	271	5%	11%	11%
Total turnover for whole Group	13,025	12%	11%	12%

* This figure includes 1,090 employees in Brazil who left the company when full-service contracts were terminated.

Turnover of all female employees, including part-time:

For 2009, these figures are also shown as a percentage of the total workforce in the countries covered by our social reporting system (95 percent of employees).

Turnover by region	2009		2008	2007
Europe	1,439	2%	1,307	1,154
The Americas	635	4%	450	569
Asia	520	2%	532	457
Middle East and Africa	19	0.4%	128	78
Total turnover for whole Group	2,613	2%	2,417	2,258

LA3 Benefits provided to employees

ABB, as a multinational organization with operations in around 100 countries, has difficulty in providing meaningful information for this indicator. In view of the adverse cost-benefit ratio in producing this information, ABB has decided not to report against this GRI indicator.

Labor/management relations

LA4 Employees covered by collective bargaining agreements

In 2009, approximately 63 percent of ABB employees were covered by collective bargaining agreements. This corresponds to a total of about 75,000 employees.

LA5 Minimum notice periods regarding significant operational changes

ABB is not in a position to provide Group-wide aggregated information, as the figures vary from country to country depending on local regulations. For the 27 countries of the European Union, ABB is represented on the EU's European Works Council where such matters are discussed.

LA11 Programs for skills management and lifelong learning

ABB employees are provided with ongoing learning opportunities to further develop themselves and build ABB's organizational capabilities. See indicator LA10 on page 8 of this report for more information.

ABB is continually working to enhance leadership skills throughout the Group, skills which have played a critical role in bringing about culture change at ABB and maintaining the company's financial strength. Our leadership development programs continue to be rolled out to an ever wider group of leaders. An example is ABB's Leadership Challenge Program which was attended by over 6,800 people in 2009, bringing the total number of employees who have benefited from this program to almost 38,000 in 43 countries. The program is available in 14 languages.

Programs are complemented by initiatives such as Global Mentoring which was launched in 2008 and focuses on current leaders developing leaders for the future. Feedback from the first groups confirms that mentoring supports the learning of both mentors and mentees. More focus is also being put on supporting leaders to develop their people not only through programs, but also through direct experience on the job.

ABB continues to develop its Occupational Health and Safety professionals. In 2009, 15 senior OHS advisors completed ABB's first International OHS Diploma course, a graduate level program run in conjunction with a United Kingdom university. As part of the OHS strategic plans developed during 2009, behavioral safety training programs and OHS leadership programs will be developed and delivered in 2010.

LA13 Other indicators of diversity

As at December 31, 2009, ABB's Board of Directors had eight members, all men, of six nationalities, whereas the Group Executive Committee had ten members, including one woman, of eight nationalities.

ABB is focusing on management development of our female executives as part of the company's commitment to embrace diversity and raise the number of women in leadership positions. In 2009, a number of women were appointed to senior management positions, for example in financial management (Country Chief Financial Officers in Algeria, Canada and Egypt and Country Treasurer in China), in human resources (Country HR manager Benelux) and marketing (Group Account Manager in Switzerland). See indicator LA13 on page 8 for more information about the numbers of women in management positions.

In addition, during 2009 ABB recruited 13 people for its high-performance Global Trainee Programs in the four specialized fields of Finance & Business Control, Human Resources & Sustainability, Information Systems, and Marketing & Sales for Power Products. Of these, 31 percent were women, compared to 36 percent in 2008.

ABB uses a Diversity and Inclusion Statement as a tool to help managers identify the benefits of diversity in the company's workforce.

Diversity and equal opportunity

LA14 Ratio of basic salary of men to women

In ABB, salaries are decided according to the nature of duties performed.

HR3 Employee training on aspects of human rights

ABB employees receive training on environmental and social aspects, which include human rights. Average overall training hours per employee for a number of selected countries are given under indicator LA10 on page 8. However, these figures are not broken down to show only human rights training.

Freedom of association and collective bargaining, child labor, forced or compulsory labor

HR5, HR6, HR7 Operations at risk

There were no ABB operations identified during 2009 to be at significant risk concerning employee rights to freedom of association and collective bargaining, incidents of child labor, or incidents of forced or compulsory labor.

SO2 Business units analyzed for corruption risks

ABB's internal auditors carry out an annual risk assessment, encompassing all business units, as the basis for their audit planning for the following year. Anti-fraud risk assessment is part of this. In addition, every significant project is included in a risk review process, which also covers corruption considerations.

SO3 Employees trained in anti-corruption procedures

Substantially all employees have completed training on ABB's Code of Conduct. In addition, approximately 95 percent of all employees have received training on anti-corruption procedures.

In 2009, ABB launched an Ombudsperson Program to ensure an additional reporting channel for its employees regarding compliance matters. This reporting channel supplements existing reporting mechanisms, such as the employee and stakeholder hotlines, as well as ABB's established compliance network. An Ombudsperson is a senior ABB professional who has volunteered to take on the Ombudsperson role, in addition to his or her main job, and who is on hand to discuss compliance concerns confidentially with ABB colleagues.

SO4 Actions taken in response to corruption

ABB applies a strict zero-tolerance policy to combat corrupt payments. Every incident is sanctioned, and may include termination of employment. In 2009, ABB identified three new incidents of corruption. During the year, two employees were dismissed, but no-one was disciplined for incidents of corruption. There were two incidents where a contract with a business partner was terminated due to suspected violations related to corruption. During 2009, ABB fought one legal case against an employee dismissed for corruption.

SO5 Public policy and lobbying

ABB provided input to the European Parliament and to the EU Commission on transmission and smart grid technologies, as well as on all aspects of energy efficiency. ABB made a strong case for the integration of the European energy market and for the necessary interconnections. ABB supported the pursuit of ambitious binding targets for renewable energy sources in EU energy policy, as well as their integration in the power grids. ABB lobbied for the promotion of available "green" technologies through procurement and in international agreements to achieve a low carbon economy.

In the United States, energy and climate legislation, coupled with economic stimulus funding programs, drove the themes of "green" technologies, energy efficiency and sustainability. ABB advanced positions at the federal level on smart grids and energy efficiency, primarily through active involvement with the prestigious Business Roundtable organization. ABB also promoted energy efficiency measures as a primary means to reach potential emission reduction targets.

SO6 Political contributions

Under ABB's Code of Conduct, contributions to political parties, politicians and related institutions are not to be made. Any exceptions have to be cleared in advance with Group Legal Affairs and Compliance. In 2009, no payments were made.

SO7 Legal actions for anti-competitive behavior

ABB has been cooperating with various antitrust authorities regarding their investigations into certain alleged anti-competitive practices in the power transformer business, the cables business, and the flexible alternating current transmission system (FACTS) business. For further information, please refer to regulatory and compliance matters in the ABB Group Annual Report.

Compliance – society

SO8 Significant fines and sanctions for non-compliance with laws and regulations

In October 2009, the European Commission fined ABB and six other European companies for colluding in the power transformer market. ABB was fined the highest amount of EUR 33.75 million having previously participated in a similar cartel. Refer to regulatory and compliance matters in the Group's consolidated financial statements in the ABB Group Annual Report for more information.

PR4 Non-compliance concerning product information and labeling

During 2009, ABB did not identify any non-compliance with regulations and voluntary codes.

PR8 Complaints regarding breaches of customer privacy

This is not an issue for ABB, which serves customers in the field of advanced technologies and does not supply to the consumer product market. The responsibility for ensuring compliance with advertising standards and voluntary codes on a worldwide scale is assigned to ABB's corporate specialist advertising agencies that perform these checks.

Compliance – product responsibility

PR9 Significant fines for non-compliance with laws and regulations concerning products and services

ABB has not identified any significant administrative or judicial sanctions or fines levied against the company during 2009 for failure to comply with laws or regulations concerning the provision and use of its products and services.

Summary of main performance indicators

GRI ref.	Indicator description	2009	2008	2007
Environmental				
EN1	Materials			
	Phthalates (tons)	16	25	43
	Brominated flame retardants (tons)	3.1	2.3	0
	Lead in submarine cables (tons)	3,600	6,596	4,750
	Organic lead in polymers (tons)	24	36	n.a.
	Lead in other products (tons), e.g. backup batteries and counterweights in robots	313	354	346
	Cadmium in industrial batteries (tons)	2.2	2.0	0.4
	Cadmium in rechargeable batteries (tons)	4.7	6.4	21
	Cadmium in lead alloy (tons)	2.5	5.3	3.5
	Cadmium in other uses (tons)	0.05	n.a.	n.a.
	Mercury in products (tons)	0.011	0.015	0.013
	SF ₆ insulation gas (inflow to ABB facilities) (tons)	962	987	909
	SF ₆ insulation gas (outflow to customers) (tons)	951	969	892
	No. of transformers with PCB oil in ABB facilities	6	7	9
	No. of capacitors with PCB oil in ABB facilities	0	9	1,669
	Mercury in instruments in ABB facilities (tons)	0.803	0.895	1
EN3	Direct energy consumption (Gigawatt-hours – GWh)			
	Oil (11.63 MWh/ton)	87	104	103
	Coal (7.56 MWh/ton)	0	0	0
	Gas	415	416	438
	District heat	259	250	223
	Electricity	1,321	1,323	1,264
	Total direct energy used	2,082	2,093	2,027
	Megawatt-hours (MWh) per employee	18	18	18
EN4	Indirect energy consumption (Gigawatt-hours – GWh)			
	District heat (total including losses at utilities)	298	287	256
	Electricity (total including losses at utilities)	3,144	2,950	3,010
EN8	Water withdrawal (kilotons)			
	Purchased from water companies	3,300	3,100	3,186
	Groundwater extracted by ABB	2,900	2,700	2,800
	Surface water extracted by ABB	2,700	2,800	2,300
	Total water consumption	8,900	8,600	8,286
EN16	Direct and indirect greenhouse gas emissions (kilotons)			
	CO ₂ from use of energy	863	859	835
	SF ₆ (in CO ₂ equivalents)	263	406	398
	CO ₂ from transport by own fleet	350	350	350
EN19	Emissions of volatile organic compounds (tons)			
	Volatile organic compounds (VOC)	782	909	850
	Chlorinated volatile organic compounds (VOC-Cl)	5	6	13
EN20	Emissions of NOx and SOx (tons SO₂ and NO₂)			
	SOx from burning coal	0	0	0
	SOx from burning oil	64	76	76
	NOx from burning coal	0	0	0
	NOx from burning oil	48	57	57
	NOx from burning gas	90	90	94

GRI ref.	Indicator description	2009	2008	2007
EN21	Discharge of process water (percentage of ABB plants)			
	Discharge to public sewer	72	62	77
	Discharge to water sources	9	13	23
	Discharge to own treatment plant	20	25	-
EN22	Waste (kilotons)			
	Waste sent for recycling	118	139	126
	General waste sent for disposal	29	35	38
	Hazardous waste	6	7	6
EN23	Significant spills			
	Total number of spills	12	4	12
EN27	Products and services			
	Percentage of reclaimable material in products	90	90	90
Social		2009	2008	2007
LA1	Employment			
	Total workforce by region (ABB employees)			
	Europe	60,600	62,131	61,600
	The Americas	17,100	19,974	18,829
	Asia	29,900	29,084	25,245
	Middle East and Africa	8,500	8,204	6,280
	Total	116,100	119,393	111,954
	Total numbers of part-time employees included above			
	Europe	2,984	5%	3,392
	The Americas	92	1%	173
	Asia	268	1%	138
	Middle East and Africa	112	2%	124
	Total	3,456	3%	3,827
LA2	Employee turnover			
	Turnover of all employees, including part-time			
	Europe	5,985	10%	10%
	The Americas	3,826	23%	19%
	Asia	2,943	11%	11%
	Middle East and Africa	271	5%	11%
	Total turnover for whole Group	13,025	12%	11%
	Turnover of all female employees, including part-time			
	Europe	1,439	2%	1,307
	The Americas	635	4%	450
	Asia	520	2%	457
	Middle East and Africa	19	0.4%	78
	Total turnover for whole Group	2,613	2%	2,417

GRI ref.	Indicator description	2009	2008	2007
LA7	Occupational health and safety			
	Fatalities, injuries, lost days, diseases			
	Employee work-related fatalities	1	2	4
	Incident rate	0.01	0.02	0.04
	Employee work-related serious injuries	27	38	28
	Incident rate	0.23	0.32	0.25
	Employee commuting/business travel fatalities	1	2	4
	Incident rate	0.01	0.02	0.04
	Employee commuting/business travel serious injuries	0	3	3
	Incident rate	0	0.03	0.03
	Contractor work-related fatalities	3	4	10
	Contractor work-related serious injuries	11	16	16
	Contractor business travel fatalities	0	1	3
	Members of the public fatalities	0	1	1
	Employee working days lost due to industrial incidents	7,633	16,877	18,929
	Employee occupational health diseases (number of cases)	47	102	87
	Employee total recordable incident rate	14.32	18.93	n.a.
HR4	Non-discrimination			
	Total number of incidents of discrimination	0	0	0
SO6	Public policy			
	Financial and in-kind political contributions	0	0	\$9,000
LA10	Training and education			
	Training per year per employee (average hours)			
	Argentina	12	15	9
	Bulgaria	9	6	n.a.
	Estonia	9	16	n.a.
	Finland	24	24	25
	Germany	15	16	11
	Indonesia	16	8	n.a.
	Kenya	16	n.a.	50
	Kuwait	20	100	n.a.
	New Zealand	16	16	28
	Norway	10	10	15
	Qatar	22	20	n.a.
	South Africa	40	40	16
	South Korea	17	21	20
	Spain	27	21	21
	Turkey	21	14	n.a.
	United States	25	25	20

GRI ref.	Indicator description	2009	2008	2007
LA13	Diversity and equal opportunity			
	Women in senior management (percentage)			
	Argentina	1	0.5	n.a.
	Bulgaria	35	40	n.a.
	Estonia	15	8	31
	Finland	13	13	12
	Germany	3	2	0
	Indonesia	3	1	n.a.
	Kenya	17	n.a.	0
	Kuwait	0	0	n.a.
	New Zealand	5	5	35
	Norway	18	19	17
	Qatar	17	20	n.a.
	South Africa	14	14	15
	South Korea	5	5	5
	Spain	9	1	1
	Turkey	13	17	n.a.
	United States	1	2	2



INDEPENDENT VERIFICATION OF MAIN PERFORMANCE INDICATORS 2009

Det Norske Veritas AS
Veritasveien 1
1322 Høvik
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
Registered in Norway
NO 945 748 931 MVA
<http://www.dnv.com>

Scope and method of work

Det Norske Veritas AS has been engaged to verify the numerical values of the environmental and social performance indicators presented in the "Summary of main performance indicators" table (the "Table") on pages 22 – 25. The verification was conducted in January and February 2010.

The verification was based on a review of the sustainability performance data, supplemented by spot checks of the collection and aggregation process which has been carried out by the sustainability organisation of ABB.

DNV has reviewed the databases containing the environmental and social performance data. To assess the validity of the numerical values of the environmental indicators we carried out telephone interviews with ten selected local sustainability officers. To verify the process for collecting information for the social indicators we carried out telephone interviews with five country sustainability controllers and three other persons throughout the ABB organisation. We also interviewed three people in the ABB Group Sustainability Affairs with responsibility for collecting, aggregating and presenting the data in the Table.

Our verification was limited to assessing the numerical values of the indicators for 2009 reported in the Table in the "ABB Group Sustainability Performance 2009 – GRI Indicators".

Conclusions

In our opinion, ABB has a well-established web-based internal reporting system, which has been continually improved in recent years. Increasing the reporting frequency for the health and safety data seems to have improved the quality. The interviews combined with the overall impression through many years of verification, clearly indicate that ABB pays particular attention to health, safety and environmental issues.

During the interviews, and the review of the databases, some errors were discovered in the numbers reported. However, none of these were identified as systematic. These errors were immediately corrected, and the Table that is presented in this review includes the updated numbers.

Based on our findings, we consider the numbers published in the Table to give a reasonable representation of ABB's sustainability performance.

Høvik, Norway, 19th February 2010

Jon Jerre
Project manager
DNV

GRI content index table

GRI ref.	Description	
1	Strategy and analysis	
1.1	Chairman and CEO's letter	ABB Group Annual Report
1.2	ABB's key sustainability issues	page 3
2.1–2.10	Organizational profile	page 12
3.1–3.13	Report parameters	page 14
4.1–4.10	Governance	page 15
4.11–4.13	Commitments to external initiatives	page 16
4.14–4.17	Stakeholder engagement	page 17
5	Performance indicators	
	Economic performance indicators	
	EC1 (ABB key figures)	ABB Group Annual Report
	EC2	page 4
	EC6	page 10
	EC8–9	page 11
	EC3–5, EC7	page 17
	Environmental performance indicators	
	EN3–4, EN16–18	page 4
	EN1–2, EN8, EN19–20, EN22–23, EN28	page 5
	EN26–27	page 6
	EN5	page 17
	EN6–7, EN9–15, EN17, EN21, EN24	page 18
	EN25, EN29–30	page 19
	Social performance indicators	
	PR1–3, PR5–7	page 6
	LA6–9	page 7
	LA10, LA12–13, HR1–2	page 8
	HR4, HR8–9	page 9
	SO1, 4.11	page 11
	LA1–3	page 19
	LA4–5, LA11, LA13–14, HR3, HR5–7, SO2–3	page 20
	SO4–8, PR4, PR8–9	page 21

