

Industrial Products
Industrial manufacturing

Industrial manufacturing

Sector climate change responses



Background

Many sector companies are already taking pro-active steps to reduce greenhouse gas (GHG) emissions and energy consumption. For some, this means improving energy efficiency on the factory floor by installing new energy tracking and monitoring equipment. Others are building new, more energy efficient facilities. Existing office buildings are also being targeted for energy improvements. These efforts pay double dividends, as they both reduce costs and help companies reach their GHG reduction goals.

Shipping and logistics represent a major source of emissions for many industrial manufacturing companies. Some manufacturers are already addressing the issue head-on; efforts to improve the carbon footprint of their shipping and logistics process may include shifting to transport modes with lower emissions such as ship or rail, downsizing products and packaging, upgrading their truck fleets to be more fuel efficient or use bio-fuels, etc. In the US, the Environmental Protection Agency (EPA)'s SmartWay Transport Partnership provides an example of government and business efforts to work together to reduce fuel consumption in freight transport.

While many manufacturers are aggressively targeting their own carbon footprint, some also assert that they are best able to fight climate change through researching and developing product offerings which help their customers reduce their carbon footprint. Such activities are also recognised as an important means to drive differentiation and add commercial value. Life Cycle Assessment (LCA) looks at the emissions generated during the entire life cycle of a product, from extraction to manufacture, transportation, usage and finally recycling at the end of a product's useful life. LCA is becoming an increasingly popular tool to demonstrate the positive impact such products can make on the carbon footprint of customers; one manufacturer estimates that the carbon emissions from usage of its products are 40-50 times greater than the emissions required for initial production, so efficiency gains can have significant cascading benefits. A number of the manufacturers we reviewed already include LCA calculations within their design process and are actively promoting products with 'Eco' credentials. Some have

already set goals for reducing carbon at the customer level, or for ensuring that a certain percentage of their own revenues stem from environmentally-friendly products. Efforts to reduce environmental impact don't stop when the working day ends – some companies are also actively encouraging employees to monitor and reduce their own carbon footprints.

The main trade organisations in the sector are actively involved in promoting global efforts to reduce emissions, with a stress on 'global'. EEF, the manufacturers' organisation in the UK, asserts that many sector companies are highly exposed to the risk of 'carbon leakage'. Carbon leakage can occur when production or investment shifts to countries not subject to regulation, or when companies based in regulated countries (like the UK and the rest of the EU) lose market share to competitors operating in regions without emissions regulation. Much of China's carbon emissions, for example, could be viewed as emissions which have been 'off-shored' from Europe and the US to low cost manufacturing facilities. Some of these shifts might mean moving production from a facility with lower GHG emissions to a less-efficient facility with higher emissions – creating a net loss in the battle against climate change. In the US, the National Association of Manufacturers (NAM) also stresses the need for any federal climate change policy to be comprehensive and involve the US' trading partners.

Accurate, consistent measurement is critical, but many companies are still in the learning stages in this respect. In PwC's Manufacturing Barometer, a quarterly survey of US senior executives in the manufacturing industry, we found that only 25% of panelists are very confident that their companies' GHG emissions are being measured reliably. More (37%) are somewhat confident and 10% are not confident at all. A fairly large number (16%) were not certain about data reliability. Twelve percent do not measure emissions data. In the recent Carbon Disclosure Project industrials report, it was noted that "Respondents perform strongly in detailing the provision of goods and services that enable customers to reduce emissions, but disclosure in other areas is below average."

The chart below summarises participation by the largest industrial manufacturing companies in some of the key global indices and programmes around climate change. On the following pages we also highlight some achievements and plans of some of these key players.

Industrial manufacturing companies' inclusion in external sustainability ratings/programmes

Company	Listed on a Dow Jones Sustainability Index	Carbon Disclosure Project Leadership Index Score	Pew Center for Global Climate Change Business Environmental Leadership Council (BELC) Member	UN Caring for Climate Signatory
ABB Ltd.	√	57	√	√
Alstom SA	√	63	√	
Caterpillar Inc.	√	IN		
Deere & Company		66	√	
Emerson Electric Co.		21		
Mitsubishi Electric Corporation		NR		
Mitsubishi Heavy Industries, Ltd.	√	44		
Schneider Electric SA	√	60		
Sumitomo Electric Industries, Ltd.	√	AQ		
Tyco International Ltd.		55		

Note: IN indicates the company provided information, but did not answer the CDP questions, so no score was provided. NR indicates the company did not reply to the CDP questionnaire. AQ indicates the company answered the questionnaire, but no score is available.

Sources: PwC/SAM sustainability investing, The Sustainability Yearbook 2010; Carbon Disclosure Project, CDP 2009 Industry Snapshots – Global 500/S&P 500/FTSE 350; Carbon Disclosure Project Website (www.cdproject.net); Pew Center for Global Climate Change website (http://www.pewclimate.org/companies_leading_the_way_belc/company_profiles); UN Global Compact website (http://www.unglobalcompact.org/Issues/Environment/Climate_Change/list_of_signatories.html)



Featured Company Highlights

Note on methodology: We reviewed information publicly available on company websites in May/June 2010, including annual reports and sustainability reports, for the ten largest industrial manufacturing companies globally, in order to provide a brief overview of what actions the sector is taking. The information in this report represents a snapshot of activities and approaches to addressing climate change; it does not provide a comprehensive list of every measure currently being undertaken, nor does it provide assurance of the accuracy of the data provided by individual companies.

Featured Company: ABB

Key achievements and targets: Many local efforts to reduce energy use and emissions, for example, 140 energy saving projects in Sweden saving equal to 4,150 tonnes of CO₂ emissions annually, while in China employee suggestions are driving energy reductions.

Overall objectives for 2010-2011 include a goal for all sites to reduce use of energy by 2.5% annually, the development of guidelines to monitor the environmental impact of the transport of goods and monitoring and reducing the environmental impact of business air travel.

Research directions: Extensive use of Life Cycle Assessments (LCA) within the product design process; high-voltage direct current transmissions which facilitate integration of renewable sources into the grid.

Innovative use of new technologies: ABB analytical instrumentation used on the first satellite devoted to monitoring GHGs from space. High-voltage, direct current transmission technology (HVDC Light) – installed and ready to transmit power from remote off-shore windfarm in Germany; HVDC was also tested successfully for usage in the world's highest capacity power transmission line, currently under construction. ABB advances in high power conversion technology have also increased the energy efficiency of aluminum smelters by 18% at two installations in the Middle East. ABB solutions are 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 power grid. When it is finished, the installation will generate around 2,650 kW of power.

Collaboration with government, trade associations, etc.: A member of the Pew Center on Global Climate Change Business Environmental Leadership Council. ABB executives also 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 Manifest of the WBCSD.

Green product offerings: Extensive, including high-efficiency motors and variable-speed drives for motors and advanced industrial information technology to control and optimise power grids and industrial processes. Also solutions for alternative and renewable energy and small-scale distributed power generation, for example, new technology wind turbines, microturbines, low emission fuel cells and distributed applications of combined heat and power plants. High-efficiency transmission systems to connect remote renewable sites (wind parks, solar farms, hydro plants) to the power grid. Installation systems to stabilise power fluctuations caused by erratic winds or cloudy weather.

Reporting: Reports against Global Reporting Initiative (GRI) metrics. Uses a relative measure of Energy usage per Employee. Provides a third-party report independently verifying main performance indicators.

Renewable energy: ABB technology, particularly facilitating distribution/transmission of renewable energy, is playing a major role in expansion of renewable power in many countries (examples in 2009 from Ireland, India, Spain, US (Texas)). ABB is a provider of wind energy solutions.

“R&D is crucial for a high-tech company such as ABB, and our steady investment paid off in 2009 with the introduction of several new technologies to meet growing demand for higher performance with lower environmental impact. In fact, consideration of the life cycle impact of products is embedded in our product design process.”

Hubertus von Grünberg, Chairman
Joe Hogan, CEO
ABB Ltd.

Featured Company: Alstom

Key achievements and targets: Alstom is targeting a 20% reduction in energy intensity and GHG emissions from its operations by 2015 (from a March 2008 baseline). The intensity of CO₂ emissions decreased from 30 tonnes CO₂ per € million sales, in 2008, to 28 tonnes at the end of December 2009.

Many local projects in place, such as encouraging more environmentally-friendly commuting in France and re-forestation in Canada.

Research directions: Extensive research activities, many focused on renewables and technologies that enable GHG emissions reduction. Strong focus on developing carbon capture and storage (CCS) technology, using both post-combustion and oxy-combustion methods. Working on the 'Smart City' concept to help urban planners achieve more energy efficient cities with low carbon emissions, from both transport and energy grid perspectives. Researching the use of biomaterials from renewable resources. In May 2009 established a licensing agreement with a private Canadian company specialized in the design and testing of tidal stream technology for energy generation. Improving efficiency of hydro turbines. Developing a new 6 MW wind turbine for offshore use. Research partnerships with over 40 universities.

Innovative use of new technologies: Contributing to the creation of large scale CCS demonstration projects, working in Europe with industrial partners, NGOs and the European Commission. Pilot plants in the USA, Sweden, Norway, Germany, Poland and Canada are testing the latest Alstom technology. Introduced composite materials and improved traction in CORADIA™ trains, improving energy consumption by 10-15%. New braking technologies in trains offer better braking control, which lowers energy use, and allows energy generated from the braking process to be fed back into the grid.

Collaboration with government, trade associations, etc.: Many research partnerships with government and academia, including collaboration with researchers at the Massachusetts Institute of Technology (MIT) to share expertise in capturing and sequestering CO₂; member of The Pew Center's Business Environmental Leadership Council (BELC). Joined the WBCSD in 2009. Member of the United States Climate Action Partnership (USCAP).

Green product offerings: Eco-design in the rail industry. Integrated retrofit solutions also help enhance the efficiency of the installed plant base. Urban Power™ Internet-based automation solutions allow the optimal control and monitoring of high power energy sources, including enabling optimal use of renewable energies. Eco 110, a new 3 MW wind turbine.

Reporting: Uses a relative measure for both energy usage and GHG of the amount of energy used and GHGs emitted in relation to sales. Alstom requires each site to assess its own environmental impact and draw up an action plan with relevant targets.

In 2009, Alstom Power launched a project to quantify the impact of Alstom's offerings to its customers in terms of CO₂ reductions. The methodological framework is based on the GHG Protocol developed by the WRI/WBCSD. Simplified procedures derived from CDM methodologies will be employed to ensure consistency – the first report will cover over 1,000 projects for the 2002-2008 time period – and an external auditor will issue assurance on the first assessment, due to be published in third quarter 2010.

Renewable energy: Alstom technology facilitating integration of renewable energy sources. Alstom offers wind turbines and wind farm solutions and is developing improved wind turbine technology. Also offering hydro solutions.

“At Alstom, we are committed to developing new power generation and transportation technologies that result in significantly reduced greenhouse gas emissions. We have a unique approach to advocating for constructive policy solutions and we are excited about collaborating with the Pew Center to develop and promote policies that will stimulate private sector solutions to climate change.”

Pierre Gauthier, CEO
Alstom

Featured Company: Caterpillar

Key achievements and targets: Caterpillar's absolute energy usage and emissions were down significantly in 2009 vs. 2008, however the company notes that much of the decrease can be attributed to a decline in production. Caterpillar has a long-term goal to reduce absolute emissions from existing facilities by 20%, improve energy efficiency by 25% and meet 20% of energy needs using renewable energy sources by 2020, compared to a 2006 baseline.

Research directions: Supporting carbon capture and sequestration efforts, improving fuel efficiency and emissions of various product lines.

Innovative use of new technologies: Implemented a programme called Global Resources Energy and Environmental Network (GREEN) at the company's Aurora, Ill., manufacturing facility. The programme uses smart information monitoring and innovative technology such as combined heat and power to improve efficiency. Up to September 2009, the plant documented an 18% reduction in GHG emissions. Elsewhere in the US, a Cat® engine is powering a new biogas plant in Willamette Valley, Oregon. The plant uses organic farm waste to generate heat and electricity and is the first biogas plant of its type in North America.

Collaboration with government, trade associations, etc.: Diverse. Actively part of the debate around climate change regulation in the US and member of the US EPA Climate Leaders programme. Member of the WBCSD. Collaborating with British government and five other industrial partners in the Energy Technologies Institute (ETI). Working with dealers to provide machines, engines, gas turbines and support services that make CDM projects possible. List of sustainability related affiliations available at <http://www.cat.com/sd2009>

Green product offerings: Has set targets for 2020 to reduce customer GHG emissions by 20% and increase customer energy efficiency by 20%. These will be achieved by a variety of measures, such as greater fuel efficiency (in 2009 Caterpillar introduced a new electric-drive track-type tractor with 30% greater fuel efficiency than previous models) and tailored solutions that optimise use of equipment. Caterpillar also offers training to customer operators to help the use the company's products more efficiently. Re-manufacturing programmes allow customers to refurbish and upgrade existing equipment to current fuel and emissions technology standards.

Reporting: Reports to the Carbon Disclosure Project.

Renewable energy: Methane-burning generators capture methane from landfill waste, a potent GHG, and convert it into electricity. Caterpillar subsidiary, Solar Turbines, serves as a member of the Board of Directors of the Business Council for Sustainable Energy (BCSE), which advocates for the deployment of clean technologies including renewable energy, energy efficiency and natural gas. Has established a goal of using alternative/renewable energy sources for 20% of the company's energy needs by 2020. Working with forest industry customers to help them harvest woody biomass for energy production.

“We’re making sustainable development part of how we do business. In 2007, in the midst of our growth period, we set bold aspirational goals for 2020, and abandoning those goals, in the face of dramatic economic challenges, was simply not an option. This isn’t a passing fad that we only care about during prosperous times. It’s a serious commitment. And it’s a real business opportunity, now and in the future.

Good things happen when we integrate sustainability into our products, services and solutions. We improve our competitiveness and create and capture customer value. We save money, reduce our environmental impact and improve employee satisfaction. And by partnering with others, we can help ensure sound policies that promote sustainable development and innovation. In the next decade, the most successful companies will be those that integrate sustainability into their core businesses. That’s what we’re doing at Caterpillar, and we are also helping our customers do the same.”

Jim Owens, CEO
Caterpillar

Featured Company: Deere & Company

Key achievements and targets: Energy conservation programmes reduced total worldwide GHG emissions by 63% per tonne of production in 2006 compared to a baseline year of 1972. In 2007 joined the US EPA Climate Leader's Program and established new goals.

Pledge to reduce emissions 25% per dollar of revenue by 2014 from a baseline year of 2005. Also joined the US EPA SmartWay Transport Partnership in 2009, which entails an agreement to benchmark freight operations, identify technologies and strategies to reduce their carbon emissions, track emissions reductions, and set goals for improvement.

Actively improving efficiency of facilities; factory in Pune, India added solar heating in 2009; new headquarters building of John Deere Iberica in Madrid incorporates a number of sustainability features.

Research directions: Improving fuel efficiency and emissions of product lines.

Innovative use of new technologies: In 2009, the company's Green Tech unit won an award for developing a generator that produces electricity from water flowing through pipes. The device yields enough energy to power a landscape irrigation controller system or other functions, such as low-power lighting or data-logging systems.

Collaboration with government, trade associations, etc.: A partner in the US EPA's Climate Leaders programme and a member of the United States Climate Action Partnership (USCAP).

Green product offerings: Continues to reduce its products' emissions, which helps customers reduce their own GHG emissions. Products supporting the biofuel industry. Re-manufacturing programmes allow customers to refurbish and upgrade existing equipment to current fuel and emissions technology standards.

Reporting: Corporate-wide GHG inventory and annual progress reports based on detailed EPA protocols and guidance (Climate Leaders programme). Reports to the Carbon Disclosure Project.

Renewable energy: In 2009, announced agreement with Adage LLC to develop sustainable system for woody biomass-fueled power generation. Already providing new E-series forestry machines as part of the Biomass Harvesting System.

“John Deere's commitment to energy-saving projects and to the goals of the Business Environmental Leadership Council and EPA's Climate Leaders program demonstrate that we can be both a sustainable and growing company that remains competitive in world markets while also remaining committed to company core values. Besides finding ways to reduce emissions of greenhouse gases from its operations, John Deere will continue to look for ways to incorporate energy efficiency through new technology into product design, new facilities and facility updates.”

Laurie Zelnio, Director, Safety,
Environment and Standards
Deere & Company

Featured Company: Mitsubishi Electric

Key achievements and targets: Company set a Voluntary Action Target of reducing CO₂ emissions from production per unit of real sales by 60% compared with fiscal 1991 levels; met goal in FY06 and continued to maintain in FY09. Absolute CO₂ emissions down 14,000 tonnes in FY09 over FY08. Also actively reducing emissions from shipping/logistics.

Targets for the 6th Environmental Plan are coordinated with the company's 'Environmental Vision 2021' and include a reduction of 48,000 tons of CO₂ emissions from production in 2012, compared with a baseline of 2009. Also targeting a 30% reduction in emissions from product usage by 2021 (using 2001 as the baseline year) and increased recycling.

Research directions: Diverse, including continuing improvement of photoelectric conversion efficiency in polycrystalline silicon photovoltaic (PV) cells, the use of SiC (silicon carbide) in electronic devices to minimise power loss.

Innovative use of new technologies: Using the company's own range of energy-monitoring products, Mitsubishi Electric implemented energy loss minimization (EM) activities at the Fukuyama Works in 1997. The project serves as a case study to demonstrate to prospective industrial customers the gains that can be achieved without compromising production efficiency.

Green product offerings: Aiming to expand business in areas that provide energy-saving solutions; targeting a reduction of CO₂ emissions from product usage by 30% by 2021. To achieve this goal, improving the environmental profile (i.e. energy usage) of a wide range of products, many of which are now classified as 'Eco-products' or 'Hyper Eco-Products.' Also offer products to monitor and reduce energy usage in factories; e.g. EcoMonitor, a multi-circuit power meter that simultaneously measures power over multiple circuits, EcoServer II, an energy efficient data collection server that handles everything from collecting energy efficiency data to transmitting it over the web, and E-Energy, an energy efficient demand-monitoring server that monitors and controls power demand.

Reporting: Comprehensive tracking of CO₂ emissions from logistics already in place in Japan and is currently being expanded to affiliates outside of Japan. Track emissions using relative criteria of per unit of real sales.

Renewable Energy: Photovoltaic power generation systems.

"In recent years, environmental issues such as climate change and resource depletion have become increasingly serious on a global scale. Last year also saw the arrival of a worldwide economic recession, which created a severe operating environment for companies. Even under conditions such as these, however, I believe the importance and urgency of environmental measures remain unchanged, and that immediate action continues to be required. The Mitsubishi Electric Group has set contributing to the realization of a sustainable society as one of its most important management tenets."

Kenichiro Yamanishi, President and CEO
Mitsubishi Electric Group

Featured Company: Mitsubishi Heavy Industries, Ltd.

Key achievements and targets: Goal of 6% reduction of the average CO₂ emission amount for the five years from 2008-2012 (using a baseline from fiscal 1990) to be achieved through reduction efforts at all production plants.

Also specific goals to reduce average CO₂ emission amount from offices and operations (R&D) for the five year period FY08-12 by 13% (using a baseline of FY05) and to reduce energy consumption in transportation more than 4% in FY10 (using a baseline of FY06).

Encouraged employees to participate in country-wide efforts to reduce their personal carbon footprint (nearly 41,000 employees participated).

Research directions: CO₂ separation and recovery equipment for emissions from thermal power generation and other plants, power generation plants that utilise renewable energies. Cross-company Sustainable Energy & Environment Strategic Planning Department looking to achieve synergies by integrating technologies across the company's diverse businesses.

Innovative use of new technologies: Using solar panels and more efficient lighting systems to reduce the emissions in factory settings. Integrated coal Gasification Combined Cycle (ICGG) technology delivers higher efficiency and lower CO₂ than conventional coal-fired power generation; a demonstration plant has been in operation in Iwaki City since 2007. Several plants now using the company's carbon capture technology (see Green product offerings). Providing technical support for Iceland's Zero Emission Plan, including construction of infrastructure for electric cars and use of synfuel to recycle CO₂.

Collaboration with government, trade associations, etc.: MHI became an active participant in 2004 in the UN Global Compact; also providing technology for CDM projects.

Green product offerings: Gas turbine combined cycle power plants offering enhanced efficiency in thermal power generation, nuclear power plants that produce zero CO₂ emissions during power generation. Kansai Mitsubishi Carbon Dioxide Recovery Process (KM CDR

Process®), process to recover CO₂ from various sources of flue gas. Wind turbines. Improved photovoltaic solar cells. Geothermal power plants.

Reporting: Using GRI guidelines (G2 and G3). A Guideline Comparison List is posted on the company website.

Renewable energy: Broad spectrum of products for renewable energy (see Green product offerings).

“I personally believe, however, that even though these harsh economic times may continue through the near term, in the long-range view the need will continue for products that are beneficial to the future of mankind and our planet's well-being. Numerous problems of severe complexity stand in the way of that future, with global warming, depletion of energy resources, and shortfalls in water resources among them. At MHI, through the provision of technologies and products across a broad spectrum of business fields, we have continuously taken steps enabling us to contribute to the resolution of these issues of global scale.

Today, governments worldwide are strategically working to make the development of clean energies and protection of the environment the driving forces to revitalize their economies. Those strategies underscore that the business initiatives MHI has taken through the years have been moves in the right direction, and we believe that the role to be played by MHI will remain significant in the future as well.“

Hideaki Omiya, President
Mitsubishi Heavy Industries

Featured Company: Schneider Electric SA

Key achievements and targets: 44,000 metric tonnes of CO₂ equivalents reduced in 2009.

As part of its Planet & Society Barometer, Schneider Electric has set a goal to of 30,000 tons annual reduction of CO₂ emissions from 2009-2011. Progress objectives towards the goal include targets to reduce energy consumption on our manufacturing, logistics and tertiary sites to 13.5 MWh per head and reduce the share of international freight transported by air to 20% (35% in 2008).

Research directions: Strong focus on improving energy efficiency. Leading global projects for intelligent buildings, renewables, nanotechnologies, and more. Partnerships with more than 50 universities for R&D projects.

Innovative use of new technologies: Developing energy management solutions for Masdar City, the world's first carbon-neutral municipality now under construction. Provisioned the Bella Center for the COP 15 conference in Copenhagen as a showcase of energy efficiency, resulting in 14% fewer CO₂ emissions and 20% in energy savings. As part of the company's 'Bipbop' programme to make environmentally friendly technologies available to the base of the economic pyramid, Schneider Electric presented an off-grid solar facility to local officials in Marovato, on Madagascar's east coast, and unveiled its In-Diya LED based lighting system in New Delhi in February 2010. In-Diya aims to provide lighting to people living with no or unreliable electricity in India. It is a specially designed LED-based lighting system that can operate on main supply and/or solar, and provides backup ranging from 8 to 15 hours for indoor applications, and is highly energy efficient.

Collaboration with government, trade associations, etc.: Became an active participant in 2002 in the UN Global Compact. Also participates in the Alliance to Save Energy, Clinton Climate Initiative and a number of initiatives in France.

Green product offerings: Goal to achieve 2/3 of product revenues with Green Premium products. Holistic system for energy management, the 'EcoStruxure' approach, that uses intelligent energy management systems to improve efficiency. Solutions for renewable energy. Energy efficiency solutions for hotels, hospitals, data centers, office buildings, etc.

Reporting: Reporting uses GRI guidelines. Reports to the Carbon Disclosure Project.

Renewable energy: Innovating Smart Grid solutions to incorporate renewable energy sources into the energy mix. Also end-to-end solutions for renewable energies, such as the Vinon-sur-Verdon Solar Park in southeastern France, a photovoltaic solar farm that produces enough energy to meet the needs of 4000 people. Sustaining sponsor of the Solar Decathlon, an international competition at which university teams race to design and build the most attractive, energy-efficient, solar-powered house.

“Sustainable development is at the core of our strategy. In essence, energy management is a key contributor to CO₂ emission reduction. Beyond that, we are committed to sustainable development in our ethics, environmental practices, and engagement in every society where we operate.”

**Jean-Pascal Tricoire, President and CEO
Schneider Electric**

Featured Company: Sumitomo Electric Industries Ltd.

Key achievements and targets: In FY08, Sumitomo Electric Industries (SEI Group) reduced energy usage from logistics and transport processes 2.3% over FY07, and energy usage in offices 22%, however energy usage from the manufacturing process was up 13%.

FY08 CO₂ emissions reduced 35% from 1990 baseline (Japan only; measurement of overseas units started in FY09). Production energy reduction target for FY09 set at 4% from FY07, and for transport and offices 2% from FY07.

Action ECO-21 (Phase 3) Campaign: the SEI Group has set a target to reduce GHG emissions arising from domestic business activities by 23% on average between FY08 and FY12 based on the fiscal 1990 level.

Actively targeting reduction of CO₂ emissions from logistics as part of Action ECO-21 campaign, including promotion of modal shift.

Research directions: Superconducting coated conductors that eliminate power transmission loss.

Innovative use of new technologies: New buildings designed and built as energy saving buildings, integrating manufacturing processes and modifying air conditioning units to reduce energy consumption.

Collaboration with government, trade associations, etc.: Part of the Logistics Committee of the Japanese Electric wire and cable makers association initiative to co-share product transportation with other companies - i.e. one company exports product in a container, the other then uses the same container to import back from same destination, rather than it coming back empty.

Green product offerings: Using LCA as part of the manufacturing process. Products which meet Sumitomo's own defined criteria are tagged with an eco-product symbol. In FY09, 155 products were tagged. For example, more efficient cutting tools shorten processing time and reduce power consumption.

Reporting: Comprehensive environmental audit. CSR report uses GRI guidelines and provides a comparative table. Reports to Carbon Disclosure Project.

Renewable energy: New Technical Training Center building uses solar panels on the rooftop to generate clean energy.

“Our production units are using their creativity and ingenuity as well as the energy-saving diagnosis program in order to cut total GHG emissions in CO₂ equivalent and emissions per unit of sales on a global scale. Our offices are also making steady efforts to save energy, while the logistics units are actively promoting modal shift in cooperation with companies outside our Group. Since fiscal 2008, we are carrying out the Eco-Life activities, which aim to reduce CO₂ emissions from households by enhancing environmental awareness of employees and their family members.”

Sumitomo Electric Industries
Corporate Social Responsibility Report 2009

Featured Company: Tyco International Ltd.

Key achievements and targets: Successful energy reduction programmes at many facilities in North America in 2009, resulting in a reduction in annual energy consumption of 18 million kilowatt hours. Significant efforts to improve efficiency of global fleet as well, resulting in a reduction in fuel consumption in the US of 429,000 gallons, equivalent to 3,900 metric tonnes of CO₂-e in 2009.

In FY09, set a 5 year goal to reduce the company's carbon footprint by 25%, with FY09 serving as the baseline year.

Innovative use of new technologies: Extensive use of green building techniques in the construction of a 500,000 square foot addition to the Allied Tube and Conduits facility in Harvey, Illinois. Tyco expects energy costs for this building will be 24% less than comparably sized buildings.

Green product offerings: Developing products with less environmental impact using research and engineering expertise. Fire suppression systems that are alternatives to systems using hydrofluorocarbons (HFC), which are potent greenhouse gases, including ANSUL® INERGEN® systems and ANSUL® SAPPHIRE® fixed nozzle, fire suppression systems. ADT energy management is a system which integrates energy management into the home security systems for customers who are aware from home.

Reporting: Reports on GHG emissions for around 80% of global buildings and the complete global fleet. References GRI reporting standards.

“We are committed to reducing our greenhouse gas emissions from our global manufacturing facilities, major locations and operations by 25% over the next five years. Likewise, we will work to reduce our use of water and the amount of waste generated at all our manufacturing facilities by 25% over the next five years. These are ambitious targets that echo our belief that reducing our impact on the environment is good for business and, most importantly, it's the right thing to do.”

Robert W. Frantz, Vice President, EHS and Edward D. Breen, Chairman and Chief Executive Officer
Tyco International

Global Industrial Manufacturing team

Graeme Billings
Global Industrial Manufacturing
Leader

graeme.billings@au.pwc.com
 Tel: +61 3 8603 3007

Erica McEvoy
Global Industrial Manufacturing
Marketing & Knowledge
Management

erica.mcevoy@au.pwc.com
 Tel: +61 3 8603 4827

Industrial Manufacturing Sustainability contacts

Malcolm Preston
Global Sustainability & Climate
Change Leader

malcolm.h.preston@uk.pwc.com
 Tel: +44 20 721 32502

Mark Thompson
UK Industrial Products
Sustainability & Climate Change
Leader

mark.z.thompson@uk.pwc.com
 Tel: +44 20 780 49643

Territory Industrial Manufacturing contacts

Australia

Graeme Billings
 graeme.billings@au.pwc.com
 Tel: +61 3 8603 3007

Italy

Gianluca Sacchi
 gianluca.sacchi@it.pwc.com
 Tel: +39 2 6672 0556

SOACAT

Marcos Panassol
 marcos.panassol@br.pwc.com
 Tel: +55 21 2516 6025

Central & Eastern Europe

Matthew Pottle
 matthew.pottle@cz.pwc.com
 Tel: +42 2 5115 2066

Japan

Tetsuo Kitagawa
 tetsuo.kitagawa@jp.pwc.com
 Tel: +81 90 6513 2487

Slovakia

Katarina Somogyiova
 katarina.somogyiova@sk.pwc.com
 Tel: +42 12 5935 0422

Canada

Calum Semple
 calum.k.semple@ca.pwc.com
 Tel: +1 416 815 5325

Korea

Jae-Eun Lee
 jae-eun.lee@kr.pwc.com
 Tel: +82 2 709 0470

Sweden

Olof Enerback
 olof.enerback@se.pwc.com
 Tel: +46 31 793 1290

Finland

Urmas Rania
 urmas.rania@fi.pwc.com
 Tel: +358 9 2280 1746

Malaysia

Thaya Sangara Pillai
 Thaya.sangara.pillai@my.pwc.com
 Tel: +60 3 2173 1188

Switzerland

Stefan Raepsamen
 stefan.raepsamen@ch.pwc.com
 Tel: +41 58 792 2622

Germany

Martin Bork
 martin.bork@de.pwc.com
 Tel: +49 211 981 7288

Mexico

Héctor Rábago
 hector.rabago@mx.pwc.com
 Tel: +52 656 892 2200

Taiwan

Gary Chih
 gary.chih@tw.pwc.com
 Tel: +886 2 2729 6666

India

N. V. Sivakumar
 n.v.sivakumar@in.pwc.com
 Tel: +91 80 2558 5663

Middle East

Alistair Kett
 a.kett@ae.pwc.com
 Tel: +971 2694 6831

UK

Chris Baker
 chris.baker@uk.pwc.com
 Tel: +44 20 721 31500

Ireland

Alisa Hayden
 alisa.hayden@ie.pwc.com
 Tel: +353 1 792 6294

Netherlands

Alexander Staal
 alexander.staal@nl.pwc.com
 Tel: +31 8879 27242

US

Barry Misthal
 barry.misthal@us.pwc.com
 Tel: +1 267 330 2146

