Respecting Nature
Serving Communities
This is the latest version of Samsung Electronics Green Management Report published since 1999. The report is a general introduction to the social contribution activities carried out by the Company, based on the corporate philosophy of “Green Management,” including those for environmental protection, industrial safety and employee health. The Company intends to use it as a stepping-stone to the efforts made towards the sustainable development.

The Company’s top management checked its contents after having it confirmed by each relevant unit of operation. The Company will make the utmost efforts to develop proper survey tools and publish of information so that every item of its environmental or social contribution activities may be presented in a more transparent way.

Scope of the Report
This report concerns the major accomplishments between September 2001 and December 2003, in relation to the previous Green Management Reports issued since 1999.

Reference Materials
For more information concerning this report, please visit the following:
Samsung Community Relations White paper (www.samsunglove.co.kr)
Samsung Electronics’ Annual Report (www.samsung.com)
CEO Message

“In the 21st Century, Samsung Electronics will make a world in which humans live in harmony with nature”

Samsung Electronics regards people’s well being and environmental conservation as the most crucial agendas in the 21st Century, strives to contribute to humankind with first-rate products and services and plays a leading role in making the world a place in which humans can live in harmony with nature. The Company keeps in mind that it can ensure continued development when it can win respect from diverse interests by fulfilling its obligations and responsibilities as a corporate citizen in matters related to the community and environmental conservation, while trying to maximize corporate value through garnering excellent operational results.


All employees of Samsung Electronics have been united as one in the efforts to put the following factors into practice: management based on environmental friendliness and industrial safety, development of environmental-friendly products, efforts for minimization of environmental impact through improved production processes, an optimally safe and pleasant workplace and contribution to the community. The Company will continue to fulfill its role as a first-rate corporate citizen both environmentally and socially by putting into practice the idea of co-existence and sharing with other members of the community, based on the philosophy of Green Management that cherishes nature and lives.

The report contains a general introduction to the social contribution activities carried out by the Company’s levels of operations made in the direction of sustainable development. We at the Company hope that this will help the readers understand it better.

Thank you.

January 2004
Yun Jong-yong CEO & Vice Chairman
Samsung Electronics Co., Ltd.
Introduction

Samsung Electronics is a world-class business in the IT industry, engaged in the production of digital media, information and telecommunication products and home appliances. It has played a leading role in the efforts for people’s affluent life and environmental conservation, based on the corporate philosophy that puts emphasis on nature and humanity.

Introduction to Samsung Electronics

Samsung Electronics’ digital technology extends into people’s lives beyond the spatial and temporal limitations with its infiniteness extensibility. The Company aims to help people enjoy more conveniences and lead a more valuable life, whilst enhancing shareholder and customer value. The Company focuses on the home, mobile and office network and core parts in its operations to stay ahead of others in the digital convergence era.

Samsung Electronics thinks highly of its responsibility as a corporate citizen to contribute to humankind as well as to the local community. The Company served as a world-class business, participating as a partner in the 1998 Nagano Winter Olympics, the 2002 Salt Lake Winter Olympics, the 2002 Busan Asian Games, and as an official supporter of the Samsung Nations Cup Equestrian Contest. It has also positively engaged in social contribution activities, by providing support for the handicapped, information-based operations and environmental conservation activities.

Established in 1969 as a manufacturer of TV’s, refrigerators, washing machines etc, it has grown to join the ranks of first-rate businesses in the electronics’ industry. The Company expanded into the semiconductor business in 1988, becoming the world’s first developer of 64 mega DRAM in 1991, 1992, as the No.1 business in the growth rate of brand value (appraised as $8.3 billion) in 2002.

The Seoul-based company employs a total of 58,000 employees and 7 factories in Korea, as well as 23,000 employees overseas in 27 local production corporations.

Diversified business structure

The various sectors, Digital Media, Telecommunication, Semiconductor, LCD and Digital Appliance sectors contribute to it company-wide profits. Its semiconductor boasts core parts technology, while the telecommunications sector is engaged in the telecommunication network business and the cellular phone handset business. Digital media and home appliance sector boast solid competitiveness in manufacturing. We aim for a leading role in the digital convergence era through synergies built by expansion of the TFT-LCD line, the semiconductor business and the network of overseas local production corporations in 2002 and 2003.

Operational Performance

Since its establishment, Samsung Electronics has made painstaking efforts to grow as a first-rate business respected by people. Looking at the operational performance in the past three years, the Company garnered more than 40 trillion won in annual sales and 5 trillion won in annual profit on average, showing a feat of posting a sales growth of 7% and 28%, respectively, in 2001 and 2002, while the IT industry was in recession. The Company was also acclaimed as “the business with the best corporate governance structure in Korea” by Asset Benchmark Research and as the “best business in Asia” by The Financial Asia of Hong Kong.

Major Products

Samsung Electronics’ factories both in and out of Korea are engaged in the production of multimedia products, such as monitors, CTVs, PCs; telecommunication products such as mobile phones, PDAs and mobile telecommunication equipment; semiconductor parts, including DDR SDRAM, SDRAM, flash memory, display drivers, LCDs; and home appliances, such as refrigerators, air conditioners and microwave ovens.
Samsung Electronics runs a network with a total of 27 production subsidiaries, 32 sales subsidiaries, 2 logistical subsidiaries and 8 research institutes all over the world, in addition to its headquarters and 7 factories in Korea. The Company is doing its best to exert all possible capabilities as a globalized business by carrying out unique R&D and marketing activities at each operation. The Company is taking a systematic approach in making inroads into overseas markets through in-depth understanding and research about local communities, based on the principle that local subsidiaries contribute to, and grow with, the countries where they are located.

As a globalized business, the Company will continue to cooperate with local business partners, including production/sales subsidiaries, for prosperity of local communities, based on the corporate philosophy of co-existence.
Highlights of Green Management

Bolstering an environmental management system
In early 2003, Samsung Electronics upgraded the level of its Environment (Safety Committee with CEO heading it). In September 2003, the Company launched the Samsung European Environment Management Team in Milan, Italy, to be better prepared for the more rigorous forthcoming regulations concerning electronic products, such as EU WEEE or RoHS.

Qualification under the international environment and safety specifications
Samsung Electronics obtained certification for qualification under the international environment and safety specifications, ISO 14001 and OHSAS 18001, for overseas subsidiaries, as part of the effort to make the production facilities more pleasant and safer places to work.

Development of environment-friendly hard disk drives
In August 2003, Samsung Electronics became the first company to put on the market an HDD (Hard Disk Drive) that does not contain lead, cadmium, hexavalent chromium or halogenated flame retardants.

Launching Green procurement system
Samsung Electronics started operating the green procurement system designed to prevent environmentally risk that are faced with during the process of development and production, and promote the purchase of environmental-friendly raw materials and parts.

Afterestation in China for prevention of yellow dust flying to Korea
In April 2003, Samsung Electronics participated in afforestation activities in China as part of the effort to prevent yellow dust originating from desert areas in China from affecting the Korean Peninsula and block the spread of China’s deserts. The Company provided support for the “Korea-China Future Forest Formation” event hosted by the Korea-China Youth’s Future Forest Center and sponsored by the Capital City Spiritual Civilization Coordination Council of the Beijing City Government.

The Company’s VCR wins Green Marketing Grand Prize
Samsung Electronics’ VCR SV-K811 was awarded the 2003 Green Marketing Grand Prize from the Ministry of Environment and the Maeil Business Newspaper, for its excellence in environmental factors, such as recyclability, energy consumption and non-toxicity. The product is the first VCR in Korea that obtain the level of Environmental Declaration of products (EDP) in Korea.

The 2nd Consumption Culture Grand Prize in the sector of environmental friendliness
On October 19, 2002, Samsung Electronics received the 2nd Consumption Culture Grand Prize in the sector of environmental friendliness from the Korean Consumption Culture Association in recognition of its leading role in environmental protection and the contribution to people’s cozy lives.

Promotion of Catch Carbon Dioxide 1030 Project
Samsung Electronics received the Presidential Award for its effort with the development of a process for PFCs gas treatment, application of alternate gas, the optimization of work processes and systematic activities for the reduction of energy consumption under the “Catch Carbon Dioxide 1030 Project” for epoch-making reduction of global warming materials.

Presidential Citation on World No Tobacco Day
Samsung Electronics carried out diverse non-smoking activities and its Health Promotion Council took steps to encourage employees to pay more attention to their health. In 2003, the Company received the Presidential Citation for outstanding achievement on the World No Tobacco Day.

Improving the workplace environment through ergonomic interventions
Samsung Electronics makes positive efforts to enhance productivity and establish worker-centered ergonomic production lines, in addition to making a database based on the information obtained through ergonomic diagnosis for the intervention of production lines. As a result, the Company received the Ergonomic Design Award Special Prize in May 2002 from the Ergonomic Society of Korea. Also, in August 2003, it was designated as a model business at the 15th Triennial Congress of the International Ergonomics Association (IEA).

Catch CO2 1030 - Promotion of Catch “Carbon Dioxide 1030”
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Construction of recycling center for electronic wastes
In June 2003, Samsung Electronics completed construction of the “Metropolitan Recycling Center” in cooperation with the Electronics Industry Environmental Council. The second one of its kind after the one in Asian, the center will be engaged in the recycling of electronic wastes, such as refrigerators, washing machines, etc.

Samsung Electronics accomplished a lot both within and without through Green Management activities. It will continue to carry out environmental conservation activities, such as the developing of environment-friendly products and service and maintaining a safe and pleasant working environment at factories, based on Green Management and the Life-cherishing philosophy.

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We will develop our technology and human resources to create superior products and services, thereby contributing towards a better global society

Samsung Electronics considers the continual development of its people to be one of its top priorities. The Company aims to develop new technologies to bring well-being to humankind, by fostering talented employees who can explore the future with creativity, open-mindedness and a sense of mission as a member of the international community.

Samsung Electronics believes good responsible management can be achieved through the harmonious combination of talented employees and technological prowess. The business activities of Samsung Electronics are always geared towards promoting prosperity for people of all races and cultures, all over the world. The Company’s employees share our commitment to actively participate with customers, to recognize and confront global challenges and create a better future for all.

Samsung Electronics’ Green Management
Samsung Electronics strives to be a company that contributes positively to human society, regarding the idea of co-existence with the planet as the most important factor for sustainable long-term success.

The Company aims to set an example for other businesses in the 21st Century, by practicing sustainable development and engaging in diverse social contribution activities. With the emphasis of their Green Management System on environment, safety and health, Samsung Electronics produces environment-friendly product designs, that consider the whole life cycle of a product from concept to end-of-life. The Company also strives to minimize significant environmental impacts by developing clean new technologies. Rigorous upstream management of hazardous materials ensures very high standards of employee health and safety, as well as more environmentally sound products.

Green Management Policy
Based on the reverence for “life”, all of our business activities observe our Green Management Policy, which encourages respect for nature and contributes to the prosperity of human life and conservation of the environment. The company plays a leading role in creating a sustainable society by recognizing and implementing the environment, safety and health as crucial factors in all our business endeavors.

1. Operation of Green Management system
Under the Green Management system, we continue to make efforts to improve how we manage environmental, safety and health impacts occurring in production and service. We have committed to periodically publish the performance results of our Green Management system.

2. Compliance with Local and International regulations
We apply rigorous standards in the management of matters pertaining to the environment and safety. In addition, we strive to faithfully observe relevant laws, regulations and international agreements in order to be a good corporate citizen.

3. Fulfillment of life cycle responsibility for products and services
We will fulfill our responsibilities for our products and service, with environment and safety conscious designs, use of environment-friendly materials and the recycling of end-of-life products.

4. Continuous improvement of environmental aspects
We will continue to minimize the use of resources and energy through clean production technologies. The development of new advanced technology is used to reduce the output of materials known to cause negative environmental impacts such as Carbon Dioxide.

5. Realization of a safe and pleasant workplace
We will do what we can to prevent environmental or safety-related accidents, foster the atmosphere of a safe and pleasant workplace to help improve employee health and the quality of our lives.

6. Solid partnership with suppliers and contribution to the community
We will cooperate with suppliers in fulfilling Green Management policies, and will maintain excellent partnerships with them. This includes carrying out activities for environmental conservation and development of the local communities together.

January 2004
Samsung Electronics strives to set examples for others to follow in the development of environment-friendly products, as well as activities for social contribution and improvement in environment, safety, and health standards. Following its announcement of Environment-Related Guidelines in 1992 and the Green Management in 1996, the Company is publicly committed to contribute to humankind through sustainable growth.

### Major Performances of Green Management and Future Plan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation of Green Management</td>
<td>Announcement of Environment-Related Guidelines</td>
<td>Water mark of sustainable management</td>
<td>Leading company in sustainable management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Domestic factories obtained ISO 14001 certification (1994)</td>
<td>All overseas factories obtained ISO 14001 certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities for Environment-friendly Products</td>
<td>Adoption of LCA/DIX methodology</td>
<td>Implementation of LCA/DIX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of CAD tool for designers</td>
<td>Development of CAD tool for designers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establishment of Domestic Recycling Center</td>
<td>Establishment of Domestic Recycling Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Improvement Activities</td>
<td>Establishment of Factory Environmental Management System (FEAMS)</td>
<td>Reduction of PFCs by 10% from 2001</td>
<td>GMIS expanded throughout domestic factories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adoption of GMIS</td>
<td>GMIS expanded to overseas factories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety/Health-Related Activities</td>
<td>Encouragement of use of LNG, pollution-free fuel</td>
<td>Application of lead-free solder to all products</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installation of in-house incineration facility</td>
<td>Operation of global recycling network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Contributions</td>
<td>Commencement of social contribution activities (1993)</td>
<td>Operation of optimized Green Procurement system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establishment of Samsung 3119 Emergency Aid service</td>
<td>Operation of optimized Green Procurement system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Major Performances of Green Management

- Adoption of LCA/DIX methodology
- Development of CAD tool for designers
- Establishment of Domestic Recycling Center
- Implementation of LCA/DIX
- Establishment of Factory Environmental Management System (FEAMS)
- Adoption of GMIS
- Encouragement of use of LNG, pollution-free fuel
- Installation of in-house incineration facility
- Commencement of social contribution activities (1993)

### Future Plan

- Development of LCA tool for designers
- Establishment of Domestic Recycling Center
- Implementation of LCA/DIX
- Establishment of Factory Environmental Management System (FEAMS)
- Adoption of GMIS
- Encouragement of use of LNG, pollution-free fuel
- Installation of in-house incineration facility
- Commencement of social contribution activities (1993)
Samsung Electronics’ Environment/Safety Management Committee establishes policies and strategies related to its Green Management and periodically appraises the performance. In 2003, the Committee launched an Eco-Product Subcommittee and Eco-Design Subcommittee as part of the effort to bolster the supportive system for the production of environment-friendly products.
Global Environment/Safety Management

Environment/Safety Management Committee

Samsung Electronics’ Environment/Safety Management Committee, led by the CEO, has five subcommittees in charge of eco-designs, eco-products, green production, lead-free soldering and eco-devices. Each subcommittee promotes activities assigned to it in connection with factories both at home and abroad.

The environment/safety management system is operated on the plan-do-check-action cycle and objectives for continual improvement are established early each year. The Company carries out internal environment/safety-related auditing once or twice a year, monitoring the relevant performance by factories and providing support for related firms’ relevant activities.

1999. A total of 17 of the 27 overseas factories obtained the ISO 14001 Certifications by the end of 2003. The others will also obtain the Certification by the end of 2004.

The Company was also designated as an environmental-friendly business by the Ministry of Environment for its positive activities in the reduction of contaminants throughout the production process and overall environmental-friendly activities.

As part of the effort to reduce environmental impacts in its general management activities and make factories safe places to work at through proper risk management, all domestic factories of Samsung Electronics obtained the ISO 14001 Certifications starting from 1994 and the OHSAS 18001 Certifications starting from 1999. A total of 17 of the 27 overseas factories obtained the ISO 14001 Certifications by the end of 2003. The others will also obtain the Certification by the end of 2004.

The Company was also designated as an environmental-friendly business by the Ministry of Environment for its positive activities in the reduction of contaminants throughout the production process and overall environmental-friendly activities.
Systematic Environment/Safety Management System

Samsung Electronics systematically carries out its environment/safety management system, including the following:

GMIS (Green Management Information System)
Under the GMIS, Samsung Electronics provides all-out support for environment, safety and health-related matters, and systematizes and utilizes relevant information to improve competitiveness. The system, which was developed by the Giheung Factory in 1998, is now adopted in the Hwaseong, Onyang, Cheonan, Suwon, Gumi and Gwangju factories.

The system contributes to the systematic management of contaminants and helps the management make prompt decisions through the provision of environment/safety-related information. It also helps the Company stay up-to-date about the information related to follow-up management of ISO 14001-related matters or international regulations on the use of energies and chemicals.

Utilization of EPS (Eco-Product System)
Under the EPS (Eco-Product System), Samsung Electronics provides tools and data designed to appraise the environment-related harm of products and raw materials in an effort to cope with environmental regulations both at home and abroad, including RoHS and WEEE. The system is chiefly comprised of LCA, Eco-Design, Green Purchasing, Green Accounting and CS.

Samsung Health Improvement Network for Employees
Keeping in mind that the employees’ health leads to corporate competitiveness, the Company operates the Samsung Health Improvement Network for Employees (SHINE), which goes a long way in the promotion of the employees’ health by indexing their obesity, drinking, living habits and stress.

Safe Clinic System
Under the Safe Clinic System, safety-related points for improvement are delivered to the factories online. The system is another example of Samsung Electronics’ effort to make its factories safer and more pleasant workplaces through the adoption of a system for computerization of safety-related check results and prompt feedback, application of tools for analysis of data and education for prevention of problems.

E-learning System
Samsung Electronics operates company-wide environment/safety-related multi-level educational programs suited to specific needs, i.e. for manager-level employees, working-level employees, etc. The semiconductor sector, in particular, sets an example for other sectors to follow with its web-based Learning Management System.

Facility Management System
This system, which has been operating since 2001, goes a long way in the accuracy of tax-related reports and bringing about tax-saving effects through improved operational efficiency and registration of relevant data, in addition to extension of the durability of buildings and prevention of accidents through proper management of facilities, as well as systematic data management related to the history of checking the facilities.

Crisis Management System
Under the Crisis Management System, Samsung Electronics exerts the utmost efforts to minimize environment/safety-related risks through the installation of hi-tech facilities against emergencies such as an explosion, a general surveillance system and an in-house firefighting organization, in addition to carrying out training sessions periodically, depending on various crisis-related scenarios.

Additionally, the Samsung 3119 Emergency Relief Aid Corps, the first of its kind in Korea operated by a private business, has provided professional aid in disaster relief activities for local communities since its launch in October 1995.

Types of disasters Samsung Electronics is ready for
- Fire and explosion
- Leakage of hazardous materials
- Food poisoning
- Biochemical terror
- Natural disaster
- Accidents (fall, burn, electrification)
Samsung Electronics continues to develop environment-friendly and reliable products by improving the environmental aspects through their life cycle, from design, through production and use to end-of-life. To accomplish this, the company is developing environment-friendly products at every stage of the life cycle, focusing on material and energy saving and using environment-friendly materials.
In order to alleviate the environmental impact during the life cycle of a product, the improvement activities at design stage is the most important and effective. Samsung Electronics has developed eco-design manuals in 1997 and built infrastructure to produce environment-friendly products from the design stage by utilizing LCA (Life Cycle Assessment) and DIX (DfR/S/D/A, Design for Recycle/Service/Disassembly/Assembly) softwares to examine the environmental impact of its products. In addition, Samsung Electronics is trying to develop environment-friendly products in a more systematic way by using the green procurement system to examine whether components and raw materials have hazardous substances. The eco-design identifies and assesses environmental factors at the stages of the basic product development processes: Concept, Plan, Development and Production. Assessment methodologies and criteria at each stage are used according to the objectives established in planning the product. With the importance of eco-design, checking items and criteria for environmental assessment will be added regularly.

**LCA (Life Cycle Assessment)**

Samsung Electronics adopted the LCA tool for its microwave range ovens in 1995 and since then has expanded the tool to other products each year for environmental assessments and improvement of products. Especially with the introduction of Environmental Declaration of Products in Korea, Samsung Electronics is using the tool as a way of marketing and provides customers with environmental information on a product.

**DIX design technique**

DIX (DfR/S/D/A, Design for Recycle/Service/Disassembly/Assembly) tool was first used in trials of TVs, washing machines and refrigerators in 1995, and since 2002 it has been applied to all products to comply with EU’s recycling regulations. In addition, the tool is being improved and the infrastructure is being built in each business unit for all designers to use DIX tool.

**Eco-Product System development**

Samsung Electronics’ Semiconductor Business and LCD Business have developed Eco-Product System (EPS) - a total environmental assessment tool — to respond to environmental regulations home and abroad. The EPS enables to assess and improve products and components in terms of environmental protection.

The system is composed of 5 modules; LCA (Life Cycle Assessment), Eco-Design, Environmental Accounting (EA), Green Procurement (GP) and Customer Service (CS). These modules share their results for systematic assessment. LCA is carried out using data collected through the existing internal system on processes, materials and pollutants. The results from LCA are used for CS and Eco-Design, and the operation logic used in LCA is also used in EA to calculate costs. In addition, the information on materials and harmful substances in supplies collected through the green procurement is provided to customers, and used to identify materials and harmful substances during product development. Samsung Electronics stores environmental data on database through the Eco-Product System to enhance the products’ competitiveness, whilst responding to customer needs.
Samsung Electronics’ supply chain environmental management efforts aim to carry out the following three missions.

1. To comply with global environmental regulations and build the response system for the unexpected environmental-associated events.

2. To promote products’ environmental quality by developing environment-friendly products through environmentally qualified materials, components and semi-finished goods.

3. To develop and produce products with lower environmental load to contribute to the global environment conservation, thereby enhancing the corporate image.

In 2001 Samsung Electronics announced the general guidelines for green procurement system and launched a trial and then the system further applied to its all affiliates in 2003. In 2004 the Company will expand the system to all of its overseas affiliates. The supply chain environmental management focuses on both the environmental management system of the affiliates and environmental quality of components and materials.

Environmental Management

Samsung Electronics ensures the product quality by carrying out the environmental management assessment of the suppliers. From 2004, all the suppliers are required to attain “Eco-partnership Certification” which is only issued by SEC after the company evaluates and monitors their environmental management system, their production processes and facilities.

If the suppliers are not qualified by this assessment process, they are required to submit their environmental management plan for complying with Samsung Electronics’ Eco-partnership certification requirements.

The Company continuously audits and promotes the suppliers to improve their Environmental Management System. Through these evaluation processes, the qualified suppliers will build a solid partnership with the Company, but the others are the likelihood of losing SEC Approved Supplier status from 2005. Samsung Electronics will drive the suppliers to improve their management system by promoting the competitive environment.

Environment management of components and materials

Samsung Electronics’ environmental management aims to help produce products that will satisfy customers by identifying banned and restricted substances contained in the components and then stop using them or improve them to comply with environmental regulations and public health.

The chemicals restricted and managed currently include cadmium, lead, mercury, hexavalent chromium, and brominated flame retardants. In 2004, the chemicals in management will further increase after careful assessments and analysis on products.

To improve the Company’s chemical management, Samsung Electronics is collaborating with Japan Electronics and Information Technology Industries Association (JEITA), European Information, Communications and Consumer Electronics Technology Industry Association (EICTA) and Electronic Industries Alliance (EIA) in USA. In addition, Samsung Electronics will designate restricted substances and publicize the general guidelines to its suppliers.

Environmental inspection and test on components and materials are not only carried out for verification for affiliates but also in the stages of approving components and sending them into the production process.

The Company operates a green procurement web site at http://glonets.samsung.com to share green procurement-associated policies and to allow suppliers to upload documents for review and exchange information effectively.
Material Saving Through Structural Change and introduction of New System

Samsung Electronics has developed the ‘Water saving tub’, ‘Magic filter’ and ‘Detergent coordination system’ to minimize the amount of water and detergent for washing machines.

By minimizing the number of holes in the tub and rotating the pulsator at a high speed to maximize water circulation, the Water saving tub succeeds in suppressing incoming water from flowing out and maintains high water levels and allows for 20% less water consumption.

The rinsing function supplies water while rotating the pulsator at a lower speed of 40 rpm to drain laundry thoroughly and then removes moisture from the clothes at a high speed to eliminate detergent lather completely. The magic filter removes the dust from the water after washing independent of water level. The Detergent coordination system automatically determines detergent amount depending on washing conditions such as laundry load, contamination degree and water temperature.

Material Saving Through Component Sharing

Samsung Electronics is trying to share and standardize components that would be commonly used in its all products. Sharing and standardizing components is important for efficient recycling. For microwave ovens, the metal-walled interior and power cables are shared and the high voltage transformers have been standardized. Some mobile phones share their external designs regardless of whether they are developed for domestic or international use. In addition, PCs achieved 27% components sharing ratio in 2002.

Material Saving Through Component Reduction

An electronic product is composed of a variety of components. Reducing the number of components can generally save energy in production process and maximize recycling. The HDDs, Spinpoint VL40 model has reduced components by 11.7% and the weight by more than 30% compared to 2001 models. MiniLite™, a compact optical fiber cable, was developed to reduce diameter by 25% and weight by 46%, and gives the additional advantage of saving energy for installation. For vacuum cleaners, the number of components can generally save energy in production.

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LCD TVs - “Energy Winner” Grand Prize

VN40KO, a 40” LCD TV model, was awarded the “Energy Winner” Grand Prize by the Citizen’s Alliance For Consumer Protection of Korea (CACPK), for its excellent ability in energy saving. This product adopted the Power Factor Correction (PFC) function, which reduces power loss during power transmission, as well as reducing standby power consumption to less than 1W thanks to standby circuit and secondary micom. Power factor is the ratio of the actual current to the apparent current. General power circuits have a 0.6 power factor, while VN40KO improved its power factor to 0.99 by adopting the Power Factor Correction function.

Notebook PCs - Low power consumption products

Samsung Electronics is trying to develop notebook PC adapters and batteries with low power consumption. Through high efficiency circuit design, elimination of unnecessary fan operation and user-specific power saving system, the Company developed Notebook PCs with power consumption improved of up to 30% as compared to 2000 models, in terms of the carbon dioxide emission factor.

Air Conditioners - Energy saving using the DESS system

Samsung Electronics has developed extremely efficient power saving floor standing type air conditioners - AP-1590/1890/2390 - adopting the TS (twin & single) compressor and a highly efficient BLDC (Brush Less Direct Current) fan motor. The Digital Energy Saving System (DESS) with the TS compressor is the cooling cycle system for extremely efficient power consumption that can operates either 1 or both of two cylinders according to the indoor cooling level. And the BLDC fan motor allows optimum torque whilst the air conditioner operates and reduces power consumption by 60% as compared to traditional fan motors. The AP-1890 model was awarded the “Energy Winner 2002” prize for its performance.

HDD - Reduction of Power Consumption

Samsung Electronics has reduced the maximum power consumption, average power consumption and standby power consumption of its HDD (Hard Disk Drive, SV0401H model) by 10%, 3% and 29%, respectively. These resulted from adoption of the Marvell Tristar 1P (a new chip technology), reduction of the head number and friction between the head and the disk, and optimized IC control in the standby mode.

Mobile Phones - Energy Saving Label acquired

All battery chargers for mobile phones and PDA of Samsung Electronics have acquired the Energy Saving Label given by the Korea Energy Management Corporation (KEMCO). The standby power consumption of the chargers is below 0.5W, lower than 1W, which is the limit to acquire the Energy Saving Label.

Printers - Change of fusing technology

Generally the fuser of laser printers uses heating lamp, which currently consumes too much heat-up time and energy. In addressing this flaw, Samsung Electronics developed a printer which adopts heating wire-based Quick Printer Initiating Devices (QPID), thus reducing heat-up time from 180 seconds to 60 seconds, which is down by 67% and heat-up power consumption by 80% from 150Wh to 30Wh (for 1750 V2 model).

Power consumption is a important factor of environmental impact. So Samsung Electronics is trying to reduce not only the power consumption of a product in its use, but its standby power consumption.
Lead-free Solder

Samsung Electronics is pursuing application of lead-free solders to printed circuit board assemblies to eliminate harmful lead element from all products.

Development of lead-free solder products has been started in 2001 in Samsung Electronics. And the Company secured lead-free soldering technology for several products including HDD (Victor Rev 3.0), printer (SCX5312), monitor (BU15O MP1.1) and DVD/CDRW combo drive (SM-348B) in 2002 and for all other product categories in 2003.

Samsung Electronics produces and sells VCR, VCR/DVD Combo products and HDD with lead-free solder and will produce the other products with lead-free solder by 2004. The Company is trying to secure lead-free soldering technologies as reliable as traditional Sn-Pb solder process by development of optimal working conditions based on 6 sigma and reliability assessments. The Company is also trying to secure full reliability for circuit components and printed circuit board assembly with different melting points of lead-free solders.

Since the second half of 2003, Samsung Electronics has been attaching ‘LF (Lead-Free)’ label on printed circuit boards with lead-free solder. This makes products distinguished from the others and, also shows Samsung Electronics’ commitment to using lead-free solder.

Environment-Friendly Semiconductors & Hard Disk Drives

Semiconductors

In 1998, Samsung Electronics has researched substitute materials for harmful elements like lead in semiconductors and developed the technology introducing more environment-friendly materials, and in May 2001 the company eliminated lead (Pb), halogen compounds such as Chlorine, Bromine and Antimony and successfully developed a memory, memory modules and ASIC using new materials such as tin and bismuth.

As these ‘green’ semiconductors demonstrated excellent results in their life and environment tests, The Company plans to expand these technologies to all semiconductors in 2004 and TFT LCD in 2005.

Hard Disk Drives

In August 2003, for the first time in the world, Samsung Electronics shipped hard disk drives (PL40), which did not include lead, cadmium, hexavalent chromium and halogen flame-retardants. Main improvements include development of lead-free solder and lead-free paints and coating agents, of which application will be expanded to all models by 2004.

Alternative Refrigerants

Samsung Electronics has replaced CFCs with alternative refrigerants for refrigerators and air conditioners and is expanding production of alternative refrigerant-based products. For refrigerators, the company has prohibited the use of CFCs as refrigerants and blowing agents from 1996 and currently uses HFC-134a and iso-butane (R-600a) as alternative refrigerants and cyclo-pentane as a blowing agent. In case of iso-butane, ODP (Ozone-layer Depletion Potentials) is ‘0 (Zero)’ and GWP (Global Warning Potentials) is very low, so the Company tried to expand to the use of iso-butanes and developed iso-butane BLDC motors to SR-L679EV and SRL39WEB models.

For air conditioners, the Company began using HFC refrigerants such as R-407C and R-410A since 1998 and is now applying the refrigerant to all air conditioners for Europe, whilst planning to apply them to cooling/heat-ing air conditioners from 2004.
Examples of Environment-friendly Products

Samsung Electronics is trying to develop and provide environment-friendly products to customers. Commodity electronics such as refrigerators, air purifiers, drum-type washing machines, mobile phones, VCRs, laser printers and TFT LCD monitors are being reborn as more environment-friendly products.

TFT-LCD Monitor (NB21BS)

Samsung Electronics leads the world in monitors, for its superior performance, as well as its environmental aspects. Many products including NB21BS have acquired TCO’03, a well-known environmental quality certificate of Sweden. TCO’03 certificate does not only evaluate environmental aspects but also values ergonomics, safety, specific adsorption rate and so on. The model contains limited cadmium, lead and halogen substances according to the certificate’s criteria and uses an easy removable mercury lamp for disassembly and plastic parts of the same material for recycling.

Laser Printer (ML-1750)

The laser printer ML-1750 has acquired the Korea Eco Label. This product reduces operation and standby power consumption by 50% (from 13.9W to 7.1W in its power saving mode) based on an environment-friendly design and adopts the automatic power saving mode to prevent unnecessary use of power. Printing noise and ozone generation of the product are 50dB and 0.0038ppm which are 10% and 30% less respectively, than the limit of Blue Angel of Germany. In addition, the product adopts toner saving functions, which saves toner use by 40%.

VCR (SV-K811)

Thanks to environmental improvements focusing on recyclability, low energy and reduction of hazardous substances, SV-K811, a Samsung Electronics VCR, was awarded Green Marketing Grand Prize 2003, which was organized by the Ministry of Environment and Maeil Business Newspaper and hosted by Environmental Management Corporation. SV-K811 uses paper-based cushion and fewer components, and indicates the material identification on plastic parts for easy recycling. Also the products pursues low energy consumption of 0.9W of standby power consumption and harmlessness to human by adopting lead-free solders and removing halogen substances from printed circuit board and packaging materials. Lead-free solders were introduced in 2001 and currently are used in VCRs and VCR/DVD combo products. SV-K811 was the first among the VCRs in Korea having acquired the Korea Eco Label.

Optical Disk Drives

Samsung Electronics’ CD-RW drives acquired the Korea Environmental Declaration of Products (EDP) label for the first time in the category of optical disk drives in March 2003, afterwards, including DVD drives, CD-ROM drives and COMBO drives received the same label. The CD-RW reduced weight by 36% and number of components by 18% as compared to the 2001 model, and also improved in components standardization and using paper-based disk packaging. Since 2002, Samsung Electronics have expanded the scope of optical disk drives with lead-free soldering by securing production technology for products with lead-free solders.

Environmental Labeling

ISO defines 3 kinds of environmental labeling; Type I label is given to products that have passed predefined criteria, for example ‘Korea Eco Label’ in Korea, Type II label is self-declared Environmental statement and Type III label is publicizing the results of LCA with third party verification, for example Environmental Declaration of Products (EDP) in Korea.

Korea Environmental Declaration of Products (EDP) Label

Samsung Electronics acquired EDP Labels for TFT-LCD monitors (SyncMaster 175P) and a 42” PDP TV (PAV2-42P251) in May in 2002 and then for a refrigerator (SRS-768CC), an air conditioner (AP-1240) and optical disk drives for PCs. The Environmental Declaration of Products is one of the ‘Environmental Labeling Type III’, indicating the whole quantification environmental load, generated during material extraction, manufacture, distribution, consumption and end of life. The information on Environmental Declaration of Products is provided at www.edp.or.kr.
Air Purifier (AC-120AW)

Samsung Electronics’ air purifiers are equipped with 12 stages of air purification system and acquired Korea Eco Label for its environment friendliness as well as the CA (Clean Air) label from Korea Air Cleaning Association.

Its Double e-HEPA (Electric High Efficiency Particulate Air) system absorbs 99% of dusts, virus, bacteria and mold. Silver nano-technology is Samsung Electronics’ patented technology, which coats silver on the filters, effective in removing 99.99% of virus, mold and bacteria.

In addition, the product maximizes purification performance by using photocatalyst deodorization, a four faced absorption system and a high efficiency motor with noise measuring below 20dB. The product is extremely efficient in energy consumption and electricity costs only total 37 Korean won (around 0.03 USD) even if used 24 hours a day. The filter can be washed with water and is extremely durable, thus reducing its impact on the environment.

Side by side Refrigerator (SRT668FDI)

Zipel SRT668FDI adopts separate cooling system for the freezer and refrigerator compartments, and has a rapid cooling rate, which is excellent in maintaining freshness and power saving. Zipel uses Inverter Technology to reduce power consumption by 12% compared to existing products and makes less noise than the library. The inverter controls the refrigerator’s freezing and cooling capabilities according to outside room temperature, frequency of refrigerator door opening and amount of stored food. In addition, the refrigerator adopts Nano Health System, an anti-virus system, which prevents propagation of microorganism, and stores food safely.

Drum-type Washing Machine (SEW-HR125)

Hauzen SEW-HR125, a drum-type washing machine, was awarded the ‘Energy Winner Prize’ in 2003 for its excellent performance in 3 core technologies; water saving, energy saving and low vibration/noise. Power saving technology includes a function cutting off standby power consumption totally, and an automatic dry function that senses the dryness level.

Zero standby power consumption means a reduction of 26,455Wh annually, equivalent to power used for washing laundry once a day for 5 months. The washing machine is equipped with a Water Turbine to save water, a washboard and lifter structure, and an inclined drum that does not require full water levels. To lower vibration and noise, BLDC motor and high-performance oil damper used in vehicles were adopted. Finally the product utilizes Silver Nano-technology to promote anti-virus effects in consideration of users’ health.

Mobile Phone (SPH-X4200 and others)

The mobile phone SPH-X4200 is famous for its beautiful design. The same external design was applied to mobile phones regardless of domestic or international use. The similar external design allowed for the use of common antennas, batteries, keys and TFT-LCD modules. The phone succeeded to reduce the size of components through single and slim circuit components and saved resources.

Samsung Electronics reduced standby power consumption up to 0.5W, far lower than 1W a standard for the Energy Saving Label.

Environment-Friendly Semiconductor Web Site

In September 2003, Samsung Electronics opened a web site on environment-friendly semiconductors. To respond to customers’ request the web site releases information on semiconductors such as Samsung Electronics’ environment-friendly semiconductor development strategies, status of products in development and production, quality and reliability tests and future roadmap.

Releasing this professional and practical information shows Samsung Electronics’ commitment to leading in standardization and development of environment-friendly semiconductors.

Recycling is the initial step towards environmental preservation. Samsung Electronics is willing to take the lead in realizing the sustainable society through end-of-life products recycling.

Collection and Recycling of Electronic waste in Korea

Establishment of Recycling scheme
Samsung Electronics is the first electronics company in Korea to establish a collection and recycling system of electronic waste no longer used by customers. By taking an initiative to realize the sustainable society, Samsung electronics is contributing to environmental protection and the efficient use of resources.

Collection System
For upgraded customer services, Samsung Electronics established a collection system that includes approximately 1,568 retail stores and 28 logistics centers nationwide, which engage in collecting end-of-life electronic goods.

Recycling System
Collected electronic waste is processed by the recycling system network consisting of Asan Recycling Center, located in Asan, Chungcheongnam-do, fully funded by Samsung Electronics, the Metropolitan Recycling Center established by Samsung and four other Korean electronics companies (May, 2003) and other six contracted recycling plants. The end-of-life electronic goods processed in the recycling system are refrigerators, washing machines, TVs, air conditioners, microwave ovens and VCRs.

Asan Recycling Center
The Samsung Recycling center located in Asan, Chungcheongnam-do oversees more than 270,000 electronic waste, which are dismantled by an automatic system (3 staged process: pre-treatment → shredding → sorting). In this process, iron, copper, aluminum, plastic, CFCs, etc. are categorically divided for recycling. The center is operating facilities to extract and separate refrigerants (CFC-12) and oil from refrigerator’s compressor and to retrieve CFC-11 gas.

End-of-life Product Recycling
Europe
As the WEEE directive came into effect in February 2003, electronics manufacturers have responsibility for the establishment of collection and recycling system of end-of-life products. Samsung Electronics is tracking information on recycling systems and legal trends and making efforts for the compliance with the legislation. For this purpose, Samsung European Environmental Management network (SEEM) was launched in September 2003.

Japan
Japan enacted the Home Appliance Recycling Law, and now refrigerators, washing machines, TVs, air-conditioners and PCs fall within the scope of this law. Samsung Electronics gets a membership in the consumer electronics recycling organization of Japan. Samsung Electronics recycled about 79,000 units in 2001 and 109,000 units in 2002. Since October 2003, the Company keeps partnership with Mitsubishi Electrics & Electronics and others for the compliance with the recycling law for PC.

USA
USA holds recycling programs for electronic waste and each state has recently been preparing a bill to make recycling electronic waste compulsory. Samsung Electronics is reviewing participation in public pilot project for the preparation for the compliance with the law.

China
There has been increased attention to environmental protection and recycling-associated activities in China. Samsung Electronics declared the “Environmental-friendly Management of Mobile Phones” with other manufacturers under the sponsorship of the State Environmental Protection Administration of China in October 2003.
Environmental Improvement Activities

Samsung Electronics is engaged in diverse environmental improvement activities ranging from efforts made to minimize environmental impact caused by production to the recycling of resources, using environment-friendly materials and applying clean energy and technology where possible. The Company’s employees are making concerted efforts to apply optimal production systems conducive to the prevention of global warming and minimize discharged contaminants.

42 Prevention of Global Warming and Energy Management | 45 Activities for Minimization of Environmental Impact | 53 Communication with Interested Parties
Samsung Electronics has played a leading role in environmental conservation, promoting the “Catch Carbon Dioxide 1030” project designed for the voluntary and epoch-making reduction of carbon dioxide.

Through the total volume of carbon dioxide emitted by its factories accounts for less than 1% of the entire picture of carbon dioxide emission in Korea, Samsung Electronics pushes ahead with the “Catch Carbon Dioxide 1030” project for voluntary and epoch-making reduction of environmental contaminants, in addition to the voluntary control of the use of other materials causing global warming, as part of the effort for environmental conservation.

Efforts for prevention of global warming
- In April 1999, the WSC (World Semiconductor Council) reached a consensus to reduce the absolute emissions of PFCs (perfluoro compounds) from semiconductor fabrication facilities by 10% or greater (based on 1997) by the year 2010.
- In December 1999, it was decided that the technology for treatment of PFCs and alternate gases that can replace them would be developed on a national level.
- In August 2002, the technology for treatment of PFCs and alternate gases that can replace them was developed.
- The process for cleaning semiconductor CVD was developed. The technology for cleaning alternate gases, using non-nitrogen a trifluoride remote plasma source was developed and as a result can reduce 90% of the PFC emission.

The Catch Carbon Dioxide 1030 Project
Under the project (the Company’s commitment to the reduction of global warming emissions by 30% from the 2001 figure by 2010), the Company plans to reduce emissions by 70% for existing lines and more than 90% for new lines installed in or after 2002 through the development of clean technology, application of alternate gases and optimization of the production process for reduction of the use of PFCs.

Application for Patent for PFCs Removal System
Under the system (fixed in an emission duct) designed for water treatment of emitted PFCs by directly applying electric energy under normal temperature and pressure, Samsung Electronics has saved about 114.3 billion won that would have otherwise been spent on treatment of PFCs. The system is applying for a patent as the first technology for treatment of PFCs. Its efficiency in treatment of PFCs boasts higher than 90%.

A facility for removal of PFCs.

Energy Service Company
- Having a professional voluntary agreement with the government
- Energy-saving through the sale of LNG
- Carried out competitions
- Laying the groundwork for energy-saving through establishment of a 5-year plan for energy-saving and investment
- Making a voluntary energy-saving agreement with the government

Major Activities for Energy-Saving
Promotion of energy-saving activities participated in by all employees
- Diverse activities, including the selection of energy-watchers, a periodical meeting of department heads in charge of energy-saving, setting one day a week as Energy-Saving Day, the operation of energy-checking teams and the location of examples of energy-wasting.
- Under the computerized “E-Energy Cost Reduction Management” system, semiconductor factories carry out prompt and accurate management of the energy cost reduction plan, sharing relevant information and exemplary cases with each other.

Positive participation in the government’s energy-saving measures and adoption of incentive systems
Samsung Electronics laid the groundwork for energy saving through the establishment of a 5-year plan for energy saving and investment, having a professional energy institution check waste factors.

Positive energy-saving activities, including enhancing the efficiency of production facilities
The Company does its best to reduce energy-wasting factors by enhancing the efficiency of production facilities and applying optimal operational conditions, and purchasing energy-efficient facilities. This way, the Company reduced power consumption by up to 25%. The Giheung and Suwon Factories received the Presidential Award for their exemplary part in energy saving.
Samsung Electronics is positively engaged in the conservation of resources and nature under an environment management program designed for minimization of environmental contaminants occurring in the production process. To that end, the Company carries out a thorough management of environmental contaminant sources and makes continued efforts for supplementation of recycling and contaminant treatment facilities.

Making air cleaner and fresher
Samsung Electronics exerts the utmost effort to minimize air pollutants through fundamental management of their sources and the development of Green Technologies. To this end, the Company replaced the boiler fuel with LNG and installed the network of optimal air pollution prevention facilities and automatic measurement of pollutants as well as adopted in-house standards for air pollutants emissions which are more rigorous than relevant laws.

Major Examples of Improvements

Reduction of pollutants with adoption of burn-wet scrubber
In an effort to reduce contaminants occurring in its semiconductor factories, Samsung Electronics adopted a burn-wet scrubber whose efficiency in treatment is excellent, thus succeeding in reducing the emission density to one-tenth of the previous level. In the case of stench-causing nitrogen trifluoride, the Company reduced it to the level of 1 ppm from 70 ppm. A burn-wet scrubber is a device designed to reduce emission density by decomposing combustion gas at a temperature of 1,200°C. The device goes a long way toward making the Company’s factories more pleasant workplaces and maximizing the by-line productivity.

Improvement of pollution prevention facility for incinerator
Samsung Electronics replaced the existing dust collection facility with a dry-type two-tier filtering dust collection facility for minimization of pollution at the incinerator.
Management of precious water-resources

Samsung Electronics is committed to the reduction of water used at its factories via improvement in the production process and recycling technology. The Giheung Factory, for example, succeeded in saving 55,000 tons of water per month by making semiconductor production without using water possible and enhancing the recovery rate of the treated water at the LCD production section.

Major Examples of Improvements

Establishment of T-N (Total Nitrogen) Removal

Each Samsung Electronics factory makes it a point to treat the waste/sewage water to the extent that it is clean enough for fish to live in, in addition to the installation of T-N (total nitrogen) and T-P (total phosphorus) treatment facilities. In the case of the Onyang Factory, the UMBR tank installed at the front end of the aeration tank is used as an oxygen-free tank, recovering activated sludge that passed the aeration tank to the UMBR tank to remove T-N and T-P. This way, the emission density of T-P and T-N has been improved to the level of 1 ppm (from 4 ppm) and 13 ppm (from 23 ppm), respectively. (The statutory standards are 6 ppm for T-P and 50 ppm for T-N.) The investment cost, architectural cost and operation cost have also been reduced.

Installation of Sewage Water Vacuum Channel for prevention of water pollution

Samsung Electronics’ Suwon Factory operates a vacuum-type sewage water treatment system after a two-stage work of installation of ducts in 1995 and 2001. The duct, the first of its kind in Korea, is a favorite course for inspection by environmental organizations. The sewage water vacuum channel has the advantage of preventing soil contamination caused by leakage in the duct.

System Diagram for T-N Removal Facility

Making waste a useful resource

Samsung Electronics does its best to reduce wastes and makes wastes useful resources in the entire process of business operation.

Waste management policy

- Designation of the need for saving resources and the use of environment-friendly materials in product designs.
- Application of the Green Procurement system at the time of purchasing raw materials.
- Encouragement of waste reduction through the system of reporting the waste discharger’s name.
- Activities for making waste a useful resource and supplementation of in-house treatment facilities (Recyclable wastes increased to 26 kinds from 13 kinds: synthetic resins, vinyl, etc.)
- Carrying out a campaign to reduce the waste of food.

Major Examples of Waste Reduction Activities

Operation of Recycling Center

Samsung Electronics’ semiconductor factory does its best to save expenses for raw materials through the process of making waste a useful resource, enhance the rate of reusing idle equipment, parts and furniture, in addition to contributing to environmental conservation. In 2002, the Company saved 1.66 billion won through full utilization of the Recycling Center opened in March 2001.

Model cases of waste reduction and recycling

- Saving expenses for treatment of a total of 1,244 tons of dimethylformamide waste through their recycling.
- Recycling of 48,000 tons organic/inorganic sludge a year as raw material for cement.
- Making 200 tons of dimethylformamide waste into fuel every year.
Management of Harmful Chemical Materials

In connection with diverse kinds of chemical substances used in the process of manufacturing electronic products, the use of certain substances are limited or prohibited to minimize harmful effects on humans and conserve environment. Samsung Electronics does what it can to prevent itself from using these harmful substances and develop alternate substances.

Systematic management of harmful chemical materials

Harmful chemical materials used in the production process at Samsung Electronics are thoroughly managed by a checking system from their warehousing until their scrapping. These newly warehoused cannot be used until after being checked by departments in charge of environment, safety and health. Employees handling harmful chemical materials are required to undergo a course of education. Various pollution preventive facilities are installed to guard against the chance of leakage. The materials are monitored by a round-the-clock surveillance system.

Examples of reduction in the use of harmful chemical materials

Reduction of toxic materials through the use of an improved method of washing ion exchange resins

In the past, a method of ion separation using hydrochloric acid and sodium hydroxide was used to remove foreign materials stuck to an ion exchange resin. The process required the use of toxic materials and great expenses for treatment of waste water. To solve such a problem, the method of CDI (continuous electric deionization), using the electric characteristics of the ion exchange resin (See the picture below) was adopted. This enables the Company to save 107 tons of toxic materials for washing ion exchange resins every year in addition to reduction of the use of water and the expense for treatment of wastewater.

Development of environment-friendly cleansing solution

Samsung Electronics’ Gumi Factory developed an environment-friendly cleansing solution that can replace harmful chemical materials used at the optical fiber production process. The cleansing solution is used to remove foreign materials, such as coating liquid or ink attached to the fixing devices in the coating and coloring process for optical fibers and cables. The development of the environment-friendly cleansing solution resulted in environmental improvement in the production process, improvement in working conditions and higher efficiency in the cleansing process (reduction by half of the frequency of washing the fixing devices) as well as reduction in cost.

Effects of improvement

- Reduction of exposure of the body (through manual cleansing) to harmful factors.
- Reduction of cleansing time (from 7.5 hours to half an hour) and higher efficiency in operation.

- Reduction of liquid waste: from 30 tons a year to zero.
  In the past, dimethy formamide waste remained. However, it was converted into ordinary wastewater for treatment.


Development of Environment-Friendly Technologies and Green Production Activities

Amid the EU’s promotion of laws and regulations against electro-electric products containing harmful materials starting from 2000, the focus of environmental concern is made on development of the clean production technologies and the purchase of raw materials. In response to this, Samsung Electronics does its best to secure environment-friendliness concerning its products and production process, using materials with low-toxicity where required in cooperation with subcontractors.

Examples of environment-friendly materials and production process

Samsung Electronics’ Semiconductor sector became the first business in the world to develop the etchant by integrating the low resistant wiring in the chrome wiring production process with a new environment-friendly material (through development of the Mo/Al/Me structure). Thus, the Company was able to cope with the regulation of the use of chrome-etchant in addition to enhancing product quality by means of the 6-Sigma technique using well-arranged statistics and systematic approaches.

The development of the environment-friendly new material enables the Company to save more than 10 billion won a year through reduction of the cost by half, enhanced productivity and reduction of waste materials (i.e. 70 tons of 6 chrome every year). It is expected that it will bring about tens of billions of won worth of cost reduction every year with its application to the mass production lines in 2004. The Company is applying for patents concerning its technology in the U.S., Taiwan and Japan.

Examples of waste reduction through improvement in the semiconductor production process

Under the previous CSP (chip size package) production process, a PI tape is attached to the carrier frame (as shown in “Before Improvement” in the following table) and a chip is placed on it before cutting it horizontally and vertically. This required the carrier frame to be cut (as shown in “After Improvement”), thus making it impossible to re-use it.

The work process was improved by changing the specification of the carrier frame from FR4 to SUS and separating the chip from the frame, only cutting the frame horizontally. This way, the SUS carrier frame can be re-used permanently, leaving no waste. The newly designed 70mm PI Tape can now load 144 chips, compared to the previous 48mm tape that could load 64 chips. The Company saves 10.7 billion won through reduction of the use of PI Tapes by more than half (having more than 30 tons of wastes) and through improvement of the production process.
Management of Environmental Impacts and Soil Contamination

Samsung Electronics’ Suwon Factory does its best to minimize environmental impacts from its production activities, establishing relevant programs from the stage of building factories and carrying out follow-up management through periodical analysis of relevant data. In addition, the Company is engaged in diverse activities for ecological conservation, including analysis of the water quality of streams near its factories, measurement of air quality, analysis of soil contamination and the quality of underground water.

Monitoring of underground water quality

The factory also takes periodical measurements based on items of management to examine the degree of water contamination collected underground near the facility.

- Points of check: 4 points near the factory
- Items checked: pH and negative/positive ions (10), heavy metals (6) and TOC.
- Frequency of check: once a quarter.

Examples of analysis of soil contamination

The factory carried out an analysis of heavy metal items (i.e. Pb, Cu, Cr, As, Cd, Ni and Zn), BTEX, THP, TCE, PCE as well as soil analysis for texture, CEC and pH to check the degree of contamination of the area where it is located based on 118 samples of soil and underground water collected from 28 points.

As a result, it turned out that the ratio of sand stood at 72-93%, showing a good degree of ventilation. The soil was also found to be free of acid and base and contained enough organic matter to meet the conditions of microbes’ growth. TCE, PCE and heavy metals were found to be below the accepted standards.

Transportation Management

Improvement in the Transportation System

Samsung Electronics helps reduce air pollutant emissions by making the distance of transportation as short as possible through improvement in the logistical system, in addition to the adoption of the digital map and software for optimization of transportation routes under the retail logistical distance measurement system, DTPS (delivery time promise system), TMS (transportation management system) and WMS (warehouse management system).

Adoption of LNG buses, the first attempt made by a domestic non-transportation business

Samsung Electronics became the first non-transportation business in Korea to adopt LNG buses for the employees’ commuting. An LNG bus emits 84% less hydrocarbon, 43% less nitrogen oxide, 59% less carbon dioxide and 50% less noise than a diesel-fuel bus. The Company plans to replace all of its buses with LNG-buses, starting with the Semiconductor Business.
Environmental Accounting

Samsung Electronics adopted the environmental accounting system, expanding the scope of application by stages, for more efficient management of environment-related expenses. For a year from October 2001, the Company promoted adoption of the environmental accounting system.

The Company has so far completed Phase-2 (January through September 2003) of the National Policy Measures for Environmental Accounting, making efforts to improve the accounting guidelines and participating in research on environmental effects and benefits. Currently, it is participating in Phase-3 (October 2003 through September 2004) for computerization of the environmental accounting system.

Environmental Accounting Phased Promotion Schedule

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase-1</td>
<td>Laying the groundwork and pilot application (2002)</td>
</tr>
<tr>
<td>Phase-2</td>
<td>Supplementation of the guidelines/ Fostering environmental accounting experts (2003)</td>
</tr>
<tr>
<td>Phase-3</td>
<td>Development of Environmental Accounting System (2004-2005)</td>
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</table>

Environmental Expenses

(Unit: Millions of Won)

<table>
<thead>
<tr>
<th>Cost Classification System</th>
<th>Environmental Expenses</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Gross</td>
</tr>
<tr>
<td>Contamination Prevention Activities</td>
<td>9,527</td>
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<tr>
<td>Contamination Treatment Activities</td>
<td>716</td>
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<tr>
<td>Rehabilitation and Restoration of Ecosystem</td>
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<td>Environmental Expenses</td>
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<tr>
<td>Fixed assets</td>
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<tr>
<td>Environmental Effects and Benefits</td>
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</tbody>
</table>

Environmental Communications Map

Samsung Electronics is engaged in multi-faceted activities aimed to contribute to environmental conservation and satisfy customers and other interested parties based on a policy of openness and fairness and co-existence with subcontractors.

Publication of report on Green Management

By simply clicking on the Green Management menu on Samsung Electronics’ homepage (www.sec.com), you can read the updated news and reports on the Company’s Green Management. The Company has provided both electronic documents and their hard-copy versions since 1999 in recognition of the fact that smooth communications among interested parties can play an important role in putting the environment/safety-related transparent management into practice.

Activities for restoration of ecological system and environmental conservation in cooperation with other interested parties

Samsung Electronics is engaged in diverse and positive activities for restoration of the ecological system in the nearby streams and other kinds of environmental conservation in cooperation with the residents of the local community, environmental organizations, government institutions, universities and sister schools. (See more details on p.71.)

Bolstering the win-win partnership with subcontractors

Samsung Electronics is in close cooperation with related companies, including subcontractors to form a win-win situation in environmental matters based on the philosophy of co-existence. The Company encourages them to be engaged in Green Purchasing, providing them with relevant information and technological support concerning checking and education on environment/safety-related matters, assisting them in obtaining ISO certifications, and carrying out a system of assessment designed to enhance their capability in environment/safety-related matters. The Company also plans to invest a total of one trillion won over the next five years in relevant facilities, education concerning production technologies and management techniques, operation of a support team, and the provision of financial experts for subcontractors.

Cooperation with other parties concerned at home and abroad for environment/safety-related activities

Samsung Electronics is setting examples for other businesses to follow by participating in environment/safety-related activities, such as environmental accounting, environmental performance evaluation and voluntary environmental agreements, having all its factories designated as environment-friendly workplaces.

In addition, the Company has played a leading role in the introduction of paradigms for sustainable management since its participation in KBCSD (Korea Business Council for Sustainable Development), which was established in March 2002. The Company has also carried out activities for environmental conservation and development of green production technology, including agreeing to voluntary reduce PFCs in 1999 and participation in ESH (environment-safety-health) of WSC (World Semiconductor Council) task force activities.

Environmental Communications with Interested Parties

- Local Community
- Shareholders and Investors
- Customers
- Government
- NGOs
- Media
- Employees
- Subcontractors
Samsung Electronics fully recognizes the importance of safety in business activities, regarding it as the first and foremost thing for enhancement of its employees’ quality of life. The Company does its best to keep its safety/health-related system updated in order to make its factories safe and pleasant workplaces.
Operation of Safety/Health Management System

Samsung Electronics strives to make the safest and the most comfortable workplaces, based on the management philosophy of humanity, carrying out various activities to enhance productivity under the management system participated in by both labor and management, and doing what it can to remove fundamental causes of accidents. To that end, the Company has been playing a leading role in the establishment of global standards of safety/health-related matters, such as hazard assessment, setting safety/health-related objectives, management of hazardous machinery and devices, handling of accidents and compensation related to them and provision of a proper working environment at its factories worldwide.

Enhancement of a sense of safety/health through periodical education

Samsung Electronics has its employees undergo production facility-centered educational courses [38 courses] designed to enhance their sense of safety/health. Cyber-versions of the educational courses are also provided so that employees may attend them at their convenience. There are also courses to encourage safety/health experts. Additionally, the Company operates the Environment and Safety Experience Center which is comprised of 22 corners in four sectors. The center is also open to the Company’s subcontractors, universities and other relevant organization.

Ensuring fundamental safety of facilities

Samsung Electronics makes it a rule to check matters related to gas leak-age, radioactivity, hazardous chemicals, noise and vibration of facilities to be supplied at the stage of their design to ensure their fundamental safety.
Everyday Exercises

Aiming to enhance employee health through everyday exercises

Samsung Electronics observes the ILO’s guideline for health management of employees, adopting the principle that the Company does its best for protection of the employees’ health and promoting the “Health Care 21 Project.”

Activities carried out by the Company for the employees’ enhanced health include campaigns for non-smoking (started in 2002) and developing healthy drinking/eating habits as well as utilization of the 8-item SHPI (the semiconductor health promotion indices) developed by the Company for quantitative assessment of an individual’s health (i.e. the obesity index, the drinking index, the everyday habit index, the work-related stress index, the cerebral blood vessel index, the teeth index and the health index).

Ergonomic improvement of working environment

Samsung Electronics does its best to realize ergonomic management of factories, based on the employee-centered workplace design, through enactment of the Samsung Electronics Ergonomic Standards and adoption of the Ergonomic Workplace Certification Program. The Company has garnered enhancement in productivity by 1.5 sigma through the 6-Sigma Movement.

The degree of satisfaction with the workplace felt by the employees has gone up to 70% in the same period.

In May 2002, the Company received the Ergonomic Design Award Special Prize in the sector of workplaces from the Ergonomics Society of Korea. In August 2003, it was officially registered as the safest workplace in the world with the Guinness Book of World Records.
Social Contributions

At Samsung Electronics, our basic management philosophy in the area of social contributions is based on our goal of building a welfare society centered on the spirit of co-existence. Samsung Electronics is engaged in diverse activities for both the local community and other countries throughout the world with our ultimate aim being the enhancement of the quality of life for all humankind. The idea of social contribution is regarded as a crucial ethical value to Samsung Electronics’ employees who are all committed to carrying out voluntary services for the local community.

Our Resolve for Social Contribution

- We resolve to contribute to humankind by fulfilling our role as corporate citizens who regards both humanity and morality as crucial virtues.
- We are committed to striving to help make our community more affluent and healthier by enhancing the quality of life for all people.
- We will do our best to make the global village a better place to live, by playing a leading role in environmental conservation and in exchanges with other parts of the world.
- The employees of Samsung Electronics and their families will share the pleasure of working together with other members of the community.
History of Social Contribution Activities

Employees at Samsung Electronics participate in a variety of voluntary community service activities under the slogan: “maximization of return of business profits to society”: our employees regard social contribution as a crucial part of business operation. Since 1995, the Company has been engaged in community service activities that focus on three themes: helping the handicapped, pursuing environmental conservation and assisting in the formation of an information-based society. Other services carried out by the Company include provision of support for youths, culture & arts activities and exchanges in academic circles.

In 1995, Samsung Electronics launched the Social Contribution Corps, setting up relevant organizations that help employees proactively take part in social contribution activities. At present, the secretariats in charge of social contribution activities control relevant activities carried out both in and out of the country.

Types and Areas of Social Contribution Activities

Organization and Contents of Activities

- Samsung Community Relations
- Community Service Teams
- Ali-Ho Service Teams
- Fund Contribution Teams
- Special Service Teams
- Welfare Facility Service Teams

Activities in social welfare facilities: cleaning, helping them take baths, birthday parties, communicating and helping youth do homework.
Activities that help those at home: helping the home-bound handicapped, low-income households, young household heads and senior citizens who lack a caregiver.
Special service activities: Service through hand language, house repair, haircutting, blood transfusions, etc.
Community services: helping farming households during harvests, environmental conservation, etc.

Major Social Contribution Activities

Social Welfare Activities

Establishment of Mugunghwa Electronics, exclusively for the handicapped

Samsung Electronics has run Mugunghwa Electronics since 1994. Mugunghwa Electronics, the first production facility in the country employing only the handicapped, was established to assist the seriously handicapped in self-reliance through the promotion and development of jobs tailored specifically around their needs. The affiliate has a dormitory for 100 employees that is equipped with special corridors, doors and ramps for the handicapped.

Free Computer Education

Samsung Electronics has run free computer education since 1994. The courses range from an introductory course to a more advanced application course. Since 2001, both online and offline courses have been offered to prepare people for our increasingly cyber-based society; and by 2003, a total of 2.26 million people had attended.

Operation of Blood Banks

Under the Blood Bank system, Samsung Electronics’ employees periodically (ranging from twice a month to once a quarter, as they choose) donate their blood for those suffering from leukemia, etc.

Employees’ voluntary community service activities

Since 1995, Samsung Electronics has made it a rule to designate every October as a special month for employees’ voluntary community service activities. The practice is intended to encourage employees to be more proactively engaged in such activities as community members. At present, there are more than 300 voluntary community service teams engaged in activities for the handicapped, youths, senior citizens and other less privileged people.

Providing lunch for under-privileged children

Samsung Electronics’ employees (in cooperation with other relevant institutions) play a central role in helping local residents improve their living conditions; in fact, their activities have become examples for others to follow. In the post-financial crisis days, the Company’s employees in Suwon, Gihung, Gumi, Oyang and Cheonan have cooperated with other voluntary worker organizations to provide lunch for children from low-income households. The Gihung Factory employees received the Presidential Citation for their part in the campaign to provide lunch for underprivileged children in cooperation with the Saemaul Council of Yongin-city.

Employees’ families engaged in community service

Samsung Electronics has encouraged the family members of its employees, particularly students on vacation, to form teams to participate in various voluntary community service programs. These firsthand experiences are valuable in molding the volunteers into active, caring members of their communities.

History of Social Contribution Activities

Major Social Contribution Activities
Social Contribution Activities through Promotion of Sports

Samsung Electronics Equestrian Team contributes though a rehabilitation horseback riding program

Samsung Electronics has done its best to enhance the prestige of Korea in the international community by fostering horsemen/women through its Equestrian Team. The Company also tries to do its part as a member of the community by providing the handicapped with opportunities to learn to ride horses as part of a rehabilitation horseback riding program.

In 2003, the Company offered free sessions to teach 23 handicapped children how to ride horses, (i.e. 10-week courses and 6-month courses on 6 occasions). These sessions improved their body motions by an average of 9%, and one child, who was suffering from tactile hypersensitivity, showed much improvement in symptoms. Samsung Medical Center’s Department of Physical Medicine and Rehabilitation is preparing a thesis based on these encouraging results to be presented to the FRDI’s (the Federation of Riding for the Disabled International) meeting and for other relevant academic circles.

In 2002, a total of 404 employees participated as volunteer workers in horseback riding events that were provided for 36 handicapped people on three occasions; they also assisted in relevant explanatory sessions and in the distribution of rehabilitation horseback riding programs to four equestrian clubs.

Cultural & Academic Activities

The Chorok Nursery Rhyme Contest

The 18th annual Chorok Nursery Rhyme Contest was held at KBS Hall on May 31, 2003. Samsung Electronics along with the YMCA have made efforts to distribute nursery rhymes to more people, children and adults alike, to encourage children to nourish their dreams and to allow adults to revisit their childhood memories.

The festival has come a long way toward fostering the environment for nursery rhymes to be loved by all, both at home and at school.

Since 2001, the contest has stood as an event that nourishes sound family ties and is fun for all family members. Samsung Electronics will continue to pour efforts into developing the event.

National Students’ Creativity Olympiad

Samsung Electronics has sponsored the National Students’ Creativity Olympiad since 1987. The annual event provides a solid base that fosters talented, creative youths. Participating teams consist of 5 to 7 students (from elementary school pupils to junior/senior high school students), who have passed a preliminary test at Samsung Electronics’ homepage (www.sec.com). The students choose one of the five subjects including sophisticated transportation technology, exploration of foreign cultures, escape from crisis and a space exploration rocket, and the winner of the event is given an opportunity to participate in the annual world DINI contest held in the U.S.

Students’ Olympiad for Scientific Exploration

Samsung Electronics has sponsored the Students’ Olympiad for Scientific Exploration since 1993 in an effort to help junior/senior high school students develop a stronger interest in science and build their curiosity for exploration. The contest is divided into the following categories: Natural Environment Exploration, Scientific Exploration and Experiment, Scientific Exploration for Fun and Young Scientists’ Festival. Prize winners are endowed with scholarships. In 2003, the contest was carried out at Haneul Plaza at Olympic Park in Seoul for two days from October 18. The first/second-place prize winners were given an opportunity to experience scientific exploration activities held by students in Japan.
International Exchanges

**Formation of fund for UNESCO-sponsored international exchanges**

Samsung Electronics contributed 600 million won to UNESCO Korea on October 31, 2000 to help form an education fund for underprivileged children all over the world, including those in North Korea.

The Samsung-UNESCO International Educational Fund amounts to one billion won, including the 400 million won collected by UNESCO and the International Red Cross. It will be spent to help underprivileged children aged 6 to 12, from underdeveloped or developing countries, buy stationery and educational materials.

In 2002, Samsung Electronics provided support for educational materials for underprivileged people in 11 countries, including papers used to make English textbooks, and also assisted in the publication of manuals for training teachers of young children and parents in Vietnam and Korea, through the UNESCO Headquarters Trust Fund. These activities have contributed to the nation’s international cooperation and have bolstered ties with the UN organization. In 2003, the Company provided support for educational materials and programs in 20-plus countries.

**Samsung-Vietnam Academic Exchanges**

Under the “Samsung-Vietnam Academic Exchanges” project that began in 1995, Samsung Electronics has provided scholarship funds, invited next-generation leaders of Vietnam and sponsored academic meetings, in addition to contributing one million dollars in funding for the project to the Korea Foundation in November 1995.

The scholarship fund provided by Samsung Electronics is granted to a total of 100 students (i.e. 10 students majoring in Koreanology, electric or electronic engineering in each of 10 universities). The next-generation leaders (those aged 18-45) visiting Korea are selected every August by the advisory committee on the Vietnamese side; these students are then provided with the opportunity to learn about Korean history, society and culture.

**Commencement of the “Samsung-Vietnam Academic Exchanges” Project**

![Commencement of the “Samsung-Vietnam Academic Exchanges” Project](image)

**Support for Crufts Dog Show**

Samsung Electronics has acted as a leading sponsor for the Crufts Dog Show, providing technical support, including 2 hundred million won worth of video & communications system equipment each year. The annual event is the largest international event of its kind held at the NEC (National Exhibition Center) in Birmingham, the U.K. Held in early March, winners are selected for each breed, and the BIS (Best in Show) is also awarded.

Samsung Electronics registered the Jindo dog of Korea with the Kennel Club of the U.K. and displayed the Jindo at its pavilion at the Crufts Dog Show, thus introducing the world to one of Korea’s most impressive breeds of dog. This was spoken of highly as an important act of social contribution.

During the Crufts Dog Show in 2003, the Company ran a booth displaying the slogan: “Samsung, Best Friend in Community.” The booth engaged in positive PR about the Company’s activities in relation to the protection of animals, including dogs, and also displayed the Company’s hi-tech products.

**Engaged in “Korea-China Green Great Wall” project**

In April 2003, Samsung Electronics participated in the aforementioned activities in China as part of an effort to prevent sand originating from the desert areas in China from affecting the Korean Peninsula; it also served as an opportunity to build a solid friendship with the Chinese. The Company provided support for the “Korea-China Future Forest Formation” event hosted by the Korea-China Youths Future Forest Center and sponsored by the Capital City Spiritual Civilization Coordination Council of the Beijing City Government.

**Providing relief aids to earthquake-stricken Algeria**

In August 2003, Samsung Electronics provided a total of $600,000 to 15 youth institutions in 8 countries: India, Malaysia, the Philippines, Singapore, Thailand, Vietnam, Indonesia and Australia, through a program called “Samsung DigitAll Hope”. The program is designed to narrow the gap between those who have access to technology and those who do not by providing an information-related educational environment through which the young can experience digital technology.

In addition, the Company provided 200 TV sets to government offices and schools where the victims set up temporary residence to help them receive relevant information more conveniently, thus enhancing its image as a business that cares about its community, especially in times of crisis.

The Company also dispatched a service team to Algeria for free repair of household appliances that were damaged as a result of the earthquake.
In step with activities carried out by Seoul headquarters, Samsung Electronics’ local corporations are also participating in community services, as part of the Company’s efforts to maintain partnerships with the local community through co-prosperity.

**SAS (Samsung Austin Semiconductor) - Rosedale Ride**

SAS (Samsung Electronics’ local corporation in Austin, Texas) is engaged in diverse activities for the local community. Rosedale Ride, for which Samsung Electronics has provided support, is a large-scale fund-raising campaign launched by 50 cyclists in 1995 to benefit the Rosedale School, Austin Independent School District’s only school for children with multiple disabilities.

The event continues to grow larger in the number of participants (more than 1,200 people participated in 2002). SAS has sponsored the event since 1999. The funds raised are used to help the school purchase computers.

**Local corporation in Vietnam holds “love-thy-neighbor” events**

SAVNA, Samsung Electronics’ local production corporation in Vietnam, has carried out various community service activities since 1999. In 2002, the local corporation ran a total of 13 community service programs, including provision of scholarships and educational materials for students, financial support for underprivileged youths and senior citizens, and providing courses that teach computer skills.

It also holds a “love-thy-neighbor running festival” twice a year. The event in June 2002 was held to help children suffering from defoliants used during the Vietnam War. The event in November 2002, held in Ho Chi Minh City to raise funds for the flood-victims near the Mekong River, attracted a record breaking 24,000 participants, including 1,200 Duc Tri Elementary School pupils.

**Local Corporation in Mexico**

Samsung Electronics’ local production corporation in Mexico, SAMEX, has consistently engaged in voluntary community service activities (on average: once every two months since April 1996) under the Company’s slogan: “Co-prosperity with Local Community”.

The local corporation’s voluntary activities, such as cleaning the public places of Tijuana and provision of support for schools, orphanages and institutions for the elderly, set an example for other businesses in Machiladora (the bonded area of foreign business-owned production facilities) to follow.

The Company’s community activities were a first for any company in Tijuana, and were discussed in El Mexicano, a leading Tijuana newspaper.
Environmental conservation activities carried out as part of social contribution efforts

Samsung Electronics has led the campaign for greening the community through various events, such as establishing cooperative relationships with sister schools and with local residents in environmental conservation activities, providing opportunities for youths to have first-hand experience of environmental matters, using its influence to encourage other businesses to join in efforts to keep mountains and streams clean, and carrying out Green events on World Environment Day.

Session for youths’ first-hand experience of environmental matters
Samsung Electronics, jointly with Green Family Green Scouts, has provided programs designed to help children appreciate the importance of the environment since 2001. The two-day program consists of a classroom session on the first day, and visits to a tidal land in Ganghwa Island and to Cheeluwon to feed birds on the second day.

Cooperation with sister schools in environmental conservation activities
Samsung Electronics has cooperated with local schools to set up sisterhood relationships with an aim to share in activities that highlight the importance of the environment, fire prevention and traffic safety. The activities include an essay-writing contest on environmental conservation, collection of relevant slogans and posters, exhibitions of exemplary cases of recycling, provision of scholarships for model students in environment-related matters, an environment/traffic safety-related quiz contest, first-hand experience of ecological matters, and etc.

Environmental conservation activities carried out in cooperation with sister schools

Activities for protection of migratory birds
An area of marshland in Hapyeong-ri on the estuary of the Nakdong River, well known worldwide as a gathering place for migratory birds, has been designated as a bird protection area. Migratory birds, including thousands of wild geese and wild ducks, arrive here in around mid-October and leave in the following spring. This is also a favorite place for ducks, herons, egrets, magpies and pigeons. World environmental organizations pay close attention to the white-naped cranes (National Treasure No.203 in Korea) and hooded cranes (No.228) that have come to visit here since the fall of 2000.

Samsung Electronics has led events to feed the migratory birds and clean the area (i.e. removing chemical bottles and plastic wastes) in cooperation with sister schools, the Ministry of Environment, Gumi-City Government and NGOs. The events serve as occasions to have pupils of the sister elementary schools recognize the importance of environmental protection.

“Keep your streams clean” campaigns
A small number of Samsung Electronics employees gathered together on weekends to pick up garbage thrown on the banks of the Woncheon Stream in Suwon. That small-scale activity led to a company-wide community-greening campaign. Eventually, 100-plus employees of Samsung Electronics and other affiliates in the same complex (i.e. Samsung Electro Mechanics, Samsung SDI and Samsung Corning) composed a volunteer service corps in an effort to improve the water quality of the stream.

Seeing the employees voluntarily participating in such an activity, the Company’s management decided to provide support by launching a research project for rehabilitation of the stream’s ecological system with an aim at improving water quality. In September 1995 Samsung Electronics, in partnership with the Environmental Research Institute of Ajou University and the Institute for Green Environment of the Suwon Center for Environmental Movement, conducted a survey of the natural surroundings near the stream as part of the first round of research; the parties checked the degree of contamination by region and the sources of contaminants. In the second round of research carried out in December 1996, the parties checked the ecological system surrounding the stream, made suggestions on how to cope with the contaminated water quality of the Sindae Reservoir and the Woncheon Reservoir located in the upstream, and began research on the impact of the contaminants from the reservoirs on the Woncheon Stream.

In November 2001, a network to “Save the Woncheon Stream” was established with local residents, members of the Suwon Center for Environmental Movement, public officials of Suwon City and four Samsung affiliates. Three rounds of research projects were carried out until 2003.

In joint efforts for improvement of the stream’s water quality, Suwon City began overhauling relevant intercepting sewers, while local residents formed the citizens’ council to keep close watch on the stream, taking various steps for purification of the water.

Samsung Electronics did its part through various activities including those to purify the area near its complex (within a 1km radius), as well as providing a round-the-clock watch on the status of the water quality via CCTVs, checking the intercepting sewer into which household sewage flows, and planting reeds.

In the past, the Woncheon Stream dried up and produced unpleasant odors due to the water staying still during the dry season. In order to solve the problem of water pollution, Samsung Electronics, joint with Suwon City, carried out construction work to divert the treated waste water (3,000 tons a day) from its factory to the upstream, thus keeping the stream flowing at all times; spent 300 million won for the work.

In step with similar efforts on the part of private organizations, Suwon City formed an ecological friendly park called Monaw Park beside the Woncheon Stream. A greater number of birds came to visit the area thanks to the improved water quality, and many local residents enjoy jogging along the stream. Presently, the stream serves as a good resting place for local residents, where children gather together to play in the water.

Social Contributions

<table>
<thead>
<tr>
<th>Environment-related event</th>
<th>First-hand learning about the environment</th>
<th>Environmental study in cooperation with sister schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden Bell Quiz Contest related to environment and traffic safety</td>
<td>A visit to ecological parks</td>
<td>Educational session on traffic safety</td>
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<tr>
<td>Environment-related experiments</td>
<td>A visit to the gathering places of migratory birds</td>
<td>A visit to the traffic safety museum</td>
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<tr>
<td>Environment-related Golden Bell Quiz contest among two-person teams</td>
<td>A visit to tidal lands on the West Coast</td>
<td>Participation in a traffic safety session</td>
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<tr>
<td>First-hand fire-fighting experience</td>
<td>A session at a fire-fighters’ school</td>
<td>A visit to an “environmental conservation and traffic safety” house</td>
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</tbody>
</table>

First-hand learning about the environment
- A visit to ecological parks
- A visit to the gathering places of migratory birds
- A visit to tidal lands on the West Coast

First-hand learning activities

A Samsung Electronics employee faces a bird nest as part of an environmental conservation campaign.

The ceremony for the completion of the “Save the Woncheon Stream” citizens’ network

The congratulations ceremony for the completion of work for diverting treated waste water to the Woncheon Stream

The Woncheon Stream is now a good resting place for Suwon citizens

Operation of Green Management Activities for Environment-friendly products Environmental Improvement Activities Safety/Health-Related Activities Social Contributions
The Company that places priority on customers, shareholders and the safety of products

The top management at Samsung Electronics sincerely recognizes the importance of the corporate governance structure and strives to keep abreast of global standards in its everyday operations. The Company aims to be identified as a business that puts priority on shareholder value, reflecting this goal in efforts to improve its corporate governance structure: particularly the Company’s management guidelines and criteria for judging of employee performance.

Samsung Electronics launched a team exclusively in charge of IR-related matters in an effort to enhance management transparency and satisfy shareholders’ right to know. It also went a long way in making brisk interactive communication between management and employees, as well as making it a rule to disclose performance results for each quarter; it has also made webcasting a routine procedure.

In 2001, Samsung Electronics announced its code of ethics, making clear its desire for ethical management. As a result of such efforts, in March 2001 the Company received a prize as a model business in improved corporate governance from ISS of the U.S., an authority in the sector of corporate governance, and in November 2002 was awarded four prizes at the Asia Awards 2002 hosted by IR Magazine: Best Communication of Shareholder Value, Best Roadshow, Best Investor Relations by an Asian Company in International Markets, and Best IR by a Korean Company.

Samsung Electronics puts top priority on stability in quality at the product development stage to ensure customer satisfaction. Under its system of certification of customer satisfaction, the Company makes it a rule that no new product can be developed without passing an 18-item process that includes tests for compatibility, usefulness and parts reliability, as well as thorough safety checks.

Such a rigorous process of quality control and our thorough after-sales service system has enabled Samsung Electronics to grow as a world-class business. At home, 7,000-plus qualified service technicians are providing prompt first-rate service through a network of 700 service points controlled by 100 service centers. The Company strives to provide differentiated after-sales service, adopting the Home Doctor, the Voluntary Service, the One More Service and Cyber Service systems. As a result, it became the first business in Korea to obtain the excellent after-service certification in 1977. As well, a total of 8,500 businesses assume the role of providing after-sales service for the Company’s products overseas.

The Green-Friendliness Prize

In September 2003, Samsung Electronics Suwon Factory received the Green-Friendliness Prize on the Day of River for its part in efforts to restore the ecological system in the Woncheon Stream. It has so far spearheaded several research projects to improve the water quality of the stream, formed the “Save-the-Woncheon Stream” citizens’ network, and promoted the work required to supply clean water to the stream (jointly with Suwon City).
Working toward a welfare society for all and sustainable development

The Samsung Electronics Volunteer Service Corps has been engaged in various voluntary activities under the slogan: “You Have a Better Future,” including providing support for welfare facilities, providing meals for children from low-income households, helping young people who head their households, assisting the elderly who lack caregivers, and helping children who suffer from pediatric cancer, designating each October (since 1995) as the Month for Community Service. The Company’s local corporations are also engaged in several impressive social contribution activities, such as provision of support to underprivileged households and operations for the removal of landmines in Southeast Asian countries.

Samsung Electronics aims to lead the digital convergence revolution with management that takes economic, environmental and social factors into consideration, and recognizes the importance of sustainable development. The Company will also strive to put a win-win strategy in place in cooperation with sub-suppliers and subcontractors, and adopt policies that satisfy various interests and help establish a welfare society for all, where economic and environmental considerations play an equal role in decision making. The Company set up a five-year, one-trillion won plan for its sub-suppliers and subcontractors based on the spirit of co-existence and sharing, providing assistance in facility investment, and in educating them on the latest manufacturing technologies and management techniques, as well as making provisions for financial experts and the training of professional managers.
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Samsung Electronics Co., Ltd.</th>
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<tbody>
<tr>
<td>Location of Headquarters</td>
<td>416, Maetan 3-dong, Yeongtong-gu, Suwon-si, Gyeongi-do, Korea</td>
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<td>Establishment</td>
<td>January 13, 1969</td>
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<tr>
<td>Representative</td>
<td>Yun Jong-yong, CEO &amp; Vice Chairman</td>
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<td>Capital Amount</td>
<td>881.7 billion won</td>
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<td>Sales</td>
<td>43 trillion 580 billion won</td>
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<td>Number of Employees</td>
<td>81,000 (58,000 in Korea/23,000 overseas)</td>
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<td>Line of Business</td>
<td>Production, sales and after-sales service of Digital Media, Telecommunication, Semiconductor, LCD and Digital Appliances</td>
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