



LG Electronics

2011 Environmental Report



This report contains some “forward-looking statements” - that is, statements related to future, not past events. In this context, forward-looking statements often address our expected future business performance and intentions, and often contain words such as “expect”, “anticipate”, “intent”, “plan”, “believe”, “seek”, “see”, or “will”. Forward-looking statements by their nature address matters that are, to different degrees, uncertain. These uncertainties may cause our actual future results to be materially different from those expressed in our forward-looking statement in this report.



C O N T E N T S

03_2011 Highlights

04_Environmental Report Overview

05_Corporate Profile

06_CEO Message

CTO Message

08_Green Management

Green Strategy

Green Management System

Green Management Activities

15_Greenhouse Gas Reduction

Low Carbon Green Management Strategy

Greenhouse Gas Emission Management

20_Green Business

Photovoltaics Solution

Lighting

Water Treatment

Smart Grid

23_Greener Products and Technologies

Greener Products

Green Technologies

38_Green Partnership

Green Program Plus

Green Partnership Activities

41_Recycling Resources

Using Renewable Resources

e-Waste Take-Back

44_Appendix

Green Performance Data

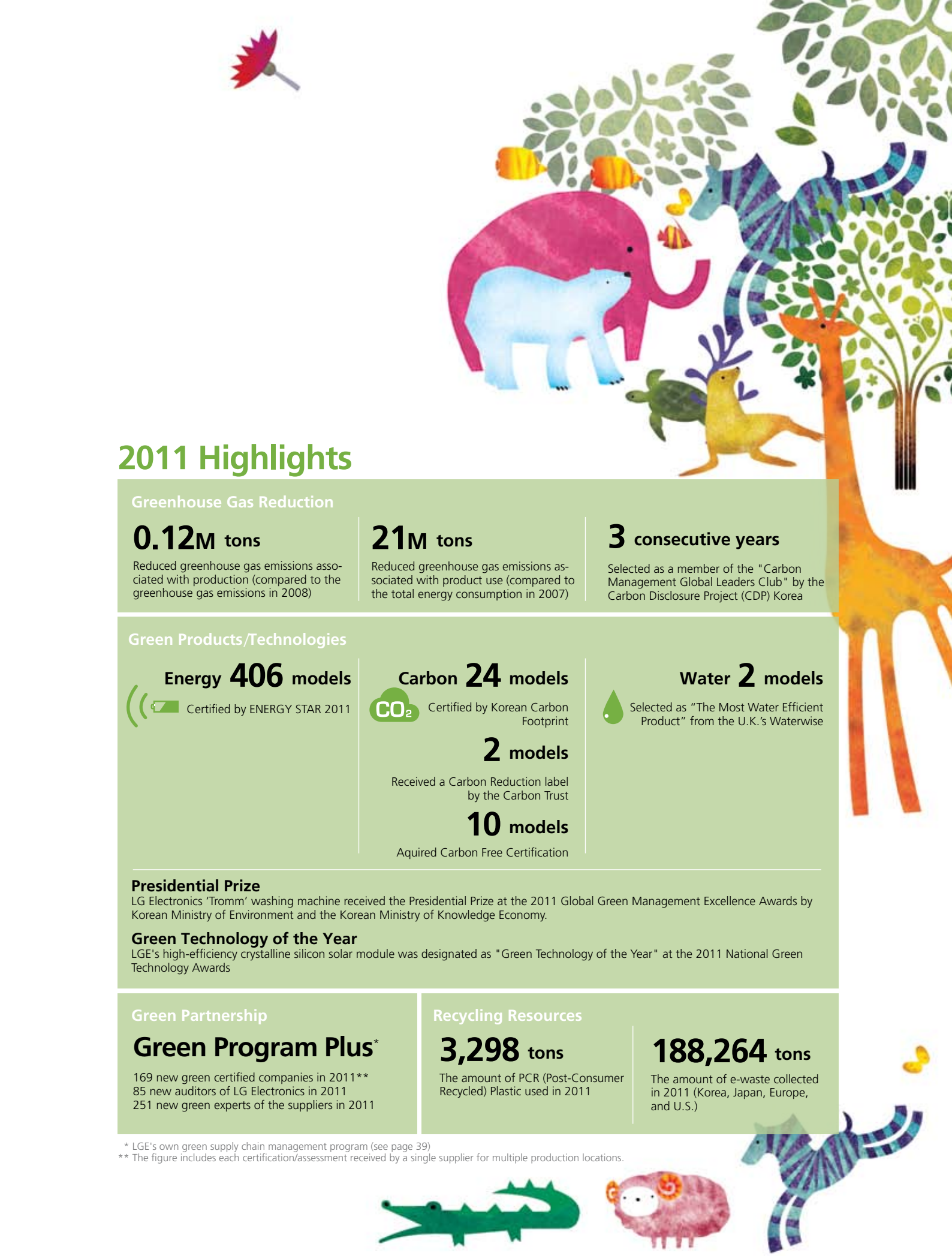
GRI Index

Independent Assurance Statement

Review from Advisor

LGE Green Management History





2011 Highlights

Greenhouse Gas Reduction

0.12M tons

Reduced greenhouse gas emissions associated with production (compared to the greenhouse gas emissions in 2008)

21M tons

Reduced greenhouse gas emissions associated with product use (compared to the total energy consumption in 2007)

3 consecutive years

Selected as a member of the "Carbon Management Global Leaders Club" by the Carbon Disclosure Project (CDP) Korea

Green Products/Technologies

Energy 406 models
Certified by ENERGY STAR 2011

Carbon 24 models
CO₂ Certified by Korean Carbon Footprint

Water 2 models
Selected as "The Most Water Efficient Product" from the U.K.'s Waterwise

2 models
Received a Carbon Reduction label by the Carbon Trust

10 models
Acquired Carbon Free Certification

Presidential Prize

LG Electronics 'Tromm' washing machine received the Presidential Prize at the 2011 Global Green Management Excellence Awards by Korean Ministry of Environment and the Korean Ministry of Knowledge Economy.

Green Technology of the Year

LGE's high-efficiency crystalline silicon solar module was designated as "Green Technology of the Year" at the 2011 National Green Technology Awards

Green Partnership

Green Program Plus*

169 new green certified companies in 2011**
85 new auditors of LG Electronics in 2011
251 new green experts of the suppliers in 2011

Recycling Resources

3,298 tons

The amount of PCR (Post-Consumer Recycled) Plastic used in 2011

188,264 tons

The amount of e-waste collected in 2011 (Korea, Japan, Europe, and U.S.)

* LGE's own green supply chain management program (see page 39)

** The figure includes each certification/assessment received by a single supplier for multiple production locations.

Environmental Report Overview

This report has been published by LG Electronics. The aim of this publication is to promote open and active communication with stakeholders about LGE's green management performance and efforts to improve sustainability. This report has also been validated independently by a third-party agency: Two Tomorrows. Environmental Report will continue to be published as part of our ongoing efforts to promote green management and contribute to environmental protection initiatives.

Period	This report is based on data from January 1, 2011 to December 31, 2011.
Scope	The scope of this report includes both foreign and domestic (Korean) information. We are working to establish a world-wide environmental data management system to assist in information gathering.
Publication	This is LG Electronics' Environmental Report, published in July 2012. This report can be found on our website at http://www.lg.com/global .
Audience	This report targets LG Electronics' stakeholders with an interest in the company's environmental performance.
References	Environmental report guidelines from the Korean Ministry of Environment, the GRI(Global Reporting Initiative) Sustainability Reporting Guidelines Version 3.1, and FTC(Federal Trade Commission) Complying with the Environmental Marketing Guide Part 260 were used as reference material.
Contact	If you have any questions or feedback about this report, please contact us at the following: Green Strategy Department, 38 Baumoe-ro, Seocho-gu, Seoul, Korea, 137-724 Tel: 82-2-526-4123 E-mail: livegreen@lge.com For more information, visit LGE's website at www.lg.com/global



Corporate Profile

As of December 31, 2011
(): Change in figures compared with the previous year
Unit: KRW billion

Organization Name	LG Electronics, Inc.	Total Assets (Consolidated)	32,658.5 (+340)
Location of Headquarters	LG Twin Towers, 128 Yeoui-daero, Yeongdeungpo-gu, Seoul, 150-721, Korea	Total Liabilities (Consolidated)	19,510.2 (+51.3)
Industry	Manufacturing	Sales Parent	28,097.1 (-1,141.4) (Domestic 8,174.7/Overseas 19,922.4)
Main Products	TV, Home Theater System, BluRay Player, Mobile Handset, Laptop Computer, Refrigerator, Washing Machine, Cooking Appliance, Built-in System Kitchenware, Vacuum Cleaner, Health Care Appliance, Air Conditioner, Monitor, Security System, Commercial Display, etc.	Sales Parent (loss)	54,256.6 (-1,497.2)
		Operating Profits Consolidated	(299.2) (+805.5)
		Operating Profits Consolidated	280.3 (+103.8)
CEO	Bon Joon Koo	Credit Rating	AA (Domestic), Baa2 (Moody's), BBB- (S&P)
Date of Establishment	October 1, 1958	No. of Shareholders	199,094
No. of Employees	91,045 (+467) [Korea: 35,286/Overseas: 55,759]	No. of Shares	180,833,806

Home Entertainment



- TV
- Monitor
- Home Theater System
- Projector
- Commercial Display
- Security System

Mobile Communication



- Mobile
- Handset
- Smartphone
- etbook
- Tablet PC
- Network Infotainment

Home Appliance



- Refrigerator
- Washing Machine
- Kitchen Appliance
- Vacuum Cleaner
- Water Solutions
- Healthcare Appliance

Air Conditioning & Energy Solution



- Commercial Air Conditioner
- Human care Conditioner
- Multi'V
- Solar Energy Solution
- Lighting
- Network Solution
- V-Net



CEO Message



Dear Stakeholders,

Our global community is showing increased interest in environmental issues, especially those associated with climate change. As a result, the roles and responsibilities of corporations to ensure environmentally sound and sustainable development are becoming increasingly important.

For quite some time, LG Electronics has consistently strived to fulfill such corporate responsibilities, and enrich both the environment and the lives of people. Since we announced our environmental policy, 'Cleaner Environment' in 1994, our company has endeavored to expand its green management, which takes the environment into consideration throughout the entire course of corporate activities - from the product development phase to packaging and product disposal.

To actively respond to global environmental issues such as climate change, we have established a department with exclusive responsibility for such duties, and are expanding investments in a sustainable fashion to reduce greenhouse gas emissions at LG Electronics' worldwide business sites. Additionally, we are increasing investment in businesses to develop highly efficient solar modules, water treatment technology, and products with enhanced energy efficiency.

Also, in 2010 LG Group (including LG Electronics) confirmed its support for 'Green 2020', a strategic roadmap which contains provisions for LG to take off as a 'Greenovation Company' by implementing the following goals:

First, LG will work toward reducing 40% of greenhouse gas emissions in our workplaces by the year of 2020 (compared to 2009), while consuming 30% less water. Second, through expanding greener products, LG plans to reduce 30 million tons of greenhouse gas emissions (cumulated amount: 200 million tons) from using our products. Third, LG aims to strengthen green business and gain 15% of its sales by this business sector.

LG Electronics will continue to provide value to customers so that they can lead affluent lives in a healthier and cleaner environment through 'Greenovation'. Finally, allow me to conclude this message by soliciting ongoing encouragement and wise counsel from our highly esteemed stakeholders. Your role in our success is always appreciated.



June, 2012

Bon Joon Koo

CEO and Vice Chairman of LG Electronics

A handwritten signature of Bon Joon Koo in black ink.



CTO Message

LG Electronics' green management not only involves environmental protection, it encompasses corporate environmental responsibilities and leadership. As such, through its sustainable R&D activities, LG Electronics strives to launch green products that fully satisfy the interests and demands of its customers. In 2011, our company's major products received the US Environmental Protection Agency's (EPA) coveted '2011 Energy Star Most Efficient' certification, which is given only to products with outstanding energy efficiency. LG Electronics has been recognized for its product and technological excellence in various environmental sectors, as exhibited by the selection of our Green Smart Store Energy Saving System as 'Prime Minister's Award' at the 2012 Energy Winner Awards.

Our company is also expanding efforts to reduce greenhouse gas emissions throughout the entire scope of its business activities, ranging from manufacturing and improved product energy efficiency to operations and logistics. In recognition of this commitment, LG Electronics was selected for three consecutive years (2009-2011) by the Carbon Disclosure Project Korea as a member of Carbon Management Global Leaders Club.

Additionally, LG Electronics is accelerating efforts to identify green businesses in preparation for the next generation of growth engines. Based on its accumulated capabilities in green technology, LG Electronics is expanding business by entering into the solar module, LED lighting, HVAC and water treatment businesses. As for the water treatment business, LG Electronics has pledged to invest total KRW 500 billion for the next 10 years, to nurture the company as a water solution provider capable of water treatment plant construction, equipment manufacturing, and operation. Also with a focus on smart home appliances, LG Electronics is identifying sustainable future green business opportunities, and is expanding investment to develop technologies that can be applied to real lifestyles, to include active participation in business to verify smart grids, both domestically and overseas.

To create a healthier business ecosystem, LG Electronics is also collaborating with suppliers to promote green growth. Through a green partnership program with suppliers called 'Green Program Plus', our company is actively counteracting regulations governing hazardous substances sourced from suppliers, and is requesting strict managerial oversight of greenhouse gas emissions created at a production level. To this end, LG Electronics is expanding training and support so that our suppliers can effectively manage greenhouse gas emissions.

Lastly, LG Electronics is expanding efforts to conserve resources. From the product development stage, we are designing products with using more recyclable materials, and are managing a take-back system for e-waste which complies with pertinent regulations of each nation.

In the future, LG Electronics promises to reduce the impact of its activities on the environment, and to grow into a sustainable corporation that creates new value for customers through the expansion of greener products, and the strengthening of green business. Thank you.



June, 2012

Skott Ahn

CTO and President of LG Electronics



01

Green Management

Green Strategy

- Green Vision
- Green Management Strategy

Green Management System

- The Green Management Structure and Decision-Making System
- Green Product Management System (GPMS)

Green Management Activities

- Environmental Education
- Exhibitions



1.Green Strategy

Green Vision

LG Electronics' Green Vision

LGE's green vision is to provide values that enhance the quality of life for its consumers and create a healthier and cleaner environment. Greenovation is a word that combines Green and Innovation, implying that LGE's green management efforts are to achieve the goals set by its green vision. LGE's green management activities include: the reduction of greenhouse gas emissions throughout the entire product lifecycle, the "Green Program Plus" which promotes shared growth with its suppliers and green businesses to create a future growth engine. These activities are based on LGE's core values of green and innovation which are represented by the "Greenovation". LGE is committed to creating innovative values that contribute to environmental protection through Greenovation activities.

Green Management Strategy

LG Group's Green 2020

In April 2010, LG Group announced the launch of its green management strategy, "Green 2020", to focus its capabilities on sustainable management for green growth while taking a proactive response to climate change. "Green 2020" is a three-pronged strategy which is: (1) creating a green workplace, (2) expanding greener products and (3) strengthening green businesses. LG plans to invest KRW 10 trillion each in R&D for new green products and businesses and also in facilities for green manufacturing processes and equipment. Based on these goals, LG Electronics adopted 5 major strategic directions.

Green Management Strategic Direction



1. Responding Proactively to Climate Change

LGE is engaging proactively to respond for climate change, having set a greenhouse gas reduction goal and established its management system accordingly.

2. Strengthening Green Energy Business

LGE is actively securing and developing future potential growth areas such as energy business, water treatment business and new environmental business.

3. Enhancing Green Product Development

LGE is expanding its production of highly energy-efficient products; replacing hazardous substances used in its products with developing green technology.

4. Promoting Green and Shared Growth

LGE conducts an environmental performance evaluation for its suppliers and supports them in establishing a green management system to promote green and shared growth.

5. Facilitating Resource Recycling

LGE is establishing solid recycling/processing systems to reuse e-waste as a manufacturing resource and actively work towards improving resource recycling technology.

Under these five strategies, LGE will continue to carry out its "Greenovation" activities.



2.Green Management System

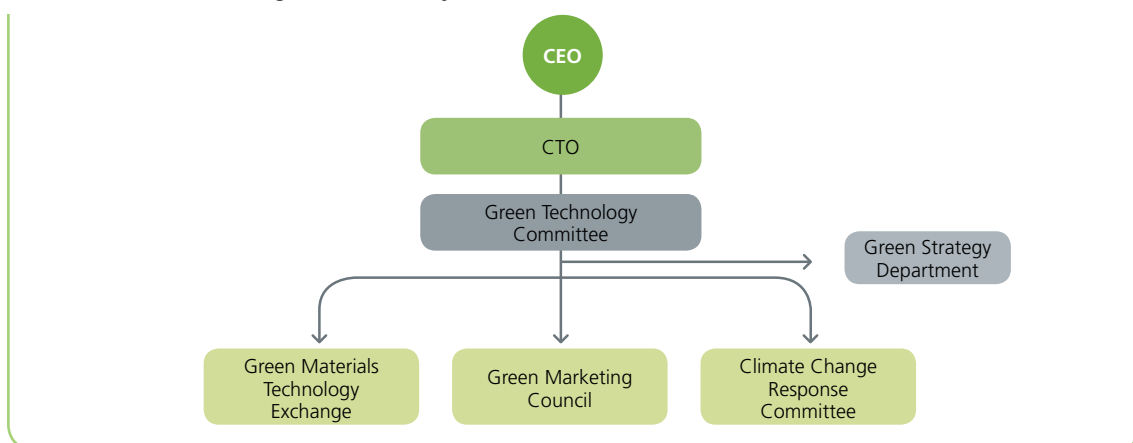
The Green Management Structure and Decision-Making System

Green Technology Committee

LGE's green management decision-making body, the "Eco-Design Committee," changed its name into "Green Technology Committee" in 2011. The Green Technology Committee makes decisions concerning LGE's green management strategy. It consists of a Chief Technology Officer (CTO) as the head and executive officers, including a research director. The committee holds bi-annual meetings as before.

While the Eco-Design Committee used to focus more on response to environmental regulations, the Green Technology Committee aims to create operational initiatives for development of green technologies and products. The committee is charged with establishing plans to develop advanced green technologies and making necessary decisions to implement them. Some of the major topics it deals with include development and replacement of hazardous substances technology, recycled plastic technology etc. Discussions and LGE's green management performance are regularly reported to LG Group.

LG Electronics Green Management Assembly



Green Marketing Council

The Green Marketing Council, under the Green Technology Committee, consists of working-level staff from Global Marketing Office, the CSR team and Corporate Design Center, as well as the marketing managers from each business unit. It also holds bi-annual meetings. The council is designed to share information and facilitate discussions between departments to establish company-wide green marketing strategies and efficient action plans.

Climate Change Response Committee

The Climate Change Response Committee was held its first bi-annual meeting in 2011. Team leaders and working-level staff from each business unit participate in the meeting to examine LG Electronics' current and emerging issues relevant to climate change and energy.

Green Product Management System (GPMS)

LGE operates the Green Product Management System (GPMS) to manage environmental information¹ on products and any environmental risks associated with its products and domestic/overseas business sites.

Hazardous Substance Management System(HSMS)

Through the Hazardous Substance Management System (HSMS) under the GPMS, LGE adds and manages hazardous substance information used in LGE products, ensures compliance with global environmental regulations (RoHS, REACH, PPW, etc.), and voluntarily monitors hazardous substances. It also runs an online Q&A system to help its suppliers comply with the regulations.

Corporate Carbon Management System (CCMS)

LGE uses the Corporate Carbon Management System (CCMS) to analyze and assess GHG emissions and energy use of its domestic/overseas business sites. LGE plans to create GHG reduction targets and manage the results via the system so that they can be used for improvement.

Also, it measures and manages GHG emissions produced throughout the product lifecycle to calculate the Product Carbon Footprint (PCF) and acquire carbon labels.

Eco Declaration

LGE has set up the Eco-Declaration IT system to provide consumers with environmental information on its products. Environmental information currently based on mobile devices is available on LGE's website:

 <http://www.lg.com/global/sustainability/environment/greener-products/environmental-label.jsp>

(Eco-Declaration is on the bottom of the web page.)



¹) Product specifications, energy consumption, recyclability, compliance, eco-friendly certification and label information



3.Green Management Activities

Environmental Education

Climate Change Education

LGE's online climate change education is designed to heighten employee awareness of climate change issues. First started in 2009, it has been gradually expanded to include approximately 20,000 employees worldwide, including those based in North America, China and the EU countries. In 2011, about 800 employees from 340 suppliers also attended the sessions. To strengthen the development of green products, new hires in R&D (under CTO unit) are required to take an environmental education course as part of their induction program.

Training for Suppliers

LGE offers the green expert training courses for its suppliers to share LGE's green technologies and know-how. Eight training sessions were conducted for 224 companies throughout 2011. Please see page 39 of the environmental report for more information.

Life's Green Class

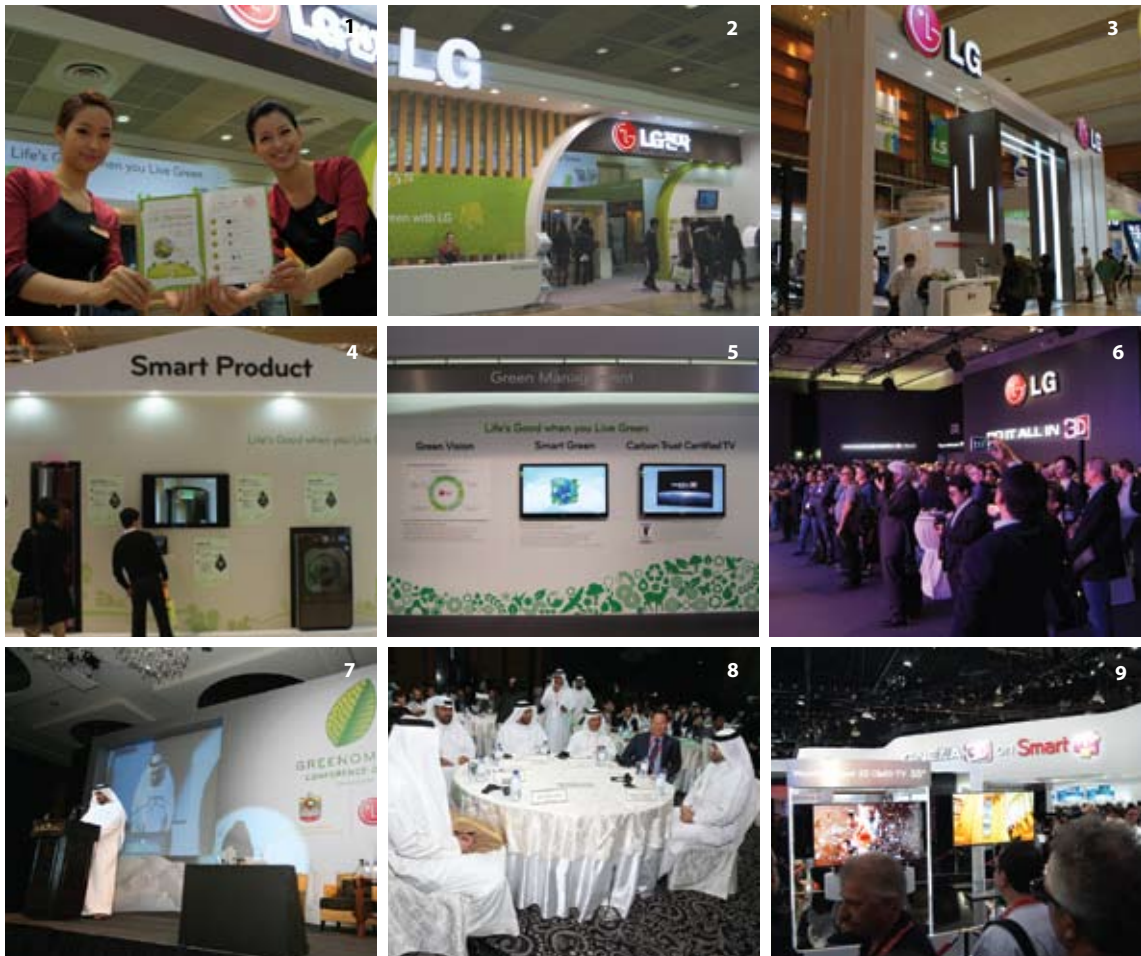
Jointly with Hanyang University in Korea, LGE has been offering the Life's Green Class (Mobile Science Laboratory) since 2006. It brings science education to schools across the country, held in a mobile science laboratory equipped with high-tech devices. Also, it offers science lectures/plays and opportunities to get involved in exciting, fun and hands-on science activities for children living on the islands and rural areas who otherwise would not be as fortunate to receive an environmental and high-tech science education. In 2011 alone, Life's Green Class visited 44 schools and science events in Korea and 70 in India for a total of 80,000 children. Life's Green Class introduced the "STEAM method" that combines Science, Technology, Engineering, Arts and Mathematics education to cultivate creative whole-brained talent and encourage LGE employees to donate their talents and participate as volunteers.



1
Life's Green Class(1)
2
Life's Green Class(2)

Exhibitions

By participating in various exhibitions last year, LGE was able to provide opportunities for consumers to experience its products and have a chance to listen to their voices for future product development. LGE set up an Eco-Zone at the exhibitions to share information about LGE's efforts and greener products. Some of the major exhibitions LGE participated in last year are the Low Carbon Green Growth Expo held in Korea, the IFA and Greenomics abroad as well as the CES, the world's largest consumer technology tradeshow, in which LGE had a chance to introduce its key green products and technologies.



1, 2
The Low Carbon Green Growth Expo (COEX,
Seoul, Oct. 2011)

3, 4
Smart Grid Week (COEX, Seoul, Nov. 2011)

5, 6
IFA (Germany, Sept. 2011)

7, 8
Greenomics (Dubai, Nov. 2011)

9
CES 2012 (USA, Jan. 2012)



"Why are kids making a pledge to love our environment?"

THE BLOG of LG Electronics: http://social.lge.co.kr/lg_story/the_blog/culture/866/

LGE's blog 'Social LG Electronics' is in Korean.



Young Environmental Leaders in India with LG

- Hemant Jadhav (Pune HR, LGE India)



To promote environmental awareness for our next generation, Life's Green Class visited 30,785 students in India for the last one year alone!

LGE's Corporate Social Responsibility (CSR) unit in India is jointly working with University of Pune, India to create the scientific interest amongst the young school students in India since 2010 and visit to more than 60 schools per one year. Life's Green Class started in Korea in 2006 as a unique mobile science laboratory. It launched in India to display, discuss and motivate school students attending from rural and urban areas on various topics such as environment and applied science. It also gives

a brief description on the recent research and its applications and gives an opportunity to get hands on experience with the help of the science experimental kits provided under this program. Owing to this initiative LG Mobile Science Laboratory plans to visit selected schools in and around Pune. Pune University trained a team to perform a science drama for about 60 minutes on the in-built stage of the LG mobile trailer in the vernacular language for better understanding of the students. During the drama, experiments dealing with wind energy, solar energy, heat exchange, degradable plastic, water absorption etc. are performed on the stage. The actors enact the day to day relevance of science in context with the science applied experiments. The hands on experience that students get through the experimental kits provided by LG Electronics is the driving force of this program. Pune University team members distribute the experimental kits to the students and guide them to perform and complete the respective experiments. The team members explain the basic laws related to the respective experiment, applications of this experiment in daily life and about the benefits of applying the same, generating an environmental awareness within the students. When the experiments are completed, students can take their kits home so that they can share their experience, knowledge and in-turn makes the society aware. Life's Green Class is the only activity which is operated in India for the students using scientific background. Particularly the students from rural area who are devoid of well equipped scientific laboratory in the school are the prime targets and extract maximum benefits under this program. The students are so excited that it motivates the teachers too. The feedback from the students and school teachers are so overwhelming that it is giving a foresight to LG Electronics and Pune University to expand this activity all over the country. We will keep caring our next generation for Life's Good with LG!



02

Greenhouse gas Reduction

Low Carbon Green Management Strategy

GHG Emissions Management

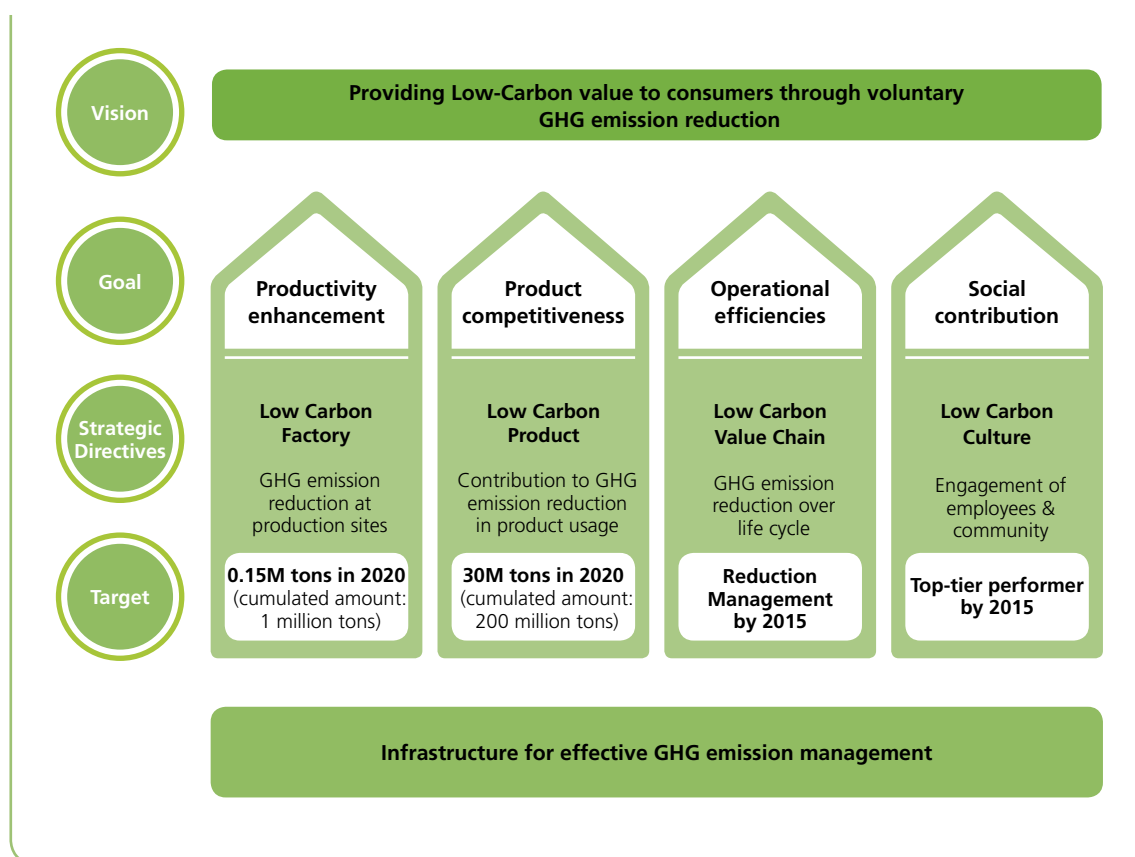
- Production Level
- Product Use Level
- Product Lifecycle



1.Low Carbon Green Management Strategy

LG Electronics' low-carbon green management strategy is comprised of four major themes: production level GHG reduction through productivity improvement, product use level GHG reduction through energy efficiency enhancement, corporate-wide GHG reduction and management, and enhancing social responsibility through promotion of low-carbon culture. Detailed action plans are also established for each theme. Based on such efforts, LGE will strive to provide low-carbon value to consumers.

LG Electronics' Low-Carbon Green Management Strategy



Selected into Carbon Management Global Leaders Club

Since 2008, LGE has been participating in the Carbon Disclosure Project (CDP) to enhance corporate sustainability and increase socially responsible investment through low carbon green management. The company has been named as a member of the Carbon Management Global Leaders Club for three consecutive years from 2009, and is recognized as one of the top Korean businesses with outstanding carbon disclosure and reduction performance.



2.Greenhouse Gas Emissions Management

Production Level

GHG Management Standard and Scope

Based on ISO 14064-1, the WRI-WBCSD¹ GHG Protocol and the 2006 IPCC² Guidelines, LGE has established and implemented an internal management standard as specified in the right table. Additionally, the company utilizes an IT system (Corporate Carbon Management System) to systematically manage GHG emissions and reductions.

Category	Standard and Scope	Applicable to
Organizational Boundary	Control Approach	14 business sites in Korea and 30 overseas production subsidiaries
Operational Boundary	Scope 1	Stationary combustion, mobile combustion, process emissions, fugitive emissions
	Scope 2	Purchased electricity and steam
Greenhouse Gas	Carbon Dioxide (CO ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), Hydrofluorocarbons (HFCs), Perfluorinated Chemicals (PFCs), Sulphur Hexafluoride (SF ₆), Hydrochlorofluorocarbons (HCFCs)	

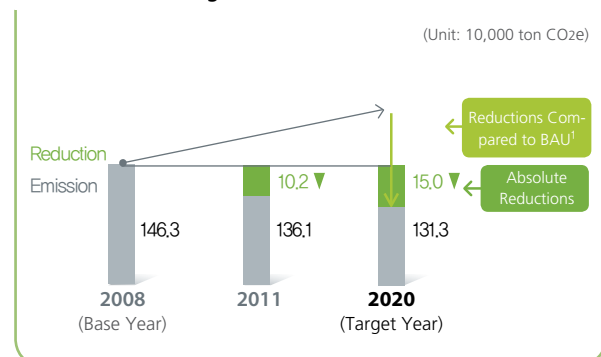
GHG Reduction Target

LGE has set a target to reduce 150,000 tons of GHG emissions associated with production in 2020 from the base year 2008 (10% reduction) through activities such as production process innovation, facility/operation efficiency improvement, renewable energy use, etc. Based on the target, LGE is expected to reduce a total of about 1 million tons (cumulative) of GHG emissions from 2009 to 2020.

Key Progress and Activities

LG Electronics reduced 102,000 tons of GHG emissions associated with production through such activities as production process innovation, facility/operation efficiency improvement, renewable energy use, etc. Also, LGE is currently in the process of acquiring ISO 50001 (Energy Management Systems) for all its production sites and major R&D facilities in order to increase energy and GHG reduction management efficiency.

GHG Reduction Targets from Production



*BAU (Business As Usual): Estimated GHG emissions are based on the assumption that GHG reduction technology and policy are maintained at the current level.

Facility/Operation Efficiency Improvement _ LGE was able to reduce about 20,000 tons GHG emissions in 2011 through activities such as cooling tower efficiency improvement (Plasma Display Panel production process), molding air compressor efficiency improvement (refrigerator parts production process), and air blowing pressure optimization.

Investment in High-efficiency Equipment _ LGE was able to reduce about 30,000 tons of GHG emissions in 2011 by investing in high efficiency equipment such as automatic building energy control systems, small capacity boilers, high efficiency turbo air compressors, etc.

Increasing Use of Renewable Energy _ LGE is expanding its use of renewable energy, adopting solar power generating systems, converting energy sources (purchasing steam from Changwon municipal waste incineration facility), etc. As of 2011, solar power generating systems with a total capacity of 126KW are in operation at the production sites at Gumi, Changwon in Korea and also in Thailand. LGE plans to continuously expand its renewable energy use, including the scope of heat recovery.

1) WRI-WBCSD: World Resource Institute, World Business Council for Sustainable Development
2) IPCC: The United Nations Intergovernmental Panel on Climate Change

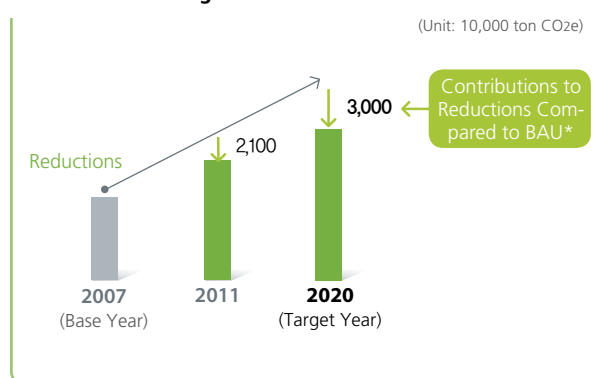


Product Use Level

GHG Reduction Targets

LGE plans to contribute to the reduction of GHG emissions associated with product use by developing and introducing highly energy efficient products. The company has set a target to reduce 30 million tons of GHG emissions from the BAU in 2020. LGE expects to contribute to a total reduction of about 200 million tons (cumulative) of GHG emissions associated with product use from 2009 to 2020.

GHG Reduction Targets from Product Use



*BAU (Business As Usual): Estimated GHG emissions are based on the assumption that GHG reduction technology and policy are maintained at the current level.

Key Progress and Activities

In 2011, LGE is estimated to contribute to reducing 21 million tons of GHG emissions associated with product use (compared to the energy consumption level of 2007) by introducing a great number of highly energy efficient products.

Carbon Footprint Disclosure _ To help consumers realize the amount of GHG produced during a product's lifecycle, LGE measures the GHG emissions for each product model and is voluntarily acquiring carbon labels. Please see page 31 for more information about carbon labels.

Clean Development Mechanism (CDM³) _ LGE is proceeding with the Clean Development Mechanism (CDM), acquiring carbon credits through sales of highly energy efficient refrigerators. The company's initiative was approved by the Indian government in April 2010 and is currently undergoing a registration process (2012). Through this project, LGE is expected to secure 400,000 tons of Certified Emissions Reductions (CERs⁴) annually over the next ten years.

3) Clean Development Mechanism (CDM): A system that allows companies in developed countries to earn certified emission reduction (CER) credits by investing in emission-reducing projects in developing countries as a way to meet their emission reduction targets under the Kyoto Protocol agreement which was enforced in 2005.

4) CERs(Certified Emission Reductions): Carbon credits issued by CDM executive board for the CDM projects aimed at reducing greenhouse gases in the atmosphere. It is defined under article 16 of the Kyoto protocol.

Product Lifecycle

Support for Suppliers' GHG Management

In 2010, LGE established and announced a plan to expand its low-carbon procurement. The Company plans to purchase over KRW 50 trillion of components annually by the year 2020 from the companies conducting sustainable GHG reduction plans among the 1,500 partners selected based on energy consumption and purchase amount. To this end, LGE is currently providing support to suppliers to strengthen their GHG management capabilities, including GHG management training, GHG inventory and will expand to provide monitoring system setup and GHG reduction consulting.

In 2011, LGE signed an MOU with Industrial Bank of Korea (IBK) to support suppliers' low-carbon green growth management. Based on the agreement, LGE is providing support for small and medium-sized enterprises' green management assessment and GHG inventory setup. LGE is also participating in the national policy initiative "Voluntary Green Partnership between Large and Small companies" led by Korean Ministry of Knowledge Economy and expanding the number of suppliers receiving the support. Additionally, it plans to facilitate suppliers' voluntary reduction of GHG emissions by creating low carbon management guidelines specified for the electronics industry and making them available to all of our suppliers.

GHG Management for Office Buildings

Since 2008, LGE has been managing GHG emissions from our office buildings in Korea, including the leased office spaces with more than 100 fulltime employees (Twin Towers, Seoul Square in Korea). In 2011, a total of 7,987 tons of GHG was emitted from LGE's office buildings. LGE's U.S. Subsidiary (LGEUS) also announced a plan to reduce GHG emissions from its office buildings in the U.S. (including warehouses) to 50% by 2020, compared to the emissions in 2007(which was approximately 21,000 ton CO₂e) LGEUS plans to meet the target mostly by expanding the use of power generated by renewable energy (50% wind and 50% biomass). LGEUS will also reduce GHG emissions by employing a building energy management system, improving lighting and HVAC efficiency and optimizing office spaces.

Green Logistics

LGE has set a target to reduce GHG emissions from logistics activities (Korea) by 1% on an annual basis compared to the distance traveled per unit weight carried from the previous year. The total GHG emissions from logistics activities in Korea was 95,282 tons in 2011 and the intensity figure is 0.408kgCO₂/tonkm. Because of the increase in logistics amount and distances, the figure in 2011 is higher than the figure in 2010 (which was 0.350kgCO₂/tonkm). To create greener logistics system, LGE plans to implement transport system innovation, energy use optimization and a green logistics IT system.

GHG Emissions from Mobility

Since 2008, LG Electronics has been managing GHG emissions from vehicles leased for employee commuting and GHG emissions associated with business travels. In 2011, 6,072 tons of GHG was emitted from vehicles leased for employee commuting and 62,153 tons of GHG was produced by employees' business travels. LGE is making ongoing efforts to reduce GHG emissions from mobility by utilizing video conferencing and encouraging employees to use greener transportation means such as railway.



03

Green Business

Photovoltaics Solution

Lighting

Water Treatment

Smart Grid



Green Business

LGE seeks to make the most of the business opportunities posed by climate change, such as a shift in consumer and market preference, increasing demand for low-carbon products and expansion of renewable energy use. With these goals, LGE has identified green businesses as being potential growth engines for the company over the coming decade. Such businesses specialize in solar power, LED lighting, total HVAC systems, smart grid and water treatment.

Photovoltaics Solution

LGE has established a solar module production facility of 330MW capacity at its Gumi Plant in South Korea, and is supplying solar modules to the European and the U.S. markets. LGE's crystalline silicon solar module was designated as "Green Technology of the Year" at the 2011 National Green Technology Awards hosted by the Korean government. With the technology, LGE now produces solar modules with over 19% energy conversion efficiency. Also, its solar cells comprised the first solar panel in the world to acquire the Carbon Free Certification¹ in July 2011. Free from OEM parts and materials, LGE's photovoltaics business has internal production procedures and quality control systems in place and plans to expand its production facility to 1GW capacity or higher.

Lighting

LGE has been developing business in LED lighting, which yields greater energy efficiency compared to incandescent and florescent lighting, and has introduced residential bulbs and lamps utilizing an LED light source as a replacement for halogen. Unlike florescent lighting, LED lighting contains no mercury and has twenty times the lifespan of halogen, with about 50,000 hours of life. LGE also acquired official certification for photobiological safety for its LED light sources from TUV Rheinland in 2011. In the industrial lighting segment, LGE introduced various LED flat luminaires and exterior lighting fixtures (streetlight). Currently, the industrial lighting segment is expanding its business areas into a lighting management system, which facilitates efficient management of power consumption utilizing diverse technologies such as sensor, electronic control, etc. Also LGE's interior lighting and floodlighting acquired the PSE (Product Safety Electric Appliance and Materials) mark in Japan and a certification from the China Qualification Center (CQC).



¹) Carbon Free Certification: A certification process that verifies GHG emissions throughout a product's lifecycle (production, distribution, use and disposal) and engages in carbon offset activities, ultimately achieving carbon neutralization for the product. (Certification Agency: Carbon Fund)



Water Treatment

In 2010, LGE developed a new water treatment process and acquired the “New Environmental Technology” certification from the Korea Environmental Industry and Technology Institute (a Ministry of Environment affiliate). With a goal to become a global leader in water solutions by 2020, LGE is also focusing on expanding the business, establishing a joint venture with Hitachi Plant Technologies and acquiring Daewoo Entec, a company specializing in operation and management of water treatment facilities.

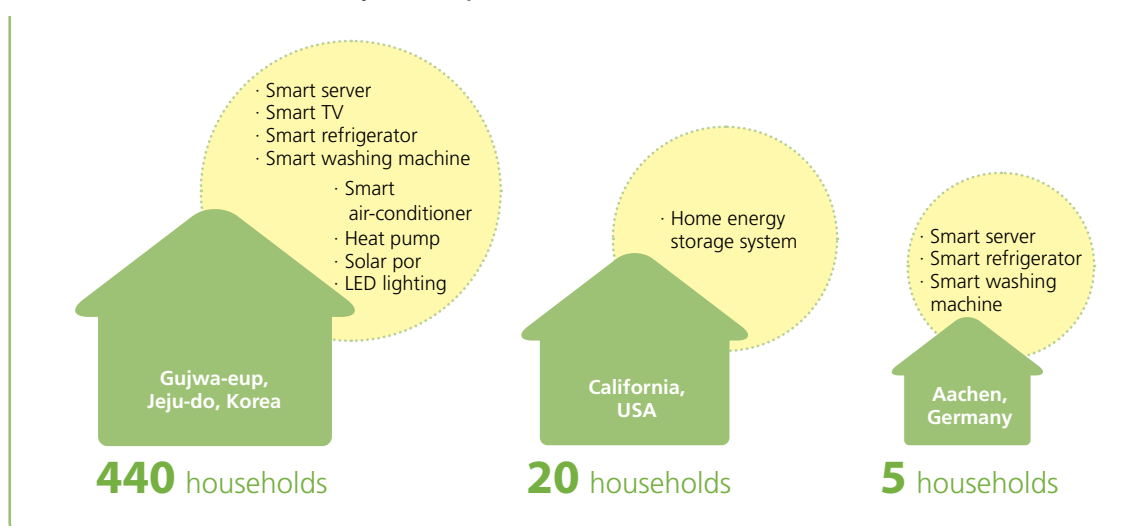
Smart Grid

LGE introduced “Smart ThinQ” products, which are smart grid ready appliances based on LGE’s proprietary smart appliance technology. Smart ThinQ appliances can save time and operation costs with simple and convenient energy managing technology. Smart ThinQ is represented in five key features: smart grid, smart management, smart diagnosis, smart control, and smart upgrade. Also, LGE has developed “Home Energy Management System (HeMS)”, a system that monitors and manages home energy consumption in real-time. And LGE has been applying this system by participating in the smart grid pilot project in Jeju Island, Korea. With these smart technologies, LGE is planning to provide a comprehensive energy management solution with a future convergence with HeMS, smart appliances, renewable energy, and Residential Energy Storage System (ESS).

Smart Refrigerator and
Washing Machine with
Smart ThinQ Technology



Status of Smart Grid Evaluation Project Participation



04

Greener Products and Technologies

Greener Products

- Green Product Strategy
- Green Product Evaluation System
- Green Product Certificates and Awards

Green Technologies



1. Greener Products

Green Product Strategy

Minimizing environmental impacts across the product lifecycle is at the core of LGE's green product strategy. The strategy has three key elements: human, energy, and resources. In an effort to reduce the environmental impact on human, LGE has been continuously working to improve the home environment for its consumers by replacing hazardous substances, reducing noises from home appliances and adding anti-allergy and anti-bacterial features. Also, it has been looking for a way to improve energy efficiency while reducing greenhouse gas emissions. Lastly, it has focused on reducing the amount of resources required for production by reducing weight and volume. Also, it has been looking for a way to improve energy efficiency while reducing greenhouse gas emissions. Lastly, it has focused on reducing the amount of resources required for production by reducing weight and volume.

LG Electronics Green Product Strategy Direction



1) PVC (Polyvinyl Chloride): Thermo plastic, also known as polyvinyl chloride and polyvinyl chloride resin, containing heavy metals such as phthalate(an environmental hormone), lead and cadmium.
2) BFRs (Brominated Flame Retardants): Mainly used as a chemical flame retardant for plastics and textiles and one of the most well-known persistent organic pollutants.



Human



Hazardous
Substances
Reduction

Hazardous Substances Reduction

LGE complies with international regulations on hazardous substances and RoHS and REACH. Although some substances are not currently regulated, The company is in the process of voluntarily replacing substances such as PVC¹ and BFRs² (which are believed to have negative impacts on the environment) once safety and reliability tests have been completed.

In 2007, LGE began to gradually ban the use of halogen (Br, Cl) in mobile phone parts. Since 2010, LGE has been using replacement of PVC and BFRs in all newly developed mobile phones. LGE has also replaced PVC and BFRs from encasements, parts of circuitry components, and parts used in all laptop models released in 2011 and are in the process of replacing LCD TV parts and components containing PVC and BFRs. From 2011, PVC replacements are used for some components in residential air conditioners and LGE is expanding the application of replacements to other models. Please visit our website for more information on this issue:

<http://www.lg.com/global/sustainability/environment/details-of-hazardous-substances.jsp>

Status of Hazardous Substance Replacement

Mobile Phones	· PVC: Not used in any new product models from January 2010 · BFRs: Not used in any new product models from January 2010, except for a few models using IC transistors, etc. · Beryllium and Phthalate: Started using parts that do not contain beryllium and phthalate in mobile phones in 2011
TV	· PVC and BFRs: In the process of replacing PVC and BFRs used in parts, starting from cabinet through bracket, back cover, pedestal, etc.
Laptops	· PVC and BFRs: Replaced PVC and BFRs from housings of all product models released in 2011. · Replacement is in progress, starting from CPU through main chipset, LCD, hard disk drive (HDD), optical disk drive (ODD), memory, webcam, LAN, parts for micro circuits, etc.
Air-Conditioners	· PVC: Replaced PVC from drain pipes for the indoor unit of residential air conditioners developed in 2011 (Released in Korea in 2012).



Home
Environment

Home Environment

LGE adds anti-allergy and anti-bacterial features to its products including washing machines, air-conditioners and vacuum cleaners to improve home environments for its customers and is constantly working to reduce noise and vibration produced by its products. All LGE's Tromm Steam Allergy Care washing machines are approved by the British Allergy Foundation (BAF) and the Korea Asthma Allergy Foundation (KAF). Also, all of LGE's bed cleaning vacuum cleaner models are cer-

1



1

VH9001DS

2
Certificate from the British
Allergy Foundation



2

3

3
Certificate from German SLG



tified for the removal of allergens and fine dust by the British Allergy Foundation and the German SLG certification authority. In particular, the "sterilization mode" of the Tromm Styler (a new 2011 model) gets rid of 99% of germs on clothing using steam at high temperature and was awarded the seal of approval by the British Allergy Foundation (BAF) and the Korea Apparel Testing & Research Institute (KATRI).



Energy



Energy Efficiency

Energy Efficiency

LGE has developed a five-year technology roadmap for each product family detailing initiatives which aim to improve energy efficiency. LGE has already met the ErP requirements on energy efficiency and has also set its own future goals and detailed strategies to reduce energy consumption and standby power. GD510, a mobile phone with a solar cell battery, which was released in Europe in October 2009, was named as the most eco-friendly mobile phone in 2010 by the EISA³. In addition, LGE plans to introduce a charger in the second half of 2012, with standby power consumption of less than 0.01W and is working to commercialize renewable energy battery technology such as fuel cell and kinetic charger⁴.



CO2 Reduction

CO2 Reduction

LGE plans to contribute to reducing the greenhouse gas emissions associated with the use of its products by developing and selling products with high energy efficiency. To reduce emissions from product use, LGE has set an annual reduction target of 30 million tons of GHG emissions based on 2007 levels in comparison with the target BAU levels in 2020. LGE established greenhouse gas inventories and is consistently improving production efficiency in order to reduce greenhouse gas emissions from production. LGE provides consumers with information about greenhouse gas emissions in the product lifecycle through carbon labels. Please see "Greenhouse Gas Reduction" part (from page 15) for more information on greenhouse gas.

Resources



Resource Reduction

Resource Reduction

From the product development phase, LG Electronics considers environmental factors (including degradability and recyclability) and incorporates them into internal development procedures. Additionally, the company also utilizes assessment tools such as a recyclability check list. Thanks to such efforts as material quality improvement, LGE was able to achieve a 7kg weight reduction in

3) European Imaging and Sound Association: An association of 50 special interest magazines which recognizes the best product in each category by presenting an award each year.

4) Kinetic Charger: A charger that converts kinetic energy to electric energy.

our 2011 washing machine (Model FR4349BAYZ) model from the previous year's (Model FR4349EAZ). (Please refer to the table below.)

Resource Reduction Case



FR4349EAZ

Production Year_ 2010

Washing • Drying Capacity_ 13kg/8kg

Weight_ 117kg



FR4349BAYZ

Production Year_ 2011

Washing • Drying Capacity_ 13kg/8kg

Weight_ 110kg

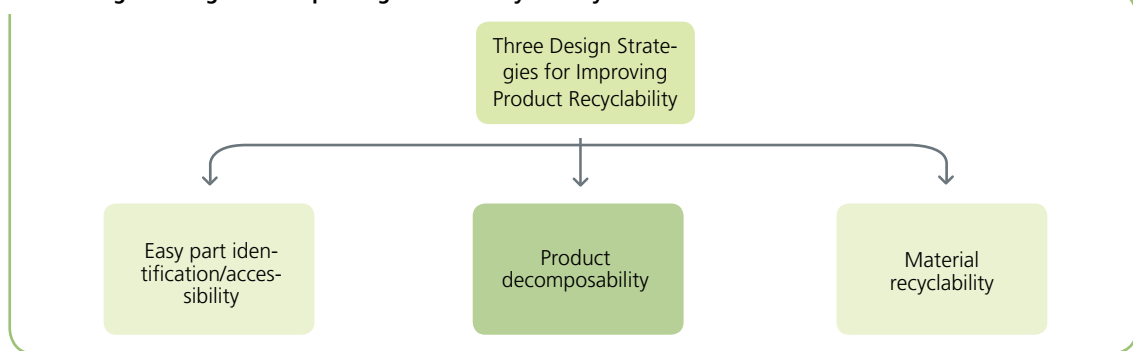


Recyclability
Improvement

Recyclability Improvement

LGE has an internal process in place to manufacture products while taking environmental issues such as product decomposition and recyclability into consideration from the product development stage and uses evaluation and support tools such as recycling checklists.

Three Design Strategies for Improving Product Recyclability



Packaging

Packaging

LGE puts an emphasis on environmental factors in packaging as well as in the products themselves. It has developed various ways of improving packaging and has actually put them in use by reducing the weight and volume of products and using eco-friendly packages and soy-based ink. For example, a mobile phone (LS696) for Sprint in the U.S. uses 39% more recycled paper for its packaging compared with its previous model (LX600). Also, the packaging paper can be recycled without additional processing since it uses water-based ink.

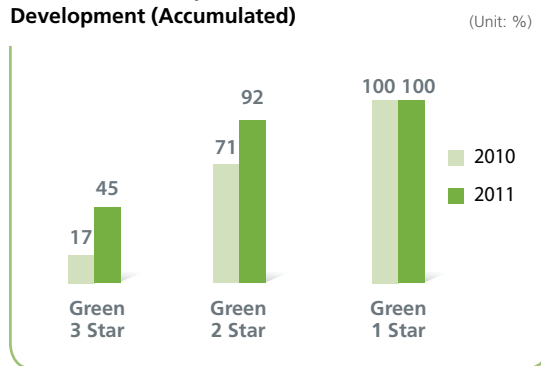


Green Product Evaluation System

The Eco Index

The Eco Index is LGE's unique system for rating how "green" a product is and translating its eco design performance into quantifiable measures. The index is utilized for managing environmental performance of products and establishing management goals. All LGE products meet environmental regulations of the major markets including the EU, the United States, Korea and Japan (RoHS⁵, REACH⁶, etc.), which is translated as "Green 1 Star" of the Eco Index. Products showing greater environmental performance are rated Green 2 Star and Green 3 Star and are managed accordingly. LGE has established rating criteria for the Eco Index based on the three strategic areas for green product development (Human, Energy and Resources) and incorporates those criteria into developing greener products. Thanks to its efforts in achieving high energy efficiency, the company increased the share of products rated Green 2 Star to 92% in 2011 from 71% in 2010 and Green 3 Star to 45% in 2011 from 17% in the previous year. LGE will continue to work on increasing product offerings that attain higher Eco Index.

Year-on-Year Comparisons of Green Product Development (Accumulated)



Eco Index Rating



Lifecycle Assessment (LCA)

Regulated by the ISO 14040 series standards, the LCA is a technique to assess and quantify environmental impacts associated with all the stages of a product's life cycle (from production through distribution, use, and disposal), as well as to identify areas for improvement and verify progress.

Since 2002, LG Electronics has been striving to quantify the environmental impacts of all its product categories in all stages of their life cycles and minimize their carbon footprint. In 2011, the company built the Life Cycle Inventory Database (LCI DB) for eight product categories (TV, monitor, washing machine, refrigerator, LED, solar panel, mobile phone and commercial air conditioning system), and plans to utilize the data base in the product life cycle assessment. Based on the results of the LCA, LGE identifies environmentally vulnerable areas in the product lifecycle and determines appropriate measures, for example raw material replacement and energy efficiency improvement. LGE French Door Refrigerator (R-T751EBHSL) and Tromm Washing Machine (FR3228WA) have received a low-carbon product certification for reducing their carbon footprint throughout their lifecycle by 12.5% and 9% compared to previous models, respectively (see page 31). LGE will continue to use the LCA and apply the results to its product development process.

5) RoHS(Restriction of the use of Hazardous Substances in EEE):Restriction of Hazardous Substances in Electrical and Electronic Equipment

6) REACH(Registration, Evaluation, Authorization & Restriction of Chemicals): Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals

Green Product Certificates and Awards

ENERGY STAR Most Efficient 2011



For more information, visit the company website at (<http://www.lg.com/global/sustainability/environment/greener-products/environmental-label.jsp>)



ENERGY STAR is an international standard established by the Environmental Protection Agency (EPA) of the United States for energy efficient consumer products. The Energy Star Service Mark is placed on products meeting the standard.

Among those that qualify for the ENERGY STAR, the top 5% most efficient products are designated as ENERGY STAR Most Efficient. In 2011, 406 LG product models, including TVs, refrigerators, washing machines, etc. earned the Energy Star Service Mark and among those that qualified, eight TV models, two refrigerator models and three washing machine models were certified as ENERGY STAR Most Efficient 2011.

CINEMA 3D TV 55LW5700

Smart Energy Saving Plus _ LG Electronics' Smart Energy Saving Plus technology allows users to reduce power consumption with a built-in power save option, which adjusts the brightness and contrast depending upon the lighting condition in a room.

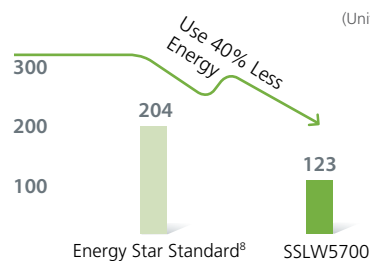
Battery-free 3D Glasses _ Employing the FPR⁷ technology, CINEMA 3D glasses offer brighter and clearer image quality compared to Shutter Glasses. As LG's CINEMA 3D glasses have no circuitries, so that the glasses don't emit any electromagnetic waves.



55LW5700

Annual Energy Use of 55LW5700

(Unit: kWh)



French Door Refrigerator LFC21776

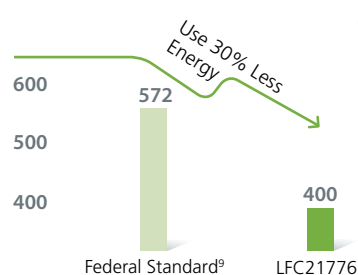
Increasing Energy Efficiency with Linear Compressor Technology _ LG's Linear Compressor Technology reduces power consumption by adjusting the compressor speed and rotation based on the volume of food and temperature inside the refrigerator.



LFC21776

Annual Energy Use of LFC21776(kWh)

(Unit: kWh)



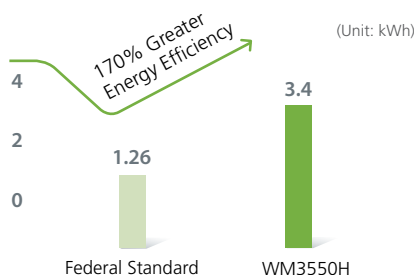
Drum Washing Machine WM3550H

Increasing Efficiency with a Direct Drive (DD) Motor _ A large capacity washing machine employing "6 Motion Technology", it increases user convenience utilizing allergy care, steam wash and 15 minute speed wash options. With the motor connected directly to the tub (DD Motor Technology), it produces less noise and consumes less power.



WM3550H

Modified Energy Factor (MEF¹⁰) of WM3550H



Most Efficient 2011 Awarded Models

- Washing machines: WM3550H, WM3150H, WM3360H
- Refrigerators: LFC21776, LFC25776
- TV: 42LV3700, 47LW5700, 47LW5600, 47LW6500, 47LW5500, 55LW5700, 55LW5600, 55LW6500

LGE Named as the 2012 ENERGY STAR Partner of the Year



LGE has won the 2012 ENERGY STAR Certificate and the "ENERGY STAR Partner of the Year Award." The ENERGY STAR Partner of the Year Award was given to recognize LGE's various environmental efforts and results made in the USA in 2011 including ▲Development and sale of products with high energy efficiency ▲ENERGY STAR labeling initiatives ▲Staff energy training ▲GHG emission reduction. LGE has participated in the ENERGY STAR Labeling initiatives by the U.S. government by displaying the ENERGY STAR certificate on its TV commercials since 2011 and provided a total of 18,000 training sessions in high efficiency product sales and energy conservation for its 110,000 floor staff. In addition, LGE has devoted time to various GHG emission reduction activities, including use of renewable energy, inhouse energy savings and company-wide, low-carbon campaigns.

- 7) FPR (Film-type Patterned Retarder) Technology: A method for producing 3D effects by employing a precise film substrate attached to the LCD TV panel in combination with polarized 3D glasses.
- 8) ENERGY STAR Qualification Standard: The annual estimated energy use (kWh) based on the energy consumption scenario with the consumption level specified in ENERGY STAR 5.3 Version (TV on Mode-max=10kW, Sleep Mode-max=1kW)
- 9) Federal Standard: The minimum requirements established by the U.S. government on energy efficiency for electronics products based on the National Appliance Energy Conservation Act
- 10) MEF (Modified Energy Factor): The official energy efficiency metric used from 2004 to compare relative efficiencies of different washing machines based on the formula $MEF = C / (M + E + D \text{ per wash cycle})$. (C: Capacity, M: Energy used to run the washing machine, E: Energy used to heat the water and D: Energy used to run the dryer). For more detailed information on key criteria of ENERGY STAR, please visit their website.

Carbon Label

Carbon Footprint Label and Low-carbon Products

LGE is trying to provide product carbon footprints to consumers so that they can identify the total GHG emissions buying and using the products. Additionally, LGE is making phased efforts to reduce GHG emissions associated with our business operations. Thanks to its voluntary disclosure of carbon footprints, LGE acquired the “Carbon Footprint Label” for 24 products and six components from the Korea Environmental Industry and Technology Institute, the industry’s best performance in this area (As of February 29, 2012).

 http://www.edp.or.kr/carbon/english/list/list.asp?search_colume=&search_text=&Gubun=5

Most noteworthy, LGE’s side-by-side refrigerator (Model R-T751EBHSL) and washing machine (Model FR3228WA) acquired the “Low Carbon Product Certification”, a designation given to products which achieve even greater performance in carbon emissions reduction compared to products with the “Carbon Footprint Label”. Currently, LGE is establishing a system that will enable the efficient assessment and improvement in carbon footprints of all its products. To this end, LGE will utilize an internal IT system (CCMS¹¹) to regularly measure GHG emissions associated with production, logistics, use and disposal of each product model, and systematically manage the relevant database. Based on this effort, LGE also plan to develop low carbon products to reduce overall GHG emissions associated with our business operations.



R-T751EBHSL
Certified in February 2011



FR3228WA
Certified in December 2011

Europe_ Carbon Trust¹²

The Carbon Trust helps businesses measure carbon emissions associated with their products and also provides a label of the carbon footprint for these products. With the label, consumers can check the carbon footprint of a particular product and make purchasing decisions that facilitate carbon reduction.

In June 2011, LGE’s two Cinema 3D TV models (47LW5500-ZE for Europe and 47LW550T-ZE for U.K.) became the first TVs sold in Europe bearing the “Carbon reduction Label” from the U.K.’s Carbon Trust.



47LW550T-ZE

11) CCMS (Corporate Carbon Management System): LGE’s IT system manages GHG emissions and the Product Carbon Footprint (PCF) for each product.

12) Carbon Trust: A not for profit group formed in 2001 with the funding from the U.K. government to promote carbon reduction and development of low-carbon technology. The Carbon Trust has been labeling products with their carbon footprint since 2007.



USA_Carbon Free

The Carbon Free Product Certification verifies the GHG emissions associated with a product's life cycle and provides certification to products offering carbon offsetting and GHG reduction (Certification Agency: Carbon Fund).

For more information, please visit the Carbon Fund website.

 <http://carbonfund.org/product-certification>

In 2011, LGE acquired the "CarbonFree" certification for ten of its product models, a first for a Korean company. Consumers who purchase products with the "Carbon-Free" certification indirectly contribute to reducing GHG emissions. The combined carbon reductions from these ten LG product models are estimated at around 90,000 tons¹³ annually.



Model Name	Certified Date	Model Name	Certified Date
Drum Washing Machine TROMM (WM3875H)	July 2011	LED Lighting (LB08D827LOA.BASIS)	July 2011
LED LCD TV (42LV5500-UA)	July 2011	Mobile Phone (LG L45C/LG-LN272)	August 2011
LED LCD Monitor (D2770P)	July 2011	Multi-V Air-conditioner (LGE ARUN072DT3)	October 2011
DIOS Refrigerator (GR-L318LSJP)	July 2011	Vacuum Cleaner (LGE LuV350P)	October 2011
Solar Panel (LG260S1C-LG255S1C-L G250S1C-LG245S1C)	July 2011	Gas Oven Range (LDG3016ST/ LDG3015ST/ LDG3015SB/ LDG3015SW)	October 2011

Water Label

U.K._Waterwise

As part of its effort to reduce energy and resource consumption of products, LGE has been working to develop technology to enhance the water-use efficiency of its washing machines and dishwashers.

In recognition of such efforts, the U.K. based NGO Waterwise named LGE's Drum washing machine (Model F1495BDS) utilizing the Dual Injection Spray Technology¹⁴ and the True Steam Technology¹⁵ incorporated dishwasher (Model D1454BF) as "the Most Water Efficient Product" in U.K. (November 2011)



D1454BF



F1495BDS

¹³ The carbon emissions associated with the entire lifecycle of all ten product models certified as "CarbonFree" multiplied by the estimated sales volume of those products in the North American market of the year. The sales volume is estimated annually starting from the time of certification and renewed every year.

¹⁴ Dual Injection Spray Technology: It sprays steam at high temperature and water into the drum simultaneously (dual injection) to provide warm-water performance with cold-water effects, such as keeping the fabrics sterilized and wrinkle-free.

¹⁵ True Steam Technology: It uses 95°C steam instead of water, thereby eliminating the need for pre-washing and saving water.

LGE won the President's Award at the 2011 Global Green Management Excellence Award



Hello. Please tell us about yourself and what you do.

Hello. I'm Dong-Shik Lee and work for LG Electronics Washing Machine Research Center. I have been working at the washing machine unit dealing with environment-related tasks for eight years. As an environmental coordinator at LGE, I will do my best for LGE to perform its roles and responsibilities as a sustainable company.

Please explain us briefly about the Global Green Management Excellence Award.

The Global Green Management Excellence Award is an environmental award started in 2002 to recognize outstanding achievements and contributions by businesses, individuals and products to improve our environment and is co-sponsored by the Ministry of Environment and the Ministry of Knowledge Economy. It was an honor that LGE's Tromm washing machine received the Presidential Prize at the 2011 Global Green Management Excellence Award.



What made LGE's Tromm washing machine win the award?

The winner of the Korea Green Management Award is selected by a four-step process: paperwork assessment, site evaluation, presentation of the finalists and final assessment. It is extremely hard to receive a good result since various categories are compared and evaluated, such as the company's green vision and strategy, social responsibility and climate change response, not just the environmental friendliness of the applicable product.

Hazardous Substances Reduction

- To prevent the supply of raw materials with hazardous substances, LGE runs Green Program Plus with its suppliers.

Green Technology

- 6 Motion: LG Tromm washing machine's unique six-motion precision speed control technology, available with a direct drive motor, was designed with energy efficiency in mind.
- Dual Injection Spray: A technology that improves energy efficiency by spraying steam at high temperature and water into the drum simultaneously (dual injection) to provide warm-water performance with cold-water effects such as keeping the fabrics sterilized and wrinkle-free.



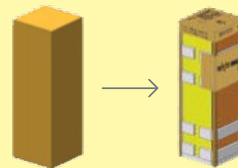
Dual Injection Spray

Home Environment

- Reduced noises and vibrations with the Direct Drive (DD) method that directly connects the motor and the tub
- High-temperature steam is pressurized into abrics effectively removing allergens (some models are certified by the BAF and the AAFA for allergy care)

Resource Reduction

- Product and packaging design change



Packaging Design Change
(Box Type → Open Type)

What is the next step or plan for Tromm washing machine in terms of the environment now?

Recently, there has been an increased need for a product that addresses emotional and practical functions, such as consumer convenience and design not to mention the quality. The LGE Tromm washing machine is part of the strategy geared towards developing green products. To put it in other words, LGE will try to increase the level of its product eco-design¹⁶. As part of such effort, LGE has implemented eco-design with a goal to reduce GHG emissions by about 5% in the lifecycle(raw material, use, transportation and disposal) of our washing machine except the product use level.

¹⁶ Eco-design: It is an environmental design that increases product performance and competitiveness while minimizing the environmental impact throughout the product lifecycle.



2.Green Technologies

LGE believes that green technologies are the next generation growth engine and has been focusing on R&D for continuous innovation of green technologies. The followings are LGE's four green technologies that gained noticeable attention in 2011.

High-efficiency Crystalline Silicon Solar Module Technology (Product Name: LG MonoXTM)

LGE developed high-efficiency crystalline silicon solar module that can generate more electricity per solar cell area. This technology enables LGE to develop solar modules with an energy conversion efficiency of over 19% and was named as "Green Technology of the Year" at the 3rd National Green Technology Award sponsored by the Korean government in November 2011.

LGE's high power solar module technology with more than 260W usage capacity, became the world's first solar module to receive Carbon Free Certification in July 2011 (see page 32).



LG MonoXTM

Smart Refrigerator (Model Name: R-T851TBHSL)

LGE's French Door Refrigerator (Model: R-T851TBHSL) combines various technologies mentioned below to provide environmental values of energy savings and resource reduction.

Smart Energy-saving Technology

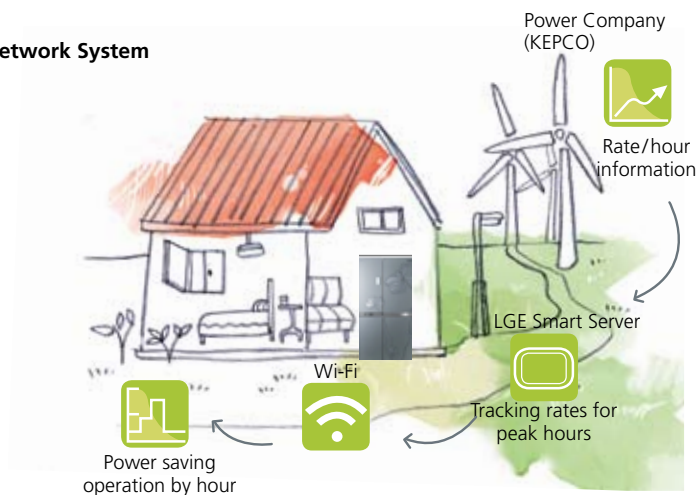
LGE's smart energy-saving technology detects different electricity rates by time of day and season to enable the refrigerator to automatically switch to energy-saving mode¹⁷.

With smart energy-saving technology, the refrigerator can keep food fresh while conserving energy.



R-T851TBHSL

Smart Refrigerator Network System



¹⁷ It is applicable only if the power company charges different rates for peak/off-peak hours/seasons and the household chooses this mode

Product Energy-saving Technology

• Linear compressor

Usually, the compressor in a refrigerator consumes more than 80% of the total energy of the refrigerator. LGE has developed linear compressor technology that adjusts the revolutions and speed depending on the internal temperature and amounts of food. Conventional reciprocating compressors use a motor that converts rotational motion into the linear motion of a piston to compress the refrigerant, which results in unnecessary loss of friction and noises associated with the cranking mechanism. On the other hand, LGE's linear compressor uses a linear motor that eliminates the unnecessary motion-converting process and reduces loss of friction and noise while controlling a pre-defined piston distance according to the refrigerator's load at the time, thus improving energy efficiency.

• Magic Space (Door-in-door)

With a door-in-door structure, the food can be stored separately so it can be easily removed, which can reduce power consumption.



- 1
Linear compressor
- 2
Magic Space(Door-in-door)



Multi-V Combi, a multipurpose system for air-conditioning, heating and refrigeration

LGE's Multi-V Combi is a multipurpose outdoor unit that can run a system air-conditioner and a refrigerated showcase at the same time. It is suitable for convenience stores or supermarkets that sell food items requiring refrigeration. The technologies mentioned below are used for LGE's Multi-V Combi.

High-efficiency LED lights

It uses high-efficiency LED lighting that consumes less electricity compared with conventional florescent lights. The brightness levels can also be easily adjusted using a dimming control¹⁸.

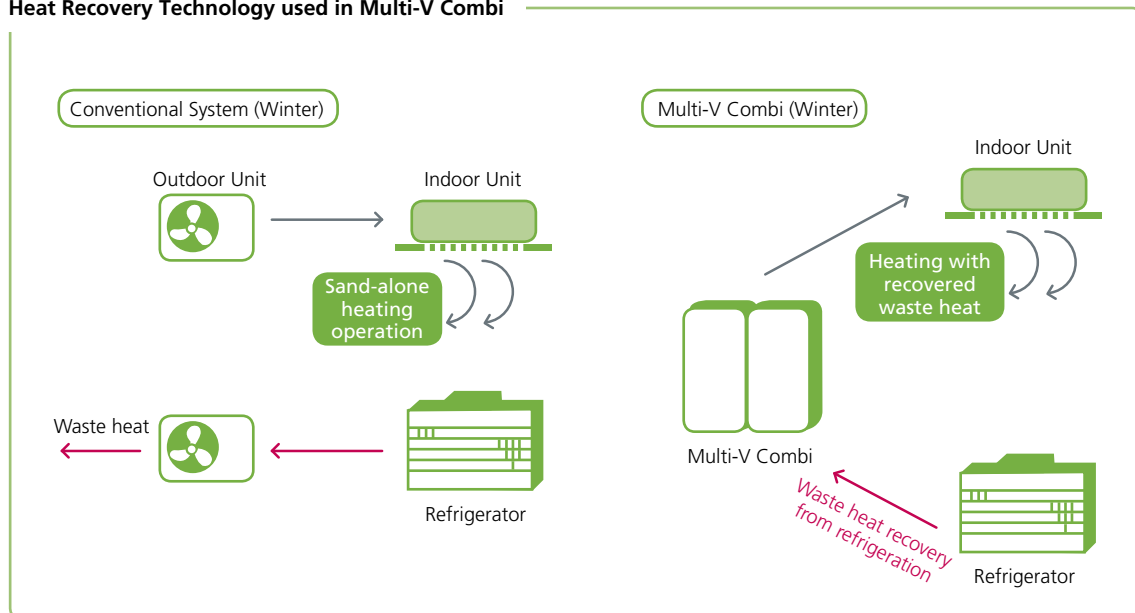
High-efficiency BLDC¹⁹ inverter technology

LGE's refrigeration system with a BLDC inverter compressor is more energy efficient than the system with a constant-speed compressor. Considering that refrigeration systems are typically operated 24 hours a day, a highly-efficient inversion-compressor that responds smoothly to any changes in the cooling load, can save even more energy.

Heat Recovery

Unlike conventional systems that have a separate air-conditioner and a refrigerator, it uses recovered energy from waste heat for heating and air-conditioning and reduces operating costs.

Heat Recovery Technology used in Multi-V Combi



Bismuth (Bi) free cutting steel²⁰

Lead (Pb) in free-cutting steel that is widely used in the precision parts of vehicles and home appliances is regarded to be hazardous if not properly discarded. However, due to a lack of alternatives, it is excluded from the RoHS.

POSCO succeeded in developing Bismuth (bi) free-cutting steel for the first time in the world by adding Bismuth, which is a substance used to make drinks and cosmetics. Bismuth free cutting steel is harmless to the body and environmentally friendly with the same processability as that of lead free-cutting steel. Partnering with POSCO, LGE has started using bi free-cutting steel when producing PDPs, LCD TVs and monitors.

After completing the processability test in July 2011, LGE registered bi free-cutting steel as an official material for its TV design plans and has applied it to mass-produced products since August 2011. LGE plans to expand the use of bismuth free-cutting steel to the pem nuts of its TVs and monitors in 2012.



Nuts made of bismuth free-cutting steel



18) Dimming control: It allows the brightness of LED lights to be adjusted to reduce power consumption.

19) BLDC(Brushless Direct Current): It is a brushless DC (Direct Current) motor. Unlike a DC motor, it has a longer life-span and can control speed, power and distance.

20) Free Cutting Steel: It is an improved quality steel that is high in strength but easy to cut and mostly used in vehicles, home appliances and office equipment where a wide variety of shapes and precision processing are necessary, such as chipping the surface of a round steel product or drilling a narrow and deep hole.





05

Green Partnership

Green Program Plus

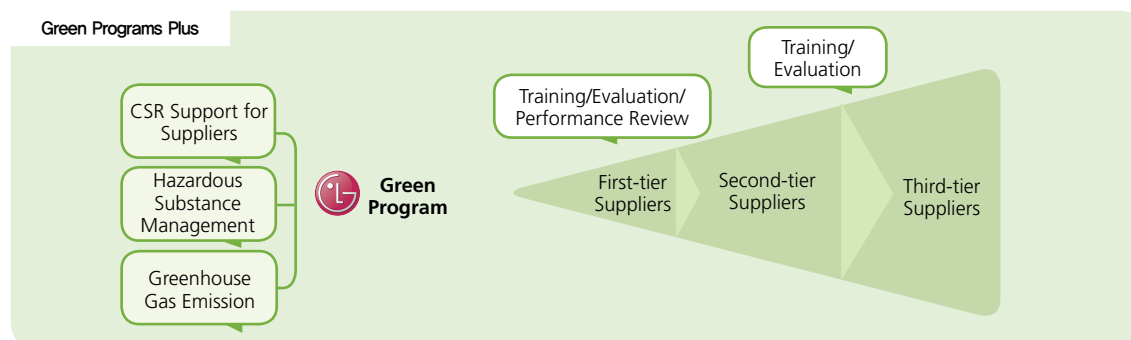
Green Partnership Activities



1.Green Program Plus

In order to promote green management across the value chain, LGE is continuously expanding green partnerships with its suppliers. Utilizing the company's proprietary green supply chain management program called "Green Program Plus (GP Plus)", LGE manages hazardous substances in its supplier's products at every stage including parts. LGE also manages their GHG emissions and plans to continually expand the scope of such green partnerships.

<http://www.lg.com/global/sustainability/environment/supply-chain-environmental-management.jsp>



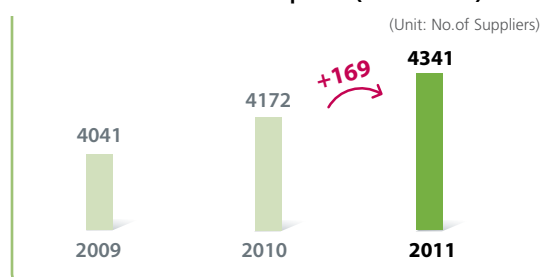
Additionally, LGE validates new suppliers' green management capabilities, and existing suppliers are managed through follow-up procedures. The following describes the company's internal criteria for assessing supplier's green management:

Green Program Plus/Assessment Criteria for Suppliers

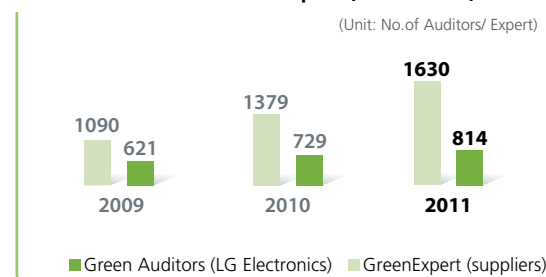
Screening of New Suppliers		Screening of Existing Suppliers	
Environmental Management System	20	Environmental/ Mass Production Management	50
Management of Hazardous Substances	50	Supplier Management	15
Management of Material / Product	30	Inspection Management	35
		Voluntary Phase-out of PVC/BFRs	5(Extra Point)

LGE has been providing suppliers with training to foster green experts and transferring the company's green technology and know-how. In 2011, The company conducted eight training sessions involving participation from 224 suppliers. Moving forward, LGE will continue to pursue green partnerships with suppliers, helping them to strengthen their green competitiveness.

NO. OF Green Certified Companies(Cumulative)



NO. OF Certified Auditors/Expert (Cumulative)



2.Green Partnership Activities

LG Electronics signs an MOU with IBK for green and shared growth

LGE signed a Memorandum of Understanding (MOU) with Industrial Bank of Korea (IBK) for "Green and Shared Growth" led by Korean government and held a ceremony in June of 2011. They will provide financial and non-financial support to LGE's suppliers for putting green management into practice. On the financial side, LGE will develop green financial products jointly with IBK. It will also increase non-financial support to its suppliers such as establishing a "greenhouse gas inventory" and providing carbon emission reduction consulting for them.

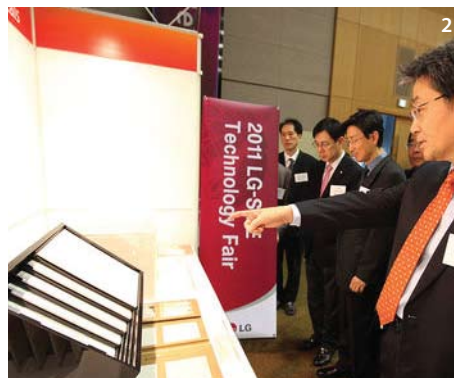
LGE expects this will help its suppliers to proactively respond to the greenhouse gas target management system and turn carbon emission reduction activities into a new business model.

LGE participates in the "Small, Medium and Large Green Partnership" project sponsored by the Ministry of Knowledge Economy

In November 2011, LGE signed an agreement to participate in the "Small, Medium and Large Green Partnership" project. Through the joint partnership with its small and medium suppliers, the company plans to assess carbon emissions during the production process and accelerate its suppliers' establishment of a low-carbon green management strategy and greenhouse gas reduction through technology development and equipment supply.

LGE holds a Tech Fair for small and medium sized companies

LG Group and LG Electronics have held the "LG Tech Fair for Small and Medium Sized Companies" since 2010 to share its best practices of R&D cooperation with its suppliers and to promote cooperative research and development for next generation technology. In 2011, the fair was held at the LGE Seocho R&D Campus on November 6th. At the event, 16 suppliers exhibited their best practices in R&D cooperation and their new technology status. LG Group presented Plaques of Appreciation to seven suppliers who achieved outstanding results through R&D cooperation.



1
Signing the MOU for
the Green and Shared
Growth

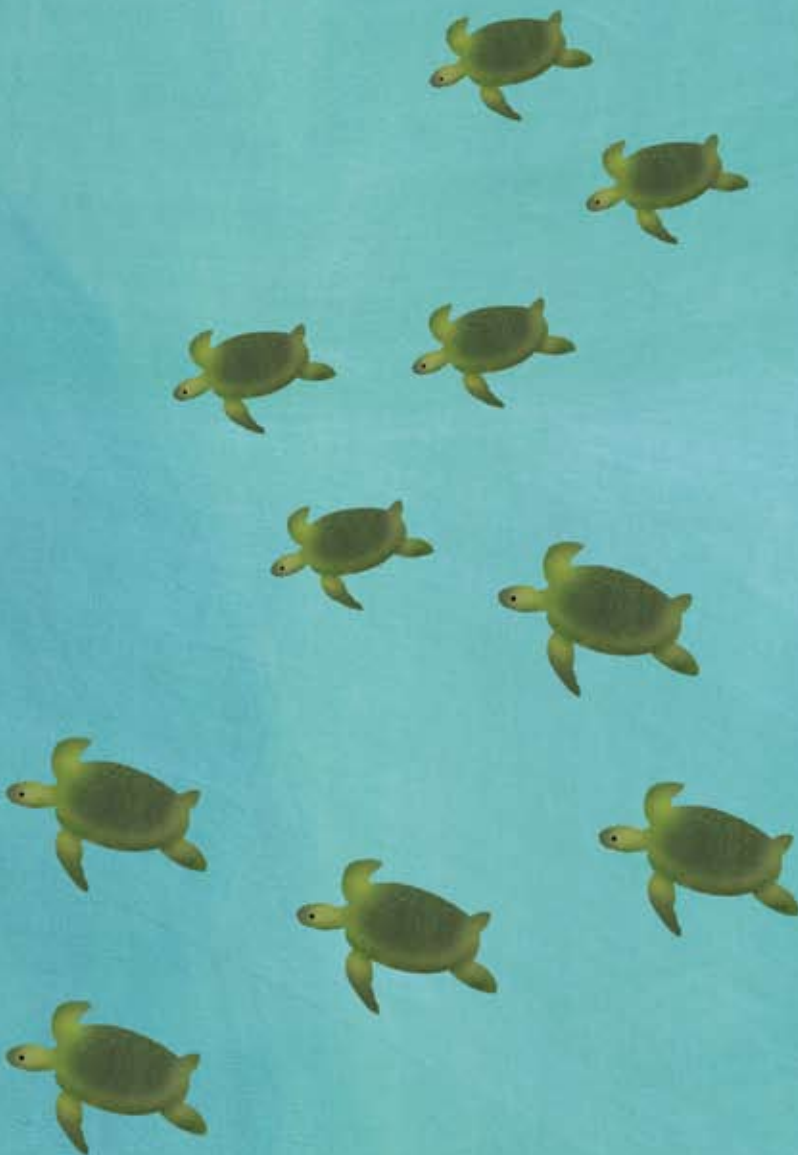
2
LG Tech Fair for small
and medium sized
companies

06

Recycling Resources

Using Recycled Resources

e-Waste Take-Back

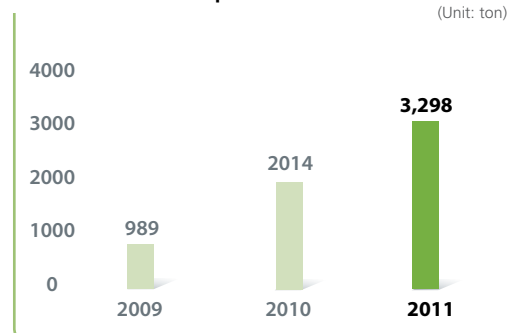


1.Using Recycled Resources

LGE is making efforts to increase the use of recycled materials to promote resource recycling.

With such efforts, LGE used a total of 3,298 tons of Post-Consumer Recycled (PCR) plastic in 2011, continually increasing the use from 989 tons and 2,014 tons in 2009 and 2010, respectively. PCR plastic is used in a variety of LGE products from refrigerators through washing machines, air conditioners, mobile handsets and monitors.

Annual PCR Consumption



* Post-Consumer Recycled (PCR) Plastic: Plastic recycled after use and disposal by consumers

2.e-Waste Take-Back

LGE believes that minimizing e-waste by prolonging product life is one way to practice green management. As part of this effort, LGE has established and manage warranty and parts holding periods as specified below:

Warranty Period/Holding Period of Parts

Product	Warranty Period*	Parts Holding Period**
Mobile Phone	1-2 years	3-5 years
TV	1-3 years	7 years
Air-Conditioner	1-5 years	7years
Washing machine, refrigerator, etc.	1-3 years	7 years

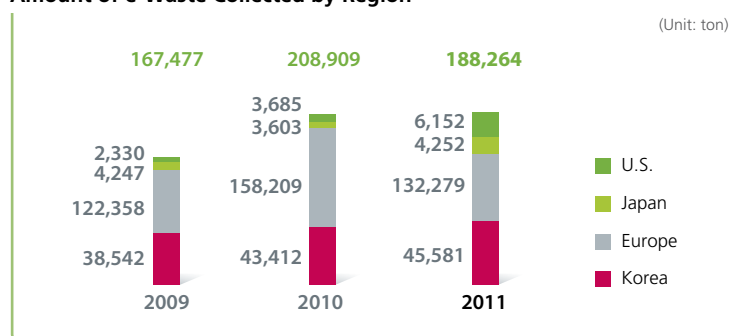
* Warranty period is subject to change depending on the product category, sales region and legal regulations.

** Parts holding period begins after the discontinuation date of a product.

LG Electronics collects e-waste in accordance with the local Electrical and Electronic Equipment (WEEE) regulations and requirements around the world. The company also maintains a website that offers information on its E-waste take-back system and related activities. <http://www.lg.com/global/sustainability/environment/take-back-recycling.jsp>

LGE is also establishing a take-back system in countries planning to implement the WEEE regulations starting in 2012, such as India, Australia and Argentina (Buenos Aires), and maintain open dialogue with governmental and industry organizations to facilitate e-waste collection and recycling.

Amount of e-Waste Collected by Region



* European countries have a different reporting period so their performance has either been predicted based on the previous year's performance or by using the performance of neighboring countries. Therefore, minor adjustments can be expected in next year's report.

Collection & Processing of e-Waste of LGEUS

- LeAndrea Dames, Take-back manager at LGEUS



How do you collect and process LGE's e-waste in the U.S.?

LGEUS is partnering with Waste Management Recycle America, Materials Processing Corporation, Metech Recycling and Electronic Recyclers International to operate its recycling system. There is no cost for recycling electronic waste and Zenith products, a U.S. subsidiary, and former brand GoldStar products are included as well as those of LGE's. LGEUS runs a website dedicated to the recycling program (<http://www.lgreyclingprogram.com>) which provides information on how to recycle and the locations of its over 200 eCycling¹ centers across the U.S.

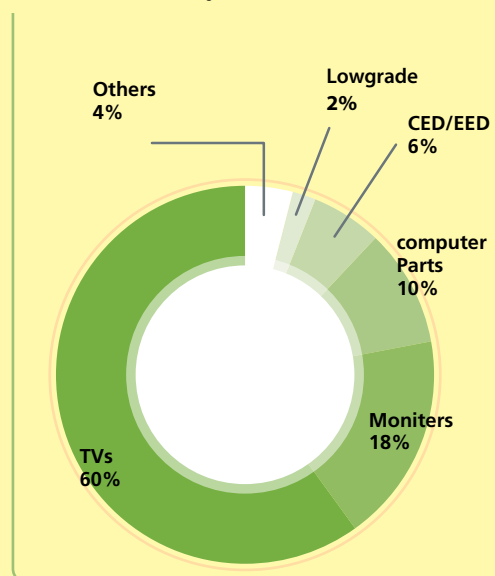
How much e-waste did LGE collect and process in the U.S. last year?

LGEUS collected about 6,152 tons of e-waste in 2011 which is an increase of about 1.7 times compared to that in 2010. Among the recovered electronic waste, TV takes up the largest amount accounting for about 60% of the overall total.

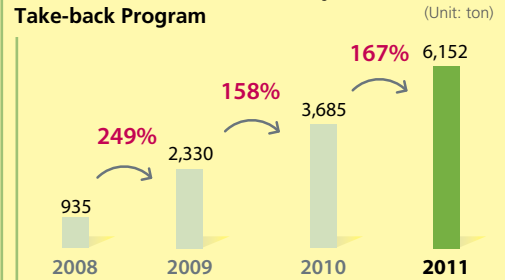
What is your plan for collecting and processing e-waste in the U.S.?

LGEUS keeps very close ties with our multiple recycling partners including Keep America Beautiful² and will continue the efforts to increase awareness among its present and future consumers about the importance of responsible recycling. We are developing a plan to promote "eCycling" on our recycling program website.

E-waste Collected by LGE the U.S. in 2011



Volume of E-waste Collected by LGEUS Take-back Program



LGE LGEUS Recycling Program Website

1) e-Cycling: A compound word of electronics and recycling. It refers to the process of recycling parts and metals from discarded machines or used devices.
 2) Keep America Beautiful: Founded in 1953, it is a US-based nonprofit organization dedicated to enhancing the natural beauty and environment of America, while improving waste handling practices at the local level.



Appendix

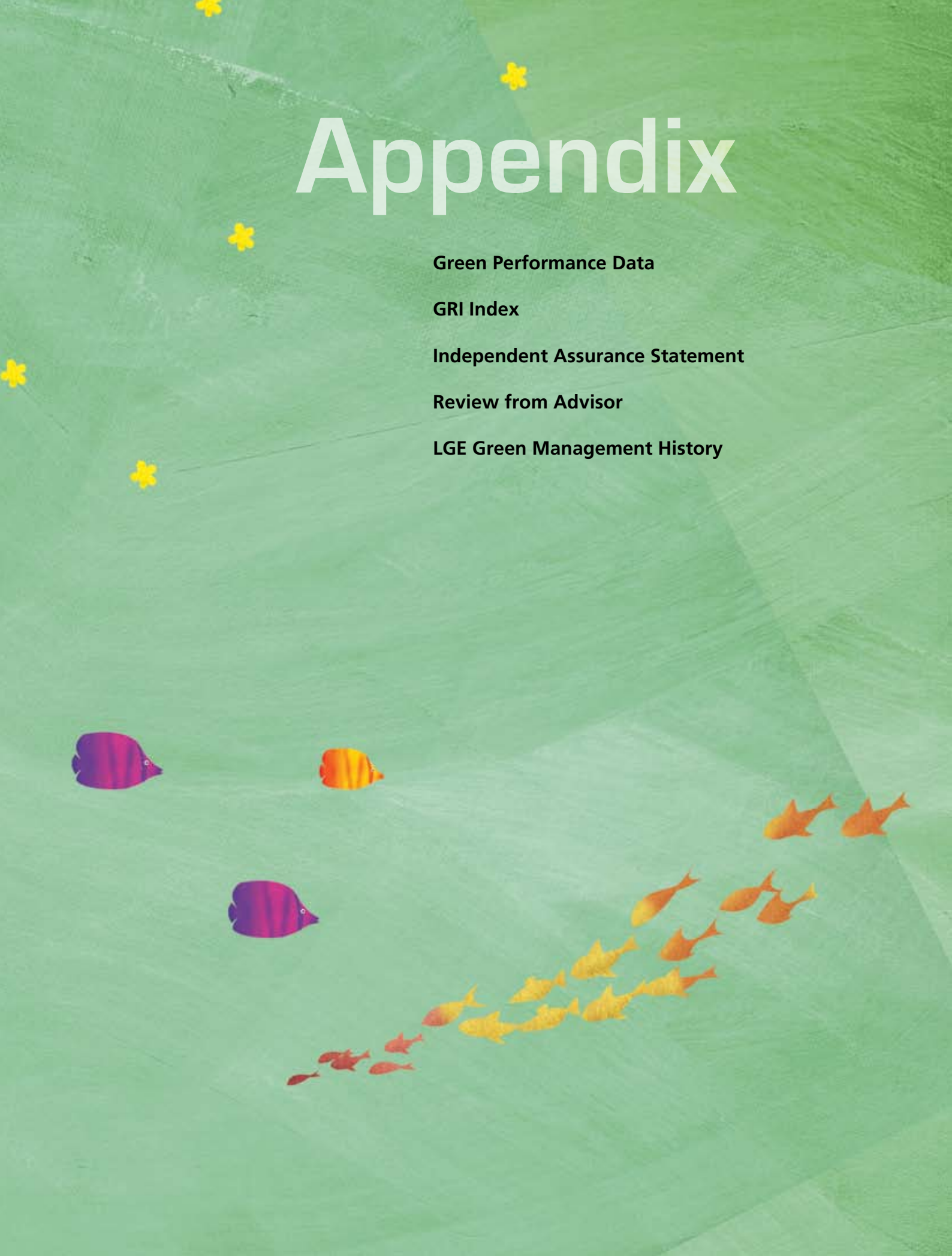
Green Performance Data

GRI Index

Independent Assurance Statement

Review from Advisor

LGE Green Management History



Green Performance Data

LG Electronics maintains environmental management standards that are 50% stricter than legally required, making contributions to reducing environmental risks and improving the local environment through strict management. To increase the reliability of the environmental data, LGE ensures that relevant staff members from all production sites undergo necessary trainings, while continuously improving the overall data management system. Through such process, LGE identified some errors in the previous year's data due to different data management systems among our business sites. LGE will provide reliable environmental data with improved management systems.

Input Data

Greenhouse Gas Emission

(Unit: K Ton CO₂e)

Category		2009	2010	2011
Korea	Scope 1	136	118	145
	Scope 2	444	516	534
Overseas	Scope 1	278	303	297
	Scope 2	407	363	385
Total		1,265	1,300	1,316
Base Unit (K Ton CO ₂ e/KRW bilion)		2.28	2.33	2.51

- Applicable business sites: 1 in Korea (Production, office and R&D centers):3D in Overseas(Production)
- Verification status -Korea: A third party verification completed (2008-2011), except for the 2011 refrigerant emissions.
-overseas: A third party verification completed (2008-2010), except for LGEAT and LGEQA.
- The data correction can be made after the completion of the third party verification.

(Unit: Ton CO₂e)

Category		2009	2010	2011
Scope 3	Leased Property	6,816	7,673	7,987
	Commuter Vehicles	4,309	4,978	6,072
	Domestic Logistics (transport)	66,987	86,210	95,282
	Business Travel	79,080	84,425	62,153

- Verification status: A third party verification completed(2009-2010)/ton.

Water Use

(Unit: K Ton)

Category	2009	2010	2011
Korea	4,291 (4,338)	5,914 (5,670)	6,373
Overseas	5,919 (5,937)	6,214 (6,221)	6,540
Total	10,210 (10,275)	12,128 (11,891)	12,913
Base Unit (K Ton CO ₂ e/ KRW bilion)	1.84	2.18	2.38

- The number is parenthesis '()' indicate the mistaken data disclosed in the 2010report.
The values have been adjusted to fix the errors occurred during the verification process.
- The water usage has significantly increased in Korea in 2010 because of the changed manufacturing process in the Gumi PDP site and mass production of the solar cell initiated in 2010.

Energy

(Unit: TJ)

Category	2009	2010	2011
Electricity	5,228	5,911	6,056
Steam	406	582	807
LNG	1,207	1,178	997
Coal	1,109	1,152	1,223
Others	341	302	353
Total	8,291	9,125	9,436

- Applicable business sites: 14 in Korea(production, office and R&D centers):30 in overseas production
- Applicable energy usage: Combustion facilities in business sites and external electricity and heat usage(excluding energy consumed by vehicles).
- The energy consumption is calculated based on net heating value Verification status Korea: A third party verification completed (2008-2010),except for LGEAT and LGEQA.
- The data correction can be made in after the completion of the third party verification.



Ozone Depleting Chemicals

(Unit: Ton)

Category		2009	2010	2011
HCFC (R22)	Korea	1,631	1,509	1,070
	Overseas	3,036	3,023	2,881
	Total	4,667	4,532	3,951

Output Data

Air Emissions

(Unit: Ton)

Category	Region	2009	2010	2011
NOx	Korea	1.5	1.8	3.3
	Overseas	71.9(92.6)	84.6(114.1)	79.0
	Total	73.4(94.1)	86.4(115.9)	82.3
SOx	Korea	0.1	0.4	0.6
	Overseas	42.5(55.6)	62.9(89.1)	47.6
	Total	42.6(55.7)	63.3(89.5)	48.2
Dust	Korea	4.0	5.0	7.5
	Overseas	61.6(66.5)	72.3(80.7)	58.1
	Total	65.6(70.5)	77.3(85.7)	65.6
VOCs	Korea	14.0	16.4	11.1
	Overseas	21.6	21.8	30.3

· In case of VOCs, there was no standard for VOC measurement in Korea so this report presents the average concentration of Total Hydrocarbon(THC) in ppm from the painting facilities.

· The numbers in parenthesis "()" indicate an error in the disclosed data from the 2010 report. The values have been adjusted to correct the errors identified during the verification process.

· Sox emissions, in particular, are greatly reduced in 2011 thanks to the newly installed anti air pollution equipment.

Discharge into Water

(Unit: Ton)

Category	Region	2009	2010	2011
T-P	Korea	1.5	1.3	0.9
	Overseas	0.6	0.5	1.3
	Total	2.1	1.8	2.2
T-N	Korea	51.3	58.0	36.6
	Overseas	6.5	5.3	2.5
	Total	57.8	63.3	39.1
SS	Korea	18.3	38.8	12.9
	Overseas	32.7	30.5	49.7
	Total	51.0	69.3	62.6
COD	Korea	54.4	106.8	77.8
	Overseas	48.0	99.2	108.5
	Total	102.4	206.0	186.3

Wastewater Discharge

(Unit: Ton)

Category	2009	2010	2011
Korea	3,017,428	3,922,150	4,140,130
Overseas	1,464,472	1,493,185	1,451,776
Total	4,481,900	5,415,335	5,591,906

· In 2011, wastewater discharge increased sharply in Korea due to the additional production lines at Gumi solar panel Plant.

GRI Index

LG Electronics' Environmental Report refers to the GRI(Global Reporting Initiative) Sustainability Reporting Guidelines Version 3.1.

GRI Index		Extent of Reporting	Related Contents	Page
Disclosure on Management Approach				
EN1	Materials used by weight or volume	△	Input Data (Material)	80
EN2	Percentage of materials used that are recycled input materials	△	Utilization of Recycled Materials	27
EN3	Direct energy consumption by primary energy source	○	Input Data (Energy)	45
EN4	Indirect energy consumption by primary source	○	-	45
EN5	Energy saved due to conservation and efficiency improvements	△	-	17
EN6	Reductions in energy requirement as a result of energy efficient or renewable energy initiatives	△	Input Data (Energy)	18, 28-32
EN7	Initiatives to reduce indirect energy consumption and reductions achieved	△	Production Level GHG Reduction	19
EN8	Total water withdrawal by source	△	Greener Products, Product Use Level GHG Reduction	45
EN9	Water sources significantly affected by withdrawal of water	×	Expanding GHG Management Across Businesses	-
EN10	Location and size of areas of high biodiversity value	×	Water Use Management, Water Use	-
EN11	Description of significant impacts of activities on biodiversity	N/A	LGE's facilities are located in industrial complexes.	-
EN12	Percentage and total volume of water recycled and reused			
EN13	Total direct and indirect greenhouse gas emissions by weight			
EN14	Other relevant indirect greenhouse gas emissions by weight			
EN15	Initiatives to reduce greenhouse gas emissions and reductions achieved			
EN16	Emissions of ozone-depleting substances by weight	○	Input Data (GHG)	45
EN17	NOx, SOx, and other significant air emissions by type and weight	○	Input Data (GHG)	45
EN18	Total water discharge by quality and destination	○	Low-Carbon Green Management	16-19
EN19	Total weight of waste by type and disposal method	△	Input Data (Ozone depleting chemicals)	46
EN20	Total number and volume of significant spills	○	Output Data (Air Emissions)	46
EN21	Habitats protected or restored	△	Output Data (Wastewater)	46
EN22	Strategies, current actions, and future plans for managing impacts on biodiversity	○	Output Data (Waste)	48,81
EN23	Number of IUCN Red List species and national conservation list species	×	None of significant spills occurred in 2011.	-
EN24	Weight of exported, imported, transported, or treated hazardous waste under the terms of Basel Convention	×	Greener Products, Low-Carbon Green Management	-
EN25	Identity, size, and protected status of water bodies and related habitats	×	Resource Reduction	-
EN26	Initiatives to mitigate environmental impacts of products and services	○	No violations in 2011	35-46
EN27	Percentage of products sold and their packaging materials	○	-	27,42
EN28	Total environmental protection expenditures and investments	×	-	-
EN29	Significant environmental impacts of transporting products and other goods	○	Expanding GHG Management Across Businesses, Output Data (GHG)	19-45
EN30	Monetary value of significant fines for noncompliance with environmental regulations	×	-	-

· The page numbers with red color in the last column of the table indicate that related data are available in LGE's Sustainability Report.
 LG Electronics Sustainability Report: <http://www.lg.com/global/sustainability/communications/sustainability-reports.jsp>



Independent Assurance Statement

Scope and objectives

Two Tomorrows (Asia) Limited has undertaken independent assurance of the LG Electronics 2011 Environmental Report (the Report).

The assurance process was conducted in accordance with the AA1000AS (2008). We were engaged to provide Type 1 assurance, which covers

- evaluation of adherence to the AA1000APS (2008) principles of inclusivity, materiality and responsiveness (the Principles)

Additionally our team used the following guidelines in providing an independent opinion on the Report contents that address LG Electronics approach to environmental assertions in marketing:

- US Federal Trade Commission's Guides for the Use of Environmental Marketing Claims Part 260 and;
- Korean guide on the assessment of environmental labelling and advertising (enforced 8-21-2009)

The scope of our work is limited to environmental aspects of performance for LG Electronics and includes information relevant to suppliers, operations and products. Corporate governance and ethics systems are not described in the Report and are excluded from this assurance.

Responsibilities of the directors of LG Electronics and of the assurance providers

The directors of LG Electronics have sole responsibility for the preparation of the Report. We were not involved in the preparation of any part of the Report. We have undertaken previous contracts with LG Electronics to benchmark previous sustainability reports against global best practices in sustainability management. We also provided assurance for the 2008-2010 Sustainability Reports. This is the second year that Two Tomorrows has provided assurance for the LG Electronics Environmental Report. Our statement represents our independent opinion and is intended to inform all of LG Electronics stakeholders including management. We adopt a balanced approach towards all LG Electronics stakeholders. Our team comprises MinGu Jun, project leader, as well as Todd Cort and InMog Yang. Further information, including individual competencies relating to the team can be found at www.twotomorrows.com

Basis of our opinion

Our work was designed to gather evidence with the objective of providing moderate assurance as defined in the AA1000AS (2008). We undertook the following activities:

- Review of information provided to us by LG Electronics on its reporting and management processes relating to the AA1000 Principles.
- Review of the English and Korean draft report against the FTC Guide Part 260 and Korean guide on labelling and advertising to identify material claims for further check and clarification during the site visit.
- One-day site visit with two assurance practitioners to Woomyeon-dong, Seoul to review supporting evidence for key claims in the report.
- Review of the processes for gathering and consolidating data, and sample checks of selected data sets.

Findings

We reviewed and provided feedback on drafts of the Report and where necessary changes were made. On the basis of the work undertaken, nothing came to our attention to suggest that the report does not properly describe LG Electronics adherence to the Principles.

Observations

Without affecting our assurance opinion we also provide the following observations.

Inclusivity concerns the participation of stakeholders in developing and achieving an accountable and strategic response to sustainability.

- LG Electronics exhibits multiple examples of engagement with key stakeholders to develop and advance the environmental performance of their products and operational activities. Examples include online climate change education for employees, LG Electronics' 'Green Program Plus' supplier training and customer feedback on sustainable product development.
- Further improvement for inclusivity can be made if LG Electronics establishes clear mechanisms to reflect the customers' feedback on the environmental performance of the products in the product development processes.

Material issues are those which are necessary for stakeholders to make informed judgments concerning LG Electronics and its impacts.

- LG Electronics clearly identifies and responds to issues that are material to its stakeholders and the business, which should enable stakeholders to make informed judgements concerning LG Electronics and its impacts. The 'Green 2020' management strategy is expected to further expand the company's investment and development in key material areas such carbon and resource management, sustainable energy, and green product and business development. Materiality could be strength-ened by linking LG Electronics' materiality process to the key issues reported in the Report.
- LG Electronics is conducting lifecycle assessment (LCA) in its product development stage. Stakeholders' understanding of material issues and LG Electronics' adherence to the materiality principle will be further improved if LG Electronics reports on the key considerations taken into each step of its product life cycle.

Responsiveness concerns the extent to which an organisation responds to stakeholder issues.

- LG Electronics mentions that they have 'responded to customer demands' frequently throughout the report, but it would be helpful to have detailed examples where stakeholder feedback has resulted in developments to their strategy, systems or products. For example, the use of exhibitions to solicit customer feedback on sustainable product development is a strong example. However, it would be helpful to highlight direct examples of what product developments/updates have been implemented based on this feedback.
- LG Electronics established expanded greenhouse gas reduction targets across the lifecycle including its suppliers, offices and logistics. We recommend that LG Electronics enhance understanding of stakeholders through reporting more systematically on the targets with clear criteria, current performance and future improvement plans.
- LG Electronics demonstrates a commitment to resource recycling and reports on use of renewable plastics in its products. We expect to see the current scope of LG Electronics' resource recycling effort further expand to various materials and items over time.

Review opinion based on FTC and Korean environmental marketing guides

- In terms of marketing claims, nothing came to our attention to suggest that these claims have not been properly made, nor that the assumptions utilized were inappropriate.

Two Tomorrows (Asia) Limited

Seoul, July 9, 2012



Todd Cort
Principal Consultant



MinGu Jun
Project Leader



InMog Yang
Associate Director



Review from Advisor

Over the years, LG Electronics (LGE) has established itself as a leader in green management. LGE continues to pursue sustainable efforts to protect the environment through its vision of 'Greenovation'. This vision was established in concert with LG Group's long-term vision of Green 2020, and serves as an exemplary model of next-generation green management that should be addressed by all large corporations. Its five key strategic directions include: strengthening low carbon green management, developing green businesses, expanding greener products, reinforcing green value chain and creating additional value with efficient resource recycling.

Taking LGE's product characteristics into account, it is more important to address the environmental impacts throughout the product lifecycle, including product use levels, rather than simply focusing on impacts at the production level. In this regard, LGE's proactive R&D efforts have helped the company achieve outstanding results, spearheading the development of highly efficient products, and contributed greatly toward its winning the 2012 ENERGY STAR Partner of the Year Award. Such achievements have enabled LGE to reduce 21 million tons of GHG emissions compared to 2007 levels, marking a significant improvement from the 12.75 million ton reduction the year before. LGE has also obtained the ENERGY STAR 2011 certification for its products including TVs, refrigerators, and washing machines to expand consumer communication efforts through its products, and is actively seeking to obtain additional certifications such as Carbon Trust in Europe, CarbonFree in the U.S. and Carbon Footprint Label and Low-carbon Products Certification in Korea.

The success of green management depends on a number of factors, including the commitment of the CEO, the corporate governance, and the collective capabilities of the organization. LGE's Eco-design Committee, which previously focused on the technical aspects of responding to regulation changes, changed its name to Green Technology Committee in 2011, and re-focused its key efforts on developing green technologies in advance and finding ways to apply them to products. Meanwhile, the Green Marketing Council, a lower unit of the organization, focuses on establishing corporate-level green marketing strategies and promoting efficient implementation of such strategies through information exchange and collaboration between business units. These changes in structure and operation are expected to be good because they will help LGE achieve long-term goals in green management. However, the lack of information on costs and associated investments makes it difficult to predict the long-term success of the current green management strategies and to assess managerial commitment for going green.

Meanwhile, LGE's voluntary effort to improve the environmental aspects of its products is commendable, as the company succeeds in gradually finding substitutes for non-regulated hazardous substances such as PVC and BFRs. To produce greener products, LGE has established its own green product evaluation standard called the Eco-index (focusing on core values of human, energy, and resources) and is applying such standards across the board—rating each product from Green 1 Star to Green 3 Star. In 2011, the proportion of Green 2 Star and Green 3 Star products increased dramatically compared to the previous year. It is my hope that in the near future, all LGE products will meet the Green 3 Star standard.

Since its initiation, LGE's Greenovation is already yielding tremendous results, and I believe that with continuous and consistent efforts, it will eventually emerge as a globally renowned best practice for green management. LGE's Environmental Report has also become more transparent, reliable, and complete. And especially in the area of Low Carbon Green Management, LGE's efforts to provide clear goals and performance results have played an instrumental role in the company's selection for three consecutive years as a member of the Carbon Management Global Leaders Club.

In some aspects, LGE's Environmental Report still requires improvement, but with the completion of a few key enhancements, LGE may become the epitome of green management and reporting.

First, the report fails to adequately consider the needs of interested stakeholders. LGE should include information in the report that these stakeholders require, in words that are readily understandable. Report content should be based on preliminary research and analysis of interested stakeholders, and their information requirements. Diagrams or charts of summarized data regarding overall environmental performance and year-on-year improvements should also be included.

Second, LGE should strive to enhance interested stakeholders' understanding of the report through the development of an integrated index that clarifies improvements, rather than simply listing the raw data. This approach would clearly illustrate the progress of ongoing improvement. For example, LGE needs to define and measure key indices such as carbon efficiency, resource efficiency, resource circulation rate, and the degree of greener product development to enhance understandability and comparability by showing progress in chart format. Also, when disclosing information on environmental impacts, it would be advisable to provide information on the degree of intensity and total amount if appropriate.

Third, it is necessary to calculate and disclose environmental costs and investments via environmental accounting. In the long term, LGE needs to consider the development of an accounting system that measures not only visible costs but also externalities. It should also consider adopting a material and energy flow accounting system capable of measuring and managing reductions in cost, resources, GHGs, and waste. This would help LGE measure unseen costs to provide better support, and to share cost reduction benefits with its partner companies.

Fourth, the report should also contain information such as forecast and response analysis regarding current issues including climate change and other various factors that may greatly influence the future of businesses. Examples include the influence analysis and strategies of the domestic carbon trading scheme scheduled for initiation in 2015, tackling the growing issue of global water shortages and pollution with the perspective of a global corporation, and efforts to protect biodiversity. The establishment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), scheduled to take place this year, foreshadows the increasing importance of managing biodiversity and ecosystem services for the future of business management.

Finally, I wish to conclude by saying that I hope LGE's Greenovation becomes the world's best green management practice. LGE Environmental Report should be continuously improved to facilitate interactive two-way communication with interested stakeholders. I hope that future reports will provide more balanced and truthful information on the current and future of LGE.



Kim Jong Dae
Professor at College of Business Administration, Inha University
Head Professor of Sustainability Management Graduate program
Director of Sustainability Management Research Institute
Former Chairman of Korea Environmental Management Association



LGE Green Management History

Since declaring its environmental vision in 1994, LGE has made tireless efforts toward Greenovation to minimize its environmental impact across its business activities and realize its consumer value through developing green products.

1990s

- 1992** • Established an environmental committee
- 1994** • Announced an environmental slogan - "Cleaner Environment"
- 1995** • Achieved company-wide ISO14001 certification
- 1996** • Introduced LCA
 - Developed the eco-design software, ATROiD in collaboration with Braunschweig University in Germany
- 1999** • Received the European environmental mark, the "Eco Flower", for monitors

2000s

- 2000** • Received the Korean environmental mark for monitors
 - Microwave business unit participated in the LCA project
- 2001** • Received the Korean environmental mark for televisions
 - Received the European environmental mark: the "Eco Flower" for refrigerators
- 2002** • Opened a hazardous substance analysis laboratory
 - Established a company-wide Green Technology Committee
 - Received certification from Korea's Environmental Declaration of Products for refrigerators and PDP TVs
- 2003** • Developed an eco-design system
 - Realized energy conservation by using waste water and heat

2004

- Introduced the LG Electronics Green Program (LGE GP) for suppliers
- Established a response system for EU RoHS
- Completed the EU Take-back System
- Developed standards for LG Electronics' environmental mark
- Received certification from Korea Environmental Declaration of Products for mobile phones

2005

- Announced the completion of the EU RoHS response system
- Received official hazardous substance analysis laboratory certification (UL)
- Introduced photo-degradable packaging materials
- Expanded LGE's energy conservation goal to all domestic business units

2006

- Launched the Eco-Design Committee (previously Green Technology Committee)
- Set a Global Energy Conservation Goal for the company
- Developed the Eco-Index and established an evaluation system
- Developed a Hazardous Substance Management System (HSMS)

- Introduced biodegradable packaging materials
- Received EU RoHS 3rd party certification (TÜV PS) for mobile phones
- Received EU RoHS third-party certification (TÜV Rhineland) for air-conditioning systems

2007

- Developed an IT management system for LGE Green Program (LGE GP) for suppliers
- Started a solar business group and established a photovoltaic power-generation system
- Established a voluntary mobile phone waste take-back system in 45 countries
- Developed and put LGE-customized greenhouse gas emission calculation system in place
- Established a greenhouse gas inventory in Cheongju Plant
- Developed a cooling/heating system, utilizing new and renewable energy technology
- Used renewable energy sources at LGE's Changwon Plant 2
- Announced its Eco Declaration (for mobile phones, air conditioners, monitors and TVs)
- Received the President's Award at the National Environmental Management Award (Air conditioners)
- Introduced cushioning material made of waste paper

2008

- Created the Eco Strategy Team
- Established greenhouse gas inventories for 12 domestic factories and received third-party international certification
- Established a voluntary e-waste take-back system in the USA (Entrusted to Waste Management (WM) Inc.)
- Received CDP Korea K-CDP Award (Woorim)
- Hosted the Dubai International Environmental Conference
- Established EMS (Environmental Management System) for suppliers (as a national eco-friendly project)
- Released hands-free solar cell batteries for mobile phones
 - Received Carbon Labeling pilot certification and Korea LOHAS certification for drum washing machines
- Pyeongtaek chemical analysis laboratory was certified as an official certified laboratory for PAHs material analysis (Germany TÜV SÜD)

2009

- Voluntarily announced greenhouse gas reduction goals
- Established greenhouse gas inventories for domestic/overseas business sites (12 domestic, 29 overseas)

- Received CDP Korea K-CDP Award (Noori)
- Executed India's Clean Development Mechanism (CDM) project
- Received TÜV Rhineland certification for solar cell modules
- Participated in the smart grid demonstration consortium as a major participant
- Supported the UN "Champions of the Earth"
- Joined UNGC
- Released solar charged mobile phone, GD510
- Established global unified environmental IT system (GPMS)
- Approved as an ISO 17025 internationally certified testing laboratory (organization recognized in Korea) for precision analysis of hazardous substances

2010

- Obtained 11 green technology certifications
- Supported the UNEP "Champions of the Earth"
- Established an integrated certified laboratory in a "Green Energy Testing Lab." (certified by UL)
- Open Europe Energy Laboratory
- Launched the water treatment business
- LGE refrigerator was selected as the world's first leading eco-friendly product at MAISON & OBJET (France)
- Acquired UL eco-friendly certification (SPC) for monitors
- Conducted environmental experts training at overseas locations
- Declared KRW 50 trillion spending goal for annual low carbon procurement
- Approved as the world's first laboratory certified for smart grid wireless communication technology
- Released solar-cell hybrid air conditioners
- Started using "Eco-magnesium*" for mobile phones
- Named as a member of the Carbon Management Global Leaders Club

2011

- Changed the name to Green Strategy Department
- Acquired the "2011 Energy Star Most Efficient" Certification (eight TV, two refrigerator and three washing machine models)
- Carbon Label: Korean Carbon Footprint Label, Carbon Trust, Carbon Free
- Selected as "The Most Water Efficient Product" from the U.K.'s Waterwise (Drum washing machine and dishwasher)
- Received the Presidential Prize at the 2011 Global Green Management Excellence Awards (TROMM Washing Machine)

*Eco-magnesium: A newly developed magnesium which do not emit SF6 and SO2 each of which is regarded as GHG and noxious gas.

Published LGE Environmental Reports

2008 Environmental Report
(Published in July 2009)



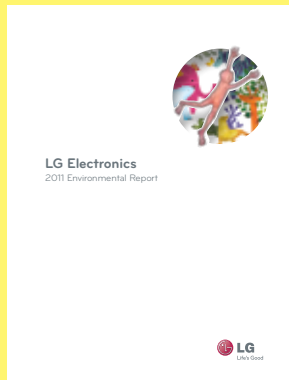
2009 Environmental Report
(Published in June 2010)



2010 Environmental Report
(Published in July 2011)



2011 Environmental Report
(Published in July 2012)



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