With the Environment

O U R  F O C U S
According to our 2014 Materiality Analysis, 1) Reducing GHG Emissions 2) Developing Highly Energy Efficient Products were identified as the most material issues, followed by “Preventing Environmental Pollution”, and “Waste Take-back and Resource Recycling.”

O U R  A P P R O A C H
As part of our efforts to reduce product-level and production-level GHG emissions, LG Electronics has quantified GHG emissions associated with a product’s life cycle, which we then use to identify improvement points and manage our performance. We also operate the ESIU (Energy, Environment, Safety, and Health) Management System to comprehensively manage our initiatives and performance in these areas.

O U R  E V A L U A T I O N
In line with the group-level green management initiative “Green 2020,” LG Electronics established the “Three Management Goals” of creating green business sites (to reduce GHG emissions and water, etc.), expanding sales in green new business areas, and increasing sales in green business sites (to reduce GHG emissions and water use), aimed at increasing products with greener features (to reduce use-level GHG and water use), and expanding sales in green new business areas. These management goals provide us with the basis for monitoring our progress and take actions to improve our performance.

S T A K E H O L D E R  S T A T E M E N T
Since 1974, LG Electronics has used CSA Group’s third party testing, certification and verification services for a broad range of products. For more than 40 years of our collaboration, we shared the same vision and value of providing safe, efficient and sustainable products and services to consumers around the world. LG Electronics has been a leader in using sustainability standards that help identify environmentally friendly products using a life cycle approach and go well beyond simply meeting the traditional energy performance benchmarks. The latest example and one of many, is the gas double oven range which was the first in the world to meet the new sustainability standard for household cooking appliances and receive the CSA Group sustainability mark in February, 2015. CSA Group has developed a sustainability mark to help retailers, regulators and consumers identify products that meet the environmental performance requirements of these standards. CSA Group is proud to work with organizations like LG Electronics that consistently demonstrate their commitment to environmental protection and a more sustainable world.

P R O D U C T S  W I T H  G R E E N E R  F E A T U R E S
Strategic Directions
As part of our ongoing effort to enhance customer value, LG Electronics strives to make our products greener by reducing the environmental impact of our products throughout their life cycle. To this end, we have in place a strategic framework for developing technologies and products that takes account three core factors: human, energy, and resources. Our actions to identify and carry out critical tasks are based on the “strategic framework for products with greener features.” We also implemented the Eco Index (internally developed indices to quantify environmental performance and establish targets), to support our systematic approach to developing greener features for our core products (TVs, mobile phones, refrigerators, washing machines, air conditioners, and monitors), and manage environmental performance and targets for each of our products.

Performance & Target Management for Products with Greener Features (Eco Index)
LG Electronics has consistently outperformed all annual targets set by the “strategic framework for products with greener features” since the 2011 adoption of the Eco Index, the internal standard for assessing the environmental performance of our products. The first company under the LG Group to implement this type of index, LG Electronics uses the Eco Index to rate every product model from our core product groups into three tiers (“Green 1 Star, Green 2 Star, and Green 3 Star”) based on their environmental performance with the goal of expanding the percentage of Green 3 Star products. In 2015, we revised the Eco Index and strengthened its performance criteria to fully accommodate customers’ diverse needs and stronger requirements for environmental performance, while reestablishing mid- to long-term targets based on our 2014 performance upon the expiration of the first management phase in 2014. LG Electronics will continue to develop and expand products with greener features that address customer needs by carefully assessing and managing the environmental performance of our products with the Eco Index.

Strategies for Products with Greener Features
Reduce Resources
- Reduce product volume and weight
- Use recycled materials
- Use renewable energy
- Reduce CO₂ emissions throughout the product life cycle

Improve Home Environments
- Minimize product noise and vibration
- Create a cleaner living environment

Enhance Energy Efficiency
- Reduce power consumption
- Reduce standby power

Increase Recyclability
- Increase the use of recyclable materials
- Design for easy disassembly

Replace Hazardous Substances
- Replace hazardous substances with safer alternatives
- Replace hazardous chemical substances

Replace Heavy Metals
- Reduce the use of heavy metals
- Replace hazardous chemical substances
### Product Stewardship

**Voluntary Replacement of Hazardous Substances**

As a global electronics maker, LG Electronics is keenly aware of its responsibility for the health of people and the environment and fully complies with international regulations on hazardous substances, including RoHS and REACH. As part of our efforts to replace and reduce substances that are believed to have negative impacts on human health and the environment, we do not use regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated diphenyl ethers (PBDE), polybrominated diphenyl ethers (PBDE)) in our products. Moreover, we are proactively replacing substances that are not currently regulated but believed to be hazardous, such as PVC (Polyvinyl Chloride), BFRs (Brominated Flame Retardants). As a result of our ongoing R&D effort, all our mobile phone products are free of PVC and BFRs as of 2010, and PVC cables in our UHD/OLED TV products have been replaced with substitute materials. We also introduced laptop and all-in-one PC models free of PVC and BFRs, and in 2013, we developed a PVC-free skirt lower (parts for reducing noise) and applied it to all refrigerator models. In 2014, we introduced a vacuum cleaner with PVC-free hoses. LG Electronics will continue with R&D efforts to replace hazardous materials and further expand the use of substitute materials in our products.

**Enhancing Energy Efficiency**

In an effort to make our products more energy efficient, LG Electronics has established the Technology Road Map (TRM) and instituted specific targets for each product, striving to hit every milestone. Although all our products fully satisfy international energy regulations such as ERP (Energy Related Product), we are not relaxing on our efforts to reduce energy and standby power consumption and have set more demanding goals and targets internally.

**ENERGY STAR**

ENERGY STAR is a certification program established by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy to promote energy-efficient consumer products. LG Electronics has been recognized by the EPA with the 2015 ENERGY STAR Partner of the Year—Excellence Award and the 2015 ENERGY STAR Partner of the Year—Climate Communications Award for continued leadership in protecting the environment, such as offering a greater number of ENERGY STAR certified product models, raising consumer awareness on energy efficiency, and training employees on energy issues. Previously, LG Electronics has recognized as the ENERGY STAR Partner of the Year for three consecutive years since 2012.

**Innovation Resources**

- **Human Resources:** 100,000 employees
- **R&D Investment:** USD 2.1 billion
- **R&D Ratio:** 5.71%

**Innovation**

- LG Electronics has established the Technology Road Map (TRM) and instituted specific targets for each product, striving to hit every milestone.

**Performance in Replacement of Hazardous Substances**

- **MOBILE PHONE**
  - Replaced PVC and BFRs with substitutes in all models by 2010
  - Replaced beryllium and phthalate substitutes in all models by 2011

- **ULTRA HD/OLED TV**
  - Applied PVC free internal cables in all models

- **MONITOR**
  - Applied a PCA/BFRs-free LCD module to all models in 2011
  - Applied a PVC/BFRs-free LCD module to all models in 2013

**Materiality Report**

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  - Stakeholder Communication
  - Materiality Report
  - Appendix
  - With the Environment

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**Product Life Cycle Assessment (LCA)**

In compliance with international standards (ISO 14040 series) for environmental performance assessment tools, LCA is a technique to measure the environmental impact associated with all the stages of a product’s life cycle (sourcing, production, distribution, product use, and disposal/recycling), identify improvement tasks, and validate the performance of improvement efforts. Since 2002, we have put great energy into quantifying the environmental impact associated with the life cycle of all our products, and use the data to minimize the negative environmental impacts of our products. As part of our efforts to quantify and manage carbon emissions produced throughout our products’ life cycle, we created the Life Cycle Inventory Database for eight product categories (TV, monitor, washing machine, refrigerator, solar module, mobile phone, and residential/commercial air conditioning system) in 2011, through which we identify the vulnerable stages and factor in environmental impact from the initial stage of product development. We also assess the life cycle carbon footprint of seven product categories on an annual basis and disclose the data on our corporate website.

**Product Carbon Footprint, Breakdown by Life Cycle Phase (As of December 31, 2014)**

<table>
<thead>
<tr>
<th>Life Cycle Phase</th>
<th>TV</th>
<th>Monitor</th>
<th>Washing Machine</th>
<th>Refrigerator</th>
<th>Mobile Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>81.04</td>
<td>89.27</td>
<td>65.77</td>
<td>80.21</td>
<td>1.97</td>
</tr>
<tr>
<td>Transport</td>
<td>28.23</td>
<td>12.63</td>
<td>3.92</td>
<td>0.00</td>
<td>0.19</td>
</tr>
<tr>
<td>Production</td>
<td>0.54</td>
<td>0.77</td>
<td>1.88</td>
<td>0.63</td>
<td>0.25</td>
</tr>
</tbody>
</table>

**Table: 2014 Performance for Products with Greater Features & Mid-to-Long-Term Targets (Unit %)**

<table>
<thead>
<tr>
<th>Feature</th>
<th>2014</th>
<th>2015</th>
<th>2017</th>
<th>2020 (Target)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency</td>
<td>80.00</td>
<td>87.00</td>
<td>94.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Resource Efficiency</td>
<td>84.00</td>
<td>91.00</td>
<td>98.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Human Efficiency</td>
<td>80.00</td>
<td>87.00</td>
<td>94.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Overall</td>
<td>84.00</td>
<td>91.00</td>
<td>98.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Database for eight product categories (TV, monitor, washing machine, refrigerator, solar module, mobile phone, and residential/commercial air conditioning system)**

- **Residential Air Conditioner**
  - 98.35 (Use), 10.11 (Transport), 0.01 (Production)  
  - 98.00 (Use), 16.52 (Transport), 0.06 (Production)

- **Commercial Air Conditioner**
  - 99.51 (Use), 4.15 (Transport), 0.01 (Production)  
  - 94.00 (Use), 16.52 (Transport), 0.06 (Production)

**Report**

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**Graphs**

- **Product Life Cycle Assessment (LCA)**
- **Product Carbon Footprint, Breakdown by Life Cycle Phase**
- **Performance in Replacement of Hazardous Substances**
- **Case Study**

**Case Study**

- **MOBILE PHONE**
  - Replaced PVC and BFRs with substitutes in all models by 2010
  - Replaced beryllium and phthalate substitutes in all models by 2011

- **ULTRA HD/OLED TV**
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  - Applied a PVC/BFRs-free LCD module to all models in 2013

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**Table: Number of ENERGY STAR Certified Products (Unit: EA)**

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>171</td>
<td>177</td>
</tr>
<tr>
<td>Monitor</td>
<td>124</td>
<td>134</td>
</tr>
<tr>
<td>Air Conditioner</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>Washing Machine</td>
<td>82</td>
<td>90</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>284</td>
<td>305</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Oven</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Lighting Product</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

---

**Figure**

- **Performance in Replacement of Hazardous Substances**
  - MOBILE PHONE
  - ULTRA HD/OLED TV
  - MONITOR

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**Graphs**

- **Product Life Cycle Assessment (LCA)**
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**Figure**

- **Performance in Replacement of Hazardous Substances**
  - MOBILE PHONE
  - ULTRA HD/OLED TV
  - MONITOR
Reduction of GHG Emissions

In order to encourage and facilitate a low-carbon lifestyle, LG Electronics measures the total amount of GHG emissions produced throughout the life cycle of its major products and discloses the data on the products, while making concerted efforts to reduce GHG emissions produced in all stages of their life cycle.

GHG Emissions Certificates & Low Carbon Certificates

In 2014, 195 of our products (cumulative) acquired carbon emissions related certificates in Korea and overseas. (Korea GHG Emissions Certificate (151 models), Low Carbon Certificate (38 models). Carbon neutral Certifica-
tion (1 model) / Overseas: CarbonFree (U.S. (2 models), Climatop1), Switzerland (1 model), and LCIE2), France (2 models)). LG Electronics plans to contribute to the reduction of GHG emissions from BAU3) (2007) by 2020. By meeting the target, LG Electronics will contribute towards a total reduction of about 400 million tons (cumulative) of GHG emissions and 3,373 kg CO2 reductions vs. base Model (83.3 kg CO2) below the lowest achievable emissions rate (122.9 kg CO2).

Reducing GHG Emissions from Product Use

LG Electronics plans to contribute to the reduction of GHG emissions associated with product use by developing and introducing highly energy-efficient products. We have established a target to reduce 60 million tons of GHG emissions from BAU4) (2070) by 2020. By meeting the target, LG Electronics will contribute towards a total reduction of about 400 million tons (cumulative) of GHG emissions associated with product use between 2008 and 2020. In order to meet the 2020 target, LG Electronics will press forward with its initiatives for enhancing energy efficiency.

Resource Reduction

Improving Materials

LG Electronics puts great efforts into maintaining the highest level of material quality and product structure from the initial phase of product development and collaborates with recyclers to increase recyclability, the ease of disassembly, and product performance while reducing form factor size and weight wherever possible. Based on such efforts, we were able to achieve a weight reduction of approximately 9 percent (0.7kg) in our 2014 32 inch TV model (Model: 32LB555B) compared to the previous year’s model (32LN5400) of the same size.

Use of Recycled Materials

As part of our efforts to promote recycling and efficient use of resources, LG Electronics utilizes recycled plastics in some of its product components following careful stability and reliability tests. In 2014, LG Electronics used a total of 7,885 tons of Post-Consumer Recycled (PCR) plastics, continually increasing use from 4,980 tons in 2012 and 5,617 tons in 2013. In the long term, we will develop substitute parts and technologies to continuously expand our use of recycled plastics over time, and systematically manage the use of recycled plastics in each of our product groups.

Reduction of Water Usage

LG Electronics invests in research and development of optimization technology and policy. We introduce our achievements, such as implementing low power multi-core application processor for mobile devices, high-performance gas turbine technology leveraging engine optimization technology, high efficiency parallel two-stage cycle refrigeration, solar technology, mature front drawer technology that uses energy and water, 0% drawer closing machine, high efficiency storage type compressor technology for residential refrigerators, Mobile Water Technology, Ice and free pump utilized dryer and care machine, design technology for higher energy efficiency with OLED technology and intelligent sensors, high efficiency refrigerator with all in applications in high power TV modules, improving energy design technology, mature front drawer technology that uses energy and water and mature front technology that requires minimum targets. Environmentally friendly compressor technology for water filtration systems.

Reduction of Packaging Volume

LG Electronics continuously strives to reduce packaging volume and make packaging more efficient. Since 2012, LG Electronics reduced the total number of bolts by 8,000 compared to the previous year’s model (32LN5400) of the same size.

LG Electronics is working to make sustainable resource recycling in our society. This year, consumers can dispose of their old appliances much more easily and at lower costs. In 2014, LG Electronics launched a free takeback service for major household appliances available nationwide upon request and not requiring for product purchase. Unlike the previous system, in which e-waste was collected upon delivery and installation of new appliances, the new takeback system allows consumers to make a request at their nearest LG Beshop. These disposed appliances, collected by a dedicated collection team, are delivered to be processed in an environmentally safe and responsible manner at regional recycling centers located nationwide. Thanks to this new takeback system, consumers can dispose of their old appliances much more easily and collection rates also continue to increase. LG Electronics will strive to deliver green services that satisfy customer needs and take the leadership in promoting sustainable resource recycling in our society.
Green Packaging

In 2012, LG Electronics introduced its Greener Packaging Design guidelines to reduce the weight and volume and promote the reuse and recycling of packaging materials. The guidelines were initially implemented for portions of TV and mobile phone products, later expanded to all products in 2013. We also built a database that lists recycled pulp content and hazardous-substance content of the paper stocks used for our product packages and use the data to increase the recycled pulp content of the paper stocks used in our product packaging. In 2014, we established targets for annual reduction rates (use of packaging materials, volume of packages, and interior packaging space) at the Business Company level and reviews performance on a semiannual basis. We also use the guidelines to design packages for new product models and assess their environmental performance. Thanks to these efforts, we were able to reduce the use of packaging materials for new products by eight percent despite an increase in size for some products, while saving KRW 39.8 billion in costs. In 2015, as part of our effort to promote green packaging performance, LG Electronics plans to discover green packaging best cases and share them at packaging technology workshops, and to run a green packaging system at the Business Company level.

C E A S T U D Y

Green Packaging Improvement Cases

Green Partnerships

Green Program Plus

LG Electronics operates the “Green Program Plus (GP+)” a sustainability management program for its supply chain, and uses the program to manage hazardous substances at our suppliers from the component level. This program has been expanded to parts procurement and GHG emissions, and includes second-tier and third-tier suppliers as well as first-tier suppliers to expand our green partnerships. Not only does the program help us promote our suppliers’ competitiveness in sustainability management, but it also enables us to identify risks existing in our supply chain and address them proactively. LG Electronics also monitors and assesses the green management system as well as the capacity of our existing and new suppliers on an ongoing basis.

Supplier Training

In order to strengthen green partnerships with suppliers, LG Electronics provides annual training on green technology, compliance response and GHG emissions management to suppliers (staff members for environmental management) and our employees in charge of the partnership. In 2014, 233 employees from suppliers (Green Expert Program) and 89 employees from LG Electronics (Green Auditor Program) completed the training. We also introduced a new program to foster experts in collecting hazardous substance data (Environmental Data Collection Expert Program) in 2013, and conducted training for the equipment testing operators from our suppliers, all in an effort to improve the credibility of collected data and hazardous substance management systems. In 2014, a total of 142 supplier employees completed the program, and we plan to further expand training targets in 2015.

Supplier Management Program

233

Supplier Employees

2014

Green Expert Program

Environmental Management System 20

Green Auditor Program

Management of Hazardous Substances 50

Assessment Criteria for Existing Suppliers

Environmental Management System 25

Supplier Employees

15

Suppliers

30

Management of Materials/Products

63

Supplier Management Audit Criteria (based on 100 point scale)

Supplier Management

Supplier Green Management Audit Criteria

5th

Screening Criteria for Prospective Suppliers

6th

Inspection Management

Department

142

Hazardous Substance Management System (HSSMS)

1st

Assessment of Hazardous Substances

Management of Materials/Products

2nd

Hazardous Substance Audit (HSA)

2nd

Materials/Products

Management of Hazardous Substances

6th

Management of Hazardous Substances

1st

Management of Hazardous Substances

1st

Hazardous Substance Management System (HSSMS)

2nd

Materials/Products

Management of Hazardous Substances


Participants: 233 Supplier Employees

Seminar: Green Expert Program

Instructor: LG Electronics Employees


Green Expert and Green Auditor Training in 2014

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Stakeholder Communication

Materiality Report // Appendix

With the Environment
LG Electronics received the 2015 Design for Recycling Award from the Institute of Scrap Recycling Industries (ISRI), a US industry organization promoting recycling, for its outstanding contribution to products designed with recycling in mind. This annual award honors corporations that prioritize recycling in the design and manufacture of their products or services based on their use of non-hazardous materials, environmentally conscious production processes, and recyclability. LG Electronics was recognized for its ongoing efforts to develop and deliver recycling-friendly products that are free of hazardous substances, use recycled and recyclable plastics, and adopt smaller and lighter packaging. The ISRI is an industry association that enjoys high profile and positive reputation in North America, representing businesses in the region’s recycling supply chain. LG Electronics received the award on April 23, during the 2015 ISRI Convention in Vancouver, Canada.

Fourteen LG Electronics Clothes Dryers Quality for ENERGY STAR
LG Electronics acquired the ENERGY STAR certification for all 14 of its clothes dryer models (six gas dryer and eight electric dryer models) slated for introduction in North America this year. Beginning this year, the US Environmental Protection Agency (EPA) is strengthening its ENERGY STAR program to residential clothes dryers and began awarding the label to clothes dryers that use approximately 20 percent less energy annually than what is required by the new minimum efficiency standards effective as of 2015. It is also worth noting that LG Electronics became the first to quality for the ENERGY STAR label for its gas dryer models. Its new EcoHybrid Heat Pump Dryer, the 2014 ENERGY STAR Emerging Technology Award winner, was among the new ENERGY STAR qualified dryer models. Major clothes dryer products from LG Electronics also offer diverse convenience and energy-saving features such as True Steam (dramatically reduces wrinkles and odors) and Sensor Dry (automatically adjusts drying time based on moisture levels). The Green Product of the Year Awards honor products that achieved exceptional environmental performance and market reception with the aim of promoting green product markets and green consumerism. The selection process for this award involves consumers as well as experts from related fields.

Clothes Dryer Earns ENERGY STAR Emerging Technology Award from the U.S. EPA
LG Electronics has been recognized by the U.S. EPA with the 2014 ENERGY STAR Emerging Technology Award for its new EcoHybrid Heat Pump Dryer. First introduced at the 2014 International CES, the world’s largest consumer electronics and technology tradehow, the EcoHybrid Dryer was recognized by the U.S. EPA for the potential to save significant amounts of energy and GHG emissions. Unlike conventional electric dryers that waste considerable amounts of energy, EcoHybrid Heat Pump Dryer utilizes heat pump technology to capture and recycle energy generated during the drying process and saves up to 50 percent more energy than conventional electric dryers. It also offers cutting-edge features such as Smart Diagnostics, which helps users to easily diagnose simple product issues with their smartphones. LG Electronics will continue to introduce technologies that maximize energy efficiency while maintaining dryer performance to maintain its leadership in the high efficiency clothes dryer market.

KOREA
Order of Industrial Service Merit (Bronze Tower) for Achievements in Green Management
The Changwon Production Group leader was honored with the Order of Industrial Service Merit (Bronze Tower) for achievements in promoting green management at the 2014 Green Management Excellence Awards. In 2009, Changwon Production Site established a steam supply system that captures and recycles the heat generated from the Changwon City’s incineration facility and has utilized the heat for production processes and building heating, reducing approximately 9GW·h in energy costs and about 4,000 tons of GHG emissions on an annual basis. The Site implemented a wide range of green initiatives that include recyclifying its facilities with high efficiency LEDs and solar panels to save energy and reduce GHG emissions.

Most Number of “Green Product of the Year” Awards in the Electronics Industry
In 2015, five of our product models were named the “Green Product of Year” by the Korea Green Purchasing Network. Winning this award for five different product models was the best performance to LG Electronics and a first for the industry. This year also marks the fifth consecutive year for LG Electronics to earn the recognition for a major product. The Green Product of the Year Awards honor products that achieved exceptional environmental performance and market reception with the aim of promoting green product markets and green consumerism. The selection process for this award involves consumers as well as experts from related fields.

GERMANY
Green Product Certification in Europe for “KizON” Wearable Band
KizON became the first wearable device to acquire the Green Product mark from TÜV Rheinland, one of the most renowned standard certiﬁcation agencies in Europe. The agency ﬁnally approved the KizON for Green Product mark through a rigorous testing and validation process based on the following criteria: content of hazardous materials, CO2 emissions, recyclability, and CSR performance of the production plant. The KgOn has already earned Korea’s Eco-Label from the Ministry of Environment in June 2014 by satisfying the following requirements: reducing the electromagnetic wave level; pollutants from heavy metals, and negative impacts on the environment. Children wearing the band can make a direct outbound call to the pre-registered parents with just a press of a button, and incoming calls are automatically answered after ten seconds to prevent any missed calls from their parents, helping concerned parents track children’s whereabouts around the clock. The KizON also lets parents set a desired interval for receiving the current location of their children wearing the band by utilizing network information from the GPS, mobile base stations, and Wi-Fi networks, and alerts parents when the battery is low.

As a global corporation with business operations throughout the world, LG Electronics puts great energy into protecting the environment as part of its CSR initiatives. Our efforts in environmental management are rewarded with meaningful and tangible results every year, inspiring us to press forward and helping us earn trust from diverse stakeholders and international organizations with global reputation and influence.
EESH MANAGEMENT SYSTEM

Green 2020

In April 2010, the LG Group announced the group-level environmental initiative “Green 2020” (Three Management Goals), which showed that LG Group’s commitment towards environmental performance does not stop at mere compliance but strives to set and achieve significantly higher standards. In line with Green 2020, LG Electron- ics also established its own initiatives and targets and is further progressing forward with their implementation. At our annual performance and strategy consensus meetings, we review progress and make necessary adjustments.

Recognizing the growing importance of EESH Management, we added EESH to our management criteria for green business site under the Green 2020 initiative in 2014, which completed the criteria together with GHG emissions and water resource.

EESH Management System

Since EESH guidelines and regulations were first established in 2009, LG Electronics has improved on those guidelines and regulations and developed them into a comprehensive framework comprised of 22 regulations and 16 guidelines (as of year end 2014), based upon which we operate the EESH Management System. In Korea, we implemented the EESH Management System at our production sites from 2010. As for overseas production sites, our Mexicali subsidiary (Mexico) acquired the ISO14001 certification (Environmental Management Systems) in 2014, while the Nanjing washing machine production subsidiary (China) and Thailand subsidiary acquired the ISO50001 and the GB/T23331 (Energy Management Systems) respectively, in March 2015.

EESH Audit

LG Electronics performs an EESH audit on its production and R&D sites in Korea and overseas to identify EESH issues in advance and prevent those issues from developing into risks. First introduced in 2005, our annual EESH audit program bases its assessment criteria on the key requirements of the EESH Management System, which are used to evaluate each production site on its compliance with regulations and internal standards. In 2014 EESH audit, Korean sites improved their score from 95.9 points to 91.5 points in the previous year, while overseas sites also increased their score to 84.1 points from 76.1 points. Based on the audit results, each site formulates and implements an improvement plan whose progress is carefully monitored.

Strengthening EESH Risk Management System

Implementation of EESH Compliance Monitoring System

LG Electronics strives to stay current and compliant with EESH regulations and legislations in countries around the world, and carefully monitors site-level compliance performance on an ongoing basis. In 2014, we developed efforts into a management system to monitor compliance performance at all our production sites. This system not only allows us to obtain the latest information on local EESH regulations both at the corporate and production site level, but also provides a snapshot look of the compliance performance of the entire production sites to help us make informed and preemptive responses to local EESH regulations. In 2015, LG Electronics plans to perform compliance risk assessment and management on a regular basis, beginning with the production sites in China.

Performance in Production-Level GHG Emissions Reduction

In 2009, LG Electronics established the four strategic directions for climate change response and has been engaging in a wide range of efforts to improve our performance. We have set a target to reduce 150,000 tons of production-level GHG emissions by 2020 (109% reduction), through which we expect to reduce a total of approximately one million tons (cumulative) of GHG emissions between 2009 and 2020. In 2014, we set a target to reduce 78,000 tons of GHG emissions from the base year 2008 across our business sites and strived to achieve the target. As a result, we exceeded the target by 106,000 tons, a reduction of 184,000 tons from the base year 2008.

Reduction of Production-Level Energy Use

Improving Operational Efficiency of Equipment and Facilities

LG Electronics continuously works to optimize and mini- mize our energy use by improving the efficiency of our facilities and production processes. We use the results of our energy assessments performed by our internal experts to design and carry out activities such as optimizing capacity/control (of motors, pumps and utility equipment of cooling towers), enhancing the differential pressure of air compressors, minimizing zero-load operations, and optimizing the washing process.

Expanding Investments in High Efficiency Equipment and Facilities

As part of our efforts to reduce energy use, LG Electronics is expanding investments in high efficiency equipment and facilities. We have replaced the lighting systems with LEDs across our business sites to reduce 2,800 tons of GHG emissions in 2014, and invested in automated control systems (BMS®) and 8PA® to improve our capacity for peak-time control, which also help reduce GHG emissions.

Goal Setting for Energy Savings

In 2009, LG Electronics established the group-level energy reduction program (BEM System) to pursue the ISO 22301 certification at the corporate level in 2014, with our mobile production line at the Pyeong-taek Plant becoming the first to acquire ISO 22301 in Korea in November of the same year. The Yantai Subsidiary also acquired ISO 22301 to complete the full BCM implementation of our mobile production facilities in 2015. LG Electronics plans to expand the BCM System to the rest of the production sites both in Korea and in overseas by 2017 and manage our BCM performance through the BCM Council.

Employee Training for Heightened EESH Awareness

Since 2013, LG Electronics has offered EESH awareness training to all its employees. In the first half of 2014, we conducted the training for overseas employees, while Korean employees received the same training on global EESH issues / cases and corporate EESH management strategy and initiatives in the second half of the year. We also offer EESH training programs tailored specifically for different employee groups (subsidy representatives, expatriates, etc.), and require EESH members to complete the advanced course developed by LG Corp. In 2015, we plan to include EESH awareness as a mandatory course in all training for promotion candidates.

Production-Level GHG Emissions Reduction Targets and Performance (Unit: 10K tons CO2e)

<table>
<thead>
<tr>
<th>Year</th>
<th>2008 (Base Year)</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2020 (Target Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions</td>
<td>146.4</td>
<td>113.3</td>
<td>117.4</td>
<td>127.9</td>
<td>131.3</td>
<td></td>
</tr>
<tr>
<td>Reductions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Emissions | Reductions
Expanding the Use of Renewable Energy
LG Electronics continues to expand the use of energy sources that produce no GHG emissions by adopting solar power generating systems and expanding renewable energy purchases. We have expanded solar power generating systems at our business sites in Korea to secure a combined capacity of 5.4 MW, and a total of approximately 6,900 MWh (cumulative) in 2014 and reducing about 3,217 tons of GHG emissions. Office buildings in the United States and Europe are also increasing their purchase of renewable energy. In 2014, US facilities purchased a total of 3,109 MWh of renewable energy, while our European office buildings used 2,580 MWh of renewable energy at the same year.

Promoting Employee “Energy Observer” Activities
In 2014, LG Electronics renamed the employee energy monitoring taskforce to “Energy Observer,” strengthening “observer” activities to promote energy saving at our sites. Each of the “Employee Energy Observer” group is composed of three to ten energy experts from the business sites (production site, R&D center, or business organization), and engages in activities to monitor energy use patterns and habits, screen for power and steam leakage, and minimize energy loss. The performance of observer groups is reflected upon major KPIs to motivate energy observers to stronger performance.

Expanding GHG Management Across Value Chain
Office Building GHG Management
Since 2008, we have managed our greenhouse gas emissions of office buildings in Korea. In 2014, a total of 5,134 tons of GHG was emitted from office buildings, including the leased office spaces that house more than 100,000 employees. In order to reduce GHG emissions from major office buildings at our overseas locations, we have set mid-to-long term reduction targets for office buildings in the United States and Europe and managed them accordingly. LG Electronics USA has set ambitious goals to reduce GHG emissions in U.S. operations by 50% by 2020. To achieve this target, the subsidiary joined The EPA led “Green Power Partnership” that encourages organizations to reduce their environmental impact by using renewable energy.

LG Electronics USA is also reducing U.S. logistics-related emissions in supply chain by using freight carriers that participate in the EPA’s SmartWay Program. European subsidiaries have set targets to reduce 156% of GHG emissions from office buildings by 2020, compared to the base year 2007 (intensity target per revenue in KRW) and keeps close track of the amount of water it uses and reuses at its production sites in Korea and overseas. In 2014, the total volume of water used at our production sites in Korea and overseas (including some R&D facilities in Korea) amounted to approximately 11.29 million tons, and 1.08 million tons of water was reused. Although we estimate that the volume of water used at our business sites will continue to increase due to production capacity expansion for solar panels and our growing business portfolio (new businesses, including EV components), we are implementing a comprehensive range of conservation initiatives to manage our water use and reuse across our production sites in an effort to meet the target. For instance, the Gumi and Changwon Plants in Korea reuse heavy water after treatment and the Noida Plant in India built a zero-discharge system that recycles all industrial wastewater from the plant and reuses it after treatment. In 2014, we increased the percentage of our used water in the total volume of water used has increased to 10 percent and is rising continuously.

LG Electronics monitors and manages the amount of wastewater generated and pollutants discharged into the river in full compliance with local laws and regulations. In Korea, the wastewater generated at our production sites is treated in two steps – first at the internal wastewater treatment facility and later at the local sewage treatment plant. As a result of our efforts, the percentage of treated wastewater at the local sewage treatment plant has increased from 4.1% in 2009 to 85.2% in 2014. The overall amount of pollutants discharged into the river in 2014 was reduced by 94% compared to 2009.

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**HEALTH & SAFETY MANAGEMENT AT BUSINESS SITES**

**Strengthening Safety Management at Business Sites**

LG Electronics receives regular consulting from professional agencies specializing in safety, fire prevention, environmental protection, and production equipment to assess the safety and environment of production sites and R&D facilities. Safety and environment assessment evaluates the system safety, production equipment safety, process safety management, power supply system safety, and fire readiness of production sites. Assessment from a third party agency ensures accurate and objective identification of risks that may be overlooked by internal staff, which are then incorporated into prevention and improvement efforts and utilized as a basis for advancing our accident prevention and workplace safety performance.

**Safety Assessment on New Construction Projects and Production Processes**

As part of our efforts toward safety and environmental compliance and risk prevention, LG Electronics provides support for safety assessment prior to the commencement of new construction projects and the implementation of new production processes. In 2014, we provided comprehensive safety and environment support for the plant construction projects in Egypt and Vietnam, including the organization of a safety and environment team and implementation of fire prevention facilities and a safety management system, and helped our production subsidiaries conduct safety assessment and make a soft landing. In order to measure the effectiveness of our support for safety assessment, we also provide post-assessment evaluation and support. In 2015, we plan to provide support for safety assessment plant construction and new process implementation and monitor the process as part of efforts to manage associated risks, including an increase in insurance costs, regulatory non-compliance, and the development of new risks.

**Safety Accident Prevention for Construction Service Providers**

In January 2015, we hosted a pledge ceremony for creating a safe workplace based on win-win partnerships with the participation of construction service providers. In the event attended by over 30 CEOs from construction companies involved in our Solar Business, and eight executives and team managers from LG Electronics, we conducted safety awareness training for CEOs, held a pledge signing ceremony for CEOs to make comparative analyses of business sites and to assess the fire safety performance. The index also enables us to make comparative analyses of business sites and to establish site-specific improvement measures. We plan to conduct FRI-based fire risk assessment on production sites throughout the world at least on a tri-annual basis and strengthen our monitoring.

**Promoting Employee Health & Enhancing Working Conditions (Korea)**

We run employee health promotion programs on an annual basis. Seoul and Wuxi/Meiyun R&D Campuses participate in a health program called “Health Rainbow,” which is comprised of seven sub programs (diagnosis and counseling) to address health issues that commonly affect professional women including metabolic syndromes, work stress, and chronic fatigue and pain. The metabolic syndrome program also participated in the “Urban Walkabout for Health” project organized by the Seoul Metropolitan Government and the Life Insurance Philanthropy Foundation, placing first among 20 teams by reducing on average 11.63% of body fat (13.2kg of weight on average). In preparation of medical emergencies, we installed automated external defibrillators and designated emergency response personnel from each floor to receive CPR training.

We have also diversified efforts to improve working conditions for employees. At Changwon Plant, we organized items requiring performance of tasks in airtight spaces by increasing the volume of airflow or replacing the equipment when it was impossible to raise the airflow, thereby enhancing efficiency by 80 percent (on average) and addressing the odor problem caused by deteriorated ventilation performance.

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**Gumi Solar Plant**

Gumi Solar Plant is required to submit a Process Safety Management (PSM) report regulated by the government. Since establishing the LG Chemicals Management System (Korea) in 2014, LG Electronics has been improving chemicals management and chemical management system implementation and providing students with a summer/venerable internship opportunity to help them apply their knowledge to actual projects.

**Changwon**

Changwon is a site in Korea that is required to submit a PSM report. LG Electronics has been improving chemicals management and chemical management system implementation and providing students with a summer/venerable internship opportunity to help them apply their knowledge to actual projects.

**Taizhou, Hangzhou**

Taizhou and Hangzhou are sites in China that are required to submit a PSM report. LG Electronics has been improving chemicals management and chemical management system implementation and providing students with a summer/venerable internship opportunity to help them apply their knowledge to actual projects.

**Yantai, Qinhuangdao, Nanjing**

Yantai, Qinhuangdao, and Nanjing are sites in China that are required to submit a PSM report. LG Electronics has been improving chemicals management and chemical management system implementation and providing students with a summer/venerable internship opportunity to help them apply their knowledge to actual projects.

**Syenyang, Huizhou, Tianjin, Qingdao**

Syenyang, Huizhou, Tianjin, and Qingdao are sites in China that are required to submit a PSM report. LG Electronics has been improving chemicals management and chemical management system implementation and providing students with a summer/venerable internship opportunity to help them apply their knowledge to actual projects.

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**Safety & Environment Assessment by External Experts**

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015 (NDR)</th>
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<tbody>
<tr>
<td>Korea</td>
<td>Changwon 1, 2, Cheongju, Pyeongtaek</td>
<td>Gumi 1, Woomyeon R&amp;D, Gumi R&amp;D</td>
<td>Gumi 1, Cheongju, Incheon</td>
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**Safety Assessment on New Construction Projects and Production Processes**

<table>
<thead>
<tr>
<th>Country</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>Korea</td>
<td>Changwon 1, Cheongju, Incheon</td>
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<td>Gumi 1, Cheongju, Incheon</td>
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<td>China</td>
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<td>Mangalore 1, 2, 3, Bengaluru</td>
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<td>Mexico</td>
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<td>Reynosa, Monterrey, Mexico</td>
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**Lost-Time Injuries Frequency Rate (LTIFR)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Average (Korea)</th>
<th>Industry Average (Korea)</th>
<th>LGE (Average)</th>
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<tbody>
<tr>
<td>2012</td>
<td>2.89</td>
<td>3.50</td>
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</tr>
<tr>
<td>2013</td>
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</tr>
<tr>
<td>2014</td>
<td>2.89</td>
<td>3.50</td>
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