



# **2012 CDP(Carbon Disclosure Project)**

**ORS (Online Reponse System)**

**2012. 5**

**Woongjin Coway**

0.1

**Introduction**

Please give a general description and introduction to your organization

**Corporate Profile**

Established in 1989, Woongjin Coway has grown into Korea's largest home-wellness appliance company, manufacturing water filtration appliances, air purifiers and bidets. We have continued to develop and grow steadily to take the lead in delivering more popularized, specialized and sophisticated home-wellness appliance. In particular, we have accumulated innovative technology capacity throughout the entire brand portfolio from 'Coway', the representative brand for the highest-quality water, 'CAIRS', a symbol of clean air, to 'LooLoo' an advocacy of a pleasant bathroom culture and 'Clive', a food waste treatment system, which helped us post the highestever sales in 2011. Our recent entry into the water treatment business, based on differentiated technology, proved to be a success and we are rapidly emerging as a leader in the field. In 2010, we launched a new premium cosmetics brand: 'Re:NK', which has been met with positive response from customers.

We also aspire to become 'the 1st Green Global Leader', to design a healthier tomorrow. As a responsible global corporate citizen, we make people and the environment our top priority and are fully devoted to delivering increased values for our stakeholders.

**Global Network**

We started a rental business for the first time in the industry and introduced the concept of 'before service(B/S)' through the promotion of service specialists whom we call 'CODY(Coway Lady)', which led to significant improvements in customer satisfaction and market share as well as brand awareness. Thanks to these endeavors, our sales grew by 13.9% in 2011 from the previous year. This growth momentum boosted our overseas business and as of 2011, we have 6 subsidiaries and 1 logistics center up and running in Asia, North America and Europe. Our overseas subsidiaries are in charge of developing localized products that consider local culture/life patterns along with securing price competitiveness, in further strengthening our status in the global market.

### Our environment Policy

Woongjin Coway declared its 'Environment Management Guidelines' and 'Environment Management Code of Practice' with the awareness that eco-friendly management forms the core element of its operations. All employees, including top executives, signed the 'environmental management pledge', committing themselves to sustained eco-friendly management. We are faithfully fulfilling our roles and responsibilities as a corporate citizen by developing low-carbon technology and eco-friendly products, sharing information with stakeholders in an honest and transparent manner and facilitating open lines of communication.

### Our environment Strategy

We have strengthened environmental management throughout the entire business operation including: product design, manufacturing, use, service and recovery & recycling. In 2009, the 'Woongjin Eco-way Launching Ceremony' was held. EHS commissioners were appointed in each division and directions and systems were finetuned to support initiatives to preserve the natural environment. Our environmental management vision to become 'the 1st Green Global Leader' will be realized through our focus on eco-friendly products and services that focus not on simple quantifiable surface growth, but on enhancing the future values of humankind.

### < Awards >

1. 2011 CDP (Carbon Disclosure Project) KOREA
  - ① Carbon Management Leaders Club
  - ② Carbon Management Industry leader (for 3 consecutive years)
2. 19th Chosun Daily Environmental Awards
3. Sustainability Management Awards 2011
4. Green Ranking No. 1 Awards

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## 0.2

### Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

**Enter Periods that will be disclosed**

**Enter Periods that will be disclosed**

Sat 01 Jan 2011 - Sat 31 Dec 2011

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**0.3**

**Country list configuration**

Please select the countries for which you will be supplying data. This selection will be carried forward to assist you in completing your response

**Select country**

Republic of Korea

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**0.4**

**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

KRW

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**0.5**

**Please select if you wish to complete a shorter information request**

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**0.6**

**Modules**

As part of the Investor CDP information request, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors and companies in the oil and gas industry should complete supplementary questions in addition to the main questionnaire.

If you are in these sectors (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will be marked as default options to your information request. If you want to query your classification, please email [respond@cdproject.net](mailto:respond@cdproject.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdproject.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

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## Further Information

### Reporting Period and Scope

This report spans from January 1st to December 31,2011. To help readers compare trends, data from 2009 and 2010 are included, in addition to some activities and accomplishments in 2012, wherever deemed necessary.

**attach file** : Corporate Profile & Mission and Vision &Global Network

This report describes our performance and carbon disclosure at the Seoul Office,the Environment Technology Institute, the Environment Quality Institute, the Production Factories.

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## Attachments

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/Introduction/Corporate Profile.pdf](https://www.cdproject.net/Sites/2012/73/21673/Investor%20CDP%202012/Shared%20Documents/Attachments/InvestorCDP2012/Introduction/Corporate%20Profile.pdf)

**Module: Management [Investor]**

**Page: 1. Governance**

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1.1

**Where is the highest level of direct responsibility for climate change within your company?**

Individual/Sub-set of the Board or other committee appointed by the Board

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1.1a

**Please identify the position of the individual or name of the committee with this responsibility**

1) Job Title : Woongjin Coway's BOD operates four committees (i.e., the EHS Management Committee, HR Committee, Labor Relations Committee, and Management Committee) to ensure transparent decision making and independence. Of these four committees, the EHS Management Committee is responsible for making decisions on climate change, and is chaired by Hong Joon-kee, the CEO of Woongjin Coway.

2) Position in the corporate structure and climate change related responsibilities

The governing structure is as follows: BOD - CEO - EHS Management Committee - Eco-way Council. The EHS Management Committee appointed by BOD shares information on climate change and environmental management issues and reflects them in its strategic decision making. EHS, an abbreviation of Environment, Health and Safety, is the intrinsic value of Woongjin Coway, a company committed to sustainable development and social responsibility.

Woongjin Coway formed the EHS Management Committee, which is under the direct responsibility of the CEO, in 2006 to realize its environmental management vision and achieve its mid-to-long-term goals. The EHS Management Committee is charged with establishing enterprise-level strategies to cope with climate change and an eco-friendly management policy. It also implements various programs to help all its operating sites become low carbon, green sites. The Environmental Management Team is a dedicated EHS group that plays an administrative role. It was formed to ensure that the related strategy and policy are effectively implemented in all areas, and has been operating the Eco-way Council, which itself was formed to switch to a working-level centered management system upon completion of the environmental management and climate change response processes.

The key issues determined by the Eco-way Council are brought before the EHS Management Committee for discussion of a strategic response and then reported to CEO Hong Joon-kee.

For reference, there were five key issues facing the Eco-way Council as of 2011: response to climate change; green strategy (communication); coping with harmful materials; resource recycling (waste); and green marketing.

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1.2

**Do you provide incentives for the management of climate change issues, including the attainment of targets?**

Yes

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1.2a

**Please complete the table**

Who is entitled to benefit from these incentives?	The type of incentives	Incentivised performance indicator
All employees	Monetary reward	<p>&lt;Waste Plastic Collection/Recycling to reduce greenhouse gas emissions by 19,010 tCO<sub>2</sub> / Person in charge paid 1 million won reward&gt; &lt;Performance Index and Activity&gt; In accordance with its vision of 'Creating Low Carbon Green Values through Cool Green Management', Woongjin Coway is actively conducting programs designed to reduce emissions of the greenhouse gas basic unit by 50% by 2020 (compared with 2010). It recycled more than 16,000 tons of plastic waste by treating waste products in 2009~2011, resulting in a greenhouse gas emission reduction of 19,010 tCO<sub>2</sub>. The person in charge was paid a bonus of KRW one million in recognition of his or her contribution to exceeding the absolute reduction target for 2011 by more than 2.5%.</p>
Management group	Monetary reward	<p>&lt;Reduction of 2,905tCO<sub>2</sub>e as a result of greenhouse gas reduction and waste product recycling efforts by vendors in 2011 / KRW 8 million paid to the Environmental Management Team as bonus&gt; &lt;Performance Index and Activity&gt; In 2011, the company set the vendor carbon partnership greenhouse gas emission target at a 50% reduction of the basic unit and a 1% reduction in terms of the absolute amount by 2020 (compared to 2010). Vendors' total emissions amounted to 44,822 tons in 2011, representing a reduction of 289 tons or 0.64% over 2010. Although there may be some differences according to each vendor's efforts to reduce emissions or change process, this performance is the result of the reduced energy consumption achieved by vendors through a reduction of heat loss, because vendors needed to replace fewer molds due to the upgrade of Woongjin Coway's ordering system, which is based on small-quantity batch production and the improvement of high-energy-consuming parts. Moreover, there was the additional benefit of an indirect reduction of 2,616 tons of greenhouse gases due to a reduction in the amount of raw materials consumed under the Refurbished Goods Production program in 2011. The successful performance of such programs as greenhouse gas emission reduction by vendors and refurbishment activities was publically recognized when the company received the 19th Chosun Ilbo Environmental Management Grand Award. The Environmental Management Team received a reward of KRW 8 million for the key role it played in these initiatives. ※ Calculation of refurbished goods greenhouse gas reduction: Calculation based on greenhouse gas emissions from products, excluding the step of carbon labeling by the Ministry of Environment. ※KRW 8 million rewards given to the Environmental Management Team (2 million won * 4 people)</p>
All employees	Recognition (non-monetary)	<p>&lt;Reduction of emissions by 7,180 tCO<sub>2</sub>e through waste collection/recycling, outstanding communication of climate change issues in 2011/Selection of person in charge as 'Employee of the Year' and promotion of environmental coordinator at Pocheon Factory&gt; &lt;Performance Index and Activity&gt; Woongjin Coway opened the Recycling Center to methodically recycle waste home appliance products at its Pocheon Factory, signed a voluntary agreement to collect and recycle plastic waste with the Ministry of Environment in December 2009, and continuously communicated climate change issues throughout the company. As a result, it recycled 6,094 tons in 2011 to reduce greenhouse gas emissions by 7,180tCO<sub>2</sub>e (in terms of cost savings), surpassing its 2011 waste product greenhouse gas reduction target of 6,000tCO<sub>2</sub>e. In recognition of such a performance, the person in charge was selected as the '2011 Employee of the Year' and included in the 2011 Hall of Fame, while the environmental coordinator at Pocheon Factory was promoted.</p>
All employees	Recognition (non-monetary)	<p>&lt;Promotion of sales of low-carbon products and selection as CDP Outstanding Company/Person in charge receives Model Employee Award and 1 promotion point &lt;Performance Index and Outcome&gt; 2011 product greenhouse gas reduction target: 1,167tCO<sub>2</sub>e / Actual 2012 performance: 1,221tCO<sub>2</sub>e (104% of 2011 target) Woongjin Coway improved the energy efficiency</p>

Who is entitled to benefit from these incentives?	The type of incentives	Incentivised performance indicator
		<p>of its carbon-labeling-certified heating/cooling water purifier in 2009 and participated in a low-carbon goods pilot certification project in 2010. The company's CHP-06DL received the first low carbon goods certification among Korean water purifiers in 2011. The product can reduce carbon emissions by 116kgCO<sub>2</sub>e throughout its product life of five years, while its energy consumption efficiency has been increased by improving the operating rate of its water heater, resulting in 23.3kgCO<sub>2</sub>e reduction per product annually. In 2011, a total of 12,188 units were sold, resulting in a 283 ton reduction of greenhouse gas emissions. The CHP-210L model is currently due for low-carbon goods certification. Compared to the CHP-96DL, it can reduce emissions by 248kgCO<sub>2</sub>e, or 49.6kgCO<sub>2</sub>e annually per product. In 2011, 18,914 units were sold, reducing greenhouse gas emissions by 938 tons. In 2011, the products helped to reduce greenhouse gas emissions by a total of 1,221 tons. Such GGE reduction activities and achievements were included in the 2011 CDP survey, and Woongjin Coway was selected as an outstanding CDP company and enrolled in the Carbon Management Leaders Club in 2011. As a result, the person in charge received the Model Employee Award and 1 promotion point.</p>

#### Further Information

(1.1a) [attach](#) EHS Management Committee climate change issues and organization

(1.2a) [Woongjin Coway incentive standard](#)

- Promotions and rewards granted according to the results of climate change countermeasures (greenhouse gas reduction, eco diversity increase, water management enhancement, etc.)

- A bonus may be given after evaluating the outcomes such as the generation of corporate profit, increase of brand value, development of a new business or introduction of a new product, creation of a new market, risk prevention, and so forth.

#### Attachments

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/1.Governance/\(1.1a\) EHS Management Commission.jpg](https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/1.Governance/(1.1a) EHS Management Commission.jpg)



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## 2.1

**Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

A specific climate change risk management process

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### 2.1a

**Please provide further details (see guidance)**

Woongjin Coway has developed a system for managing climate change risks and operates a process to prevent such risks in advance and analyze them for future use as opportunity factors when creating new business with consideration not only for climate change-related carbon but also water and eco diversity. **1) Process scope** The Environmental Management Team (under the Woongjin Coway Environmental Quality Research Institute) collects and analyzes from different angles not only existing product environmental regulatory information such as RoHS and REACH, but also risks and opportunities concerning the regulatory, physical and other factors with consideration to global climate change issue related carbon, water, and eco diversity. The collected information is collected for use in establishing a climate change response strategy and minimizing the risks if it is determined to have a significant impact on the business and consumers. **<Representative Case Concerning Carbon, Water, and Eco Diversity>** - **Carbon:** (Low) carbon labeling certification, application of eco-friendly technology and eco-friendly materials, and development of high-efficiency, low-energy consuming products Improvement of the production process to reduce carbon emissions by Woongjin Coway and vendors, and development of high- energy-consuming parts to improve the production method - **Water:** Expansion of water business and strategic M&As to cope with global warming, expansion of water treatment business, and development of nano filter- **Eco diversity:** Cosmetics using more eco-friendly materials, signing of MOUs to develop eco-friendly cosmetics raw materials and introduction of Eco brand cosmetics The key climate change response activities and their outcomes are managed according to the performance index in the SAP EHS (SAP Environment Health Safety Management) system and reported to the CEO in real time by the EIS (Executive Information System). They are continuously monitored and fed back to the relevant organizations by the Environmental Management Team. **2) Method of evaluating company-wide risks and opportunities** Woongjin Coway evaluates enterprise-level opportunities and risks using the SAP EHS (SAP Environment Health Safety Management and EIS (Executive Information System) with consideration to business importance and the interests of stakeholders. For example, since opportunities and risks related to public trust affect the entire company, changes in greenhouse gas emissions are analyzed on a monthly and quarterly basis to execute the company's reduction activities in order to prepare for cases where it may be applicable to greenhouse gas energy target management in the next few years. Internal reduction activities include the application of low carbon technology and eco-friendly materials, the introduction of high-efficiency products, the use of high-efficiency equipment and the replacement of aged equipment. The company believes such activities contribute to improving its competitiveness and increasing its revenue as well as maximizing the creation of opportunities. Woongjin Coway intends to continue evaluating the opportunities and risks of its climate change response strategy in order to help the company take early leadership in the global markets. **3) Method of evaluating asset-level risks and opportunities** Woongjin Coway evaluates opportunities and risks at the asset level using the EHS (SAP Environment Health Safety Management) and EIS (Executive Information System) with consideration to business importance and the stakeholders' interest. For example, if an increase in the amount of yellow dust due to abnormal weather conditions causes problems for equipment, it recognizes that there is a serious risk at the asset level, such as an increase in operating costs and a decline in production due to the problem with the production equipment. Moreover, if the introduction of a low-carbon product to cope with climate change, which has become a major issue worldwide, is delayed, R&D expenditure can increase and the company's competitiveness can deteriorate, thereby seriously affecting it sales. To cope with such an eventuality, the company's business strategy reflects the marketing process for climate change (marketing of air purifiers to cope with yellow dust, marketing of radiation-free water purifiers, etc.) and the global commercialization of low- carbon products featuring next-generation and innovative technologies. **4) Frequency of monitoring** In 2009 Woongjin Coway developed Korea's first SAP EHS, an integrated environmental management system which enables the company to manage methodically and efficiently the global standard level carbon inventory system and various systems for managing

energy, harmful materials and waste, and health and safety. The SAP EHS reports the performance and key issues four times a year (once a quarter), while the EIS performance index can be checked in real time. Furthermore, climate change issues with the potential to seriously affect Woongjin Coway's business are routinely and immediately dealt with by holding an emergency meeting. Examples of such issues include those related to energy target management and law/regulation worldwide. **5) Criteria for determining importance or priority** Woongjin Coway's SAP EHS (SAP Environment Health Safety Management) system formulates climate change strategies by comprehensively evaluating them against major, intermediate, and minor criteria based on business importance and risk. The issues deduced in 2011 include greenhouse gas reduction activities, eco diversity, new growth green business, and carbon marketing. **6) To whom is this reported?** Woongjin Coway's SAP EHS (SAP Environment Health Safety Management) and EIS (Executive Information System) system monitor and manage company activities aimed at adapting to and coping with climate change. At Woongjin Coway activities related to environmental and climate change issues are led by the Environmental Management Team and reported to the Chairman of the EHS Environmental Management Committee and the CEO at the EHS Environment Committee meeting held every quarter. The key issues are reported to the CEO and BOD, and any resolutions made are reflected in Woongjin Coway's climate change management strategy and direction. The key issues in 2011 included the acquisition of Samyang Water System Co., Ltd., the development of a greenhouse gas reduction technology and the development and introduction of a water purifier fitted with nano technology.

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## 2.2

### Is climate change integrated into your business strategy?

Yes

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## 2.2a

### Please describe the process and outcomes (see guidance)

**1) Process** To identify new growth businesses and deploy sustainable management, Woongjin Coway practices multi-dimensional environmental management that goes beyond carbon reduction and even considers water and the preservation of eco diversity. As the threat of climate change is closely related to Woongjin Coway's business particularly, the company is expanding its activities with a broad sense of responsibility. The company has implemented a climate change response business strategy centered on the following three key themes: carbon, water, and eco diversity.

**(Process: Information collection -> impact analysis -> countermeasure generation -> progress report -> monitoring and feedback)** Information concerning direct and indirect global opportunities and threats is collected in real time to analyze the opportunities and threats presented by regulatory, physical and other factors in order to generate the plan to minimize business risks and maximize opportunities. Under the guidance of the EHS Management Committee, the Eco-way Council executes the strategic response and reports to the CEO and the chairman of the EHS Management Committee four times a year to reflect it in the (company's) climate change business strategy and policy. The SAP EHS and EIS systems provide real-time monitoring and feedback. **2) Aspects influencing the strategy** Woongjin Coway carries out new growth identification and climate change response activities by practicing multi-dimensional climate change management of not only carbon but also of water and eco diversity. The following three principal factors are considered in devising the business strategy: carbon, i.e., the living environmental home appliance business, water, i.e., the water treatment business; and eco diversity (eco-friendly materials), e., the cosmetics business.

**(1) Risk:** Deterioration of business competitiveness arising from an increase in product defects due to unexpected hikes in the cost of raw materials and the generation of yellow dust caused by climate change **(2) Opportunity:** Increase in revenue due to differentiated green product development and high-efficiency product

certification and new business development by acquiring licenses to introduce new products using natural raw materials. **(3) Greenhouse gas reduction goal** Since greenhouse gas reduction can be a significant factor in business - such as rising R&D costs - to cope with the strengthening of energy consumption efficiency and the idle power standard when the greenhouse gas and energy goal management policy is enacted in the future, the company set itself the goal of reducing the greenhouse gas basic unit by 50% by 2020 compared to 2010 and is carrying out various programs to better comply with the greenhouse gas regulations. **3)Short term strategy changes** The short-term strategy to cope with climate change includes the development of high-energy-efficiency technologies and products and the reduction of greenhouse gas emissions (introduction of high-efficiency equipment, replacement of aged equipment, etc.). To strengthen the low carbon management activities, the Environmental Management Team was formed (under the Woongjin Coway Environmental Quality Research Institute) to actively cope with global climate change. Although the company's response to climate change risk was slow prior to the formation of the Environmental Management Team, the Eco-way Council, led by the Environmental Management Team, now promptly carries out response actions such as climate change, green strategy (communication), harmful materials, and resource recycling initiatives. These activities are reported to the CEO through the EIS system, and the climate change-related risks and opportunities are communicated to the relevant departments through the MIS system. For example, the competitor's introduction of the energy-consumption-efficiency class 1 model and the application of an eco-friendly refrigerant were expected to cause a sales risk to Woongjin Coway; that being the case, the Eco-way Council was formed to introduce eco-friendly products differentiated from those of the competitors, and the rental mattress business, which includes the suppression of fungus and the cleansing of mattresses, was launched. Furthermore, using MD, Woongjin Coway sells the world's best brands and goods on consignment, in order to eliminate carbon generation during the manufacturing process and increase revenue. **4)Long term strategy changes** The climate change paradigm worldwide now reaches beyond carbon, necessitating consideration of water and eco diversity strategies with regard to business decisions. As such, Woongjin Coway launched its 'Climate Change-related New Business,' thereby extending its long-term strategy to include water and eco diversity. As for the long-term strategy, the carbon business focuses on strengthening the development of innovative products to lead the change in living patterns and to expand the global outsourcing of new goods. The water business includes the expansion of the global water business and IT based eco smart drinking water and sewage management, while the eco diversity business includes the expansion of eco diversity and the acquisition of licenses to strengthen the company's eco-friendly material competitiveness. Climate change greatly affects R&D. In fact, the company invested KRW 27.7 billion in R&D to cope with global climate change in 2011, which amounts to 1.52% of company's revenue, but the figure is expected to rise each year. The company also plans to expand the PPS (Product Service System) considering eco-friendliness throughout the product process and platform business. **5)Strategic advantage** Woongjin Coway's carbon reduction goal is to differentiate and enhance the company brand by introducing high-energy-efficiency and eco-friendly products. The competitive superiority of such a strategy can be determined via an ESG assessment by climate change experts and organizations. For example, the company's global presence as Korea's preeminent environmental company was improved when it was added to the DJSI (Dow Jones Sustainability Indices) and became the first Korean company to be included in the FTSE 4 GOOD. **6) Business decisions** Woongjin Coway focuses on investment in technology development, new business development, and strategic M&As to reduce the regulatory and physical risks and maximize opportunities related to global climate change.

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2.2b

Please explain why not

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2.3

## Do you engage with policy makers to encourage further action on mitigation and/or adaptation?

Yes

### 2.3a

#### Please explain (i) the engagement process and (ii) actions you are advocating

Woongjin Coway believes that addressing climate change is not a choice but a must for the survival of an enterprise. As such, it has formed partnerships with climate change policy makers for continuous monitoring and the expression of opinions in committee meetings.

##### 1. Engagement Path & Process

1) **Method through the industrial associations:** Government – Woongjin Coway Green Partnership, Green Purchase Council, Waste Plastic Collection/Recycle Council, Ministry of Knowledge Economy, Green Business Association, Green Growth Council, Energy Management Corporation, Electricity and Electronics Information Association, etc.

2) **Individual businesses:** Woongjin Group Green Purchase Council, communication with environmental enterprises and NGOs, etc.

3) **Method through third parties:** CDP, KoSIF, UNGC, Korea Chamber of Commerce and Industry, Climate Change Forum, and the environmental foundation.

4) **Process:** Climate change issue deduction (internal and external issues) -> Issue analysis -> Review and response plan generation (response strategy using the engagement channel) -> Response activity -> Monitoring

##### 2. Engagement Issues and Activities

- **Greenhouse Gas Energy Goal Management System (Legalization):** Each business site of Woongjin Coway sets its greenhouse gas reduction target to achieve the company's goal of reducing the absolute amount of emissions for 2011 by 5% over the previous year. Such activities include introducing standalone heating systems to reduce greenhouse gas emissions generated by electricity; controlling air-conditioning at 6:00PM in the summer season; increasing the efficiency of the carbon filter line production process; and replacing the transformers with high-efficiency models.

- **Korea Low Carbon Green Growth (Policy):** Woongjin Coway proactively complies with the government's policy. The company's eco-friendly activities include (low) carbon mark certification; the development of mini softeners with no power supply; the reduction of bidet filter size; the development of self-generating bidets; the introduction of products that do not use refrigerants; and the increased use of eco-friendly materials. The company also signed a voluntary agreement with the Ministry of Environment to reduce greenhouse gas generation during product disposal and to recycle more waste materials. Such activities are geared towards reducing greenhouse gas generation so as to comply with the government's policy and international regulations.

- **National Government Program (Green Product Partnership):** Woongjin Coway operates a green partnership to jointly respond to environmental issues with the vendors, and has also jointly developed with the government a low carbon green management system for the vendors as part of a carbon partnership. The green product partnership is adopted not only at the vendors' sites, but also with a view to reducing the carbon emissions of the parent company's products. Woongjin Coway strives to ensure shared growth by strengthening product competitiveness in response to climate change with the participating companies.

- **High-efficiency Materials and Government Devices (Energy Consumption Efficiency):** As the energy consumption efficiency classification criteria have become increasingly restrictive, differentiated eco-friendly technology has been applied to the existing class 2/3 water purifiers and air purifiers to introduce the class 1 products.

- **Carbon Information Disclosure CDP (Information Disclosure):** Woongjin Coway transparently discloses its climate change strategy, the related risks and opportunities, and the volume of its carbon emissions in the carbon management report and CDP survey.

Woongjin Coway accepted the engagement issue related policy proposal and makes its decisions by considering not only carbon but also water and eco diversity, and will continue with this practice.

3. **Engagement Method:** Woongjin Coway's engagement includes participating in the policy study of the Ministry of Environment; sharing climate change

information with NGOs; supporting R&D costs by participating in national programs; participating in new technology pilot projects (PSS: Product Service System); strengthening partnerships with vendors; participating in a voluntary agreement with the Ministry of Environment to collect and recycle waste; continuously communicating with stakeholders (CDP survey, carbon management report, sustainable management report, carbon report, and publishing a newsletter, ECOWAY); and participating in the CEO's Water Mandate.

#### Further Information

(2.3a) Communication channels

#### Attachments

<https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/2.Strategy/Cmmunication channels.pdf>

### Page: 3. Targets and Initiatives

#### 3.1

**Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?**

Absolute and intensity targets

#### 3.1a

**Please provide details of your absolute target**

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
A-1	Scope 1+2	100%	1%	2010	5365	2020	Woongjin Coway changed the baseline year to 2010 after the method of calculating emissions was changed due to the opinion that the

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
							refrigerant R-134a - which is generated when the water purifier is disposed of, and was previously categorized as a scope 1 fugitive emission during the 2010 test - should be categorized as optional information according to Korea's greenhouse gas/energy target management guideline. Woongjin Coway's rate of greenhouse gas emission by power usage is around 80%, the lowest level in the industry. The company set the goal of restricting emissions compared to company growth as much as possible.
A-2	Other: Scope3:Supplier emissions	100%	1%	2010	45111	2020	Woongjin Coway's vendors also voluntarily verified their performances according to the Korea greenhouse/energy target management standard in 2011, and set the goal of restricting their greenhouse gas emissions as much as possible amid the continuing growth of Woongjin Coway.

### 3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
B-1	Scope 1+2	100%	50%	metric tonnes CO2e per unit revenue	2010	5365	2020	Woongjin Coway set the mid-to-long-term goal of reducing greenhouse gas emissions by 50% on a basic unit basis (tCO2/KRW 100 million) by 2020 compared with 2010, and is implementing various climate change programs.
B-2	Other: Scope3:Supplier emissions	100%	50%	metric tonnes CO2e per unit revenue	2010	45111	2020	The performance of Woongjin Coway's vendors is reported on the assumption that their revenue growth is the same as that of Woongjin Coway. The vendors have also set the goal of reducing greenhouse gas emissions by 50% on a basic unit basis (tCO2/KRW 100 million) by 2020 (compared with 2010).

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
								To date, Woongjin Coway has established carbon partnerships with 33 vendors, with greenhouse gas emissions standing at 44,822tCO <sub>2</sub> e in 2011. The figure represents a reduction of 0.64% in terms of the absolute amount and 10% in terms of the basic unit compared with the figure of 45,111tCO <sub>2</sub> e in 2010, indicating that e vendors' carbon competitiveness has been improved by the carbon partnership. To achieve the goal of reducing greenhouse gas generation by 50% in terms of the basic unit (tCO <sub>2</sub> /KRW 100 million) over 2010 by 2020, Woongjin Coway plans to expand its cooperation with vendors and use its shared growth cooperation fund to carry out various programs, including the upgrading of aged equipment and introduction of high-efficiency equipment.

### 3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comments
B-1	Decrease	1	No change	0	1.) In terms of the absolute amount of emissions, 53tCO <sub>2</sub> e or a 1% reduction over 2010 is expected by 2020. 2) Revenue in 2020 is expected to be KRW 3.94 trillion, i.e., an increase of KRW 2.421 trillion or 159% over 2010. 3) Although an increase in the absolute volume of emissions can be delayed, realistically speaking reduction will be difficult as the business continues growing. 4) However, the rate of revenue growth will be much higher than that of greenhouse gas emission growth, so it is expected that the

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comments
					goal of reducing greenhouse gas emissions by 50% on a basic unit basis can be achieved by 2020.
B-2	Decrease	1	No change	100	Woongjin Coway's vendors have the goal of reducing greenhouse gas emissions by 50% on a basic unit basis over 2010 by 2020. The analysis was performed on the assumption that their revenue growth is the same as that of Woongjin Coway. 1) In terms of the absolute amount of emissions, 449tCO <sub>2</sub> e or a 1% reduction over 2010 is expected by 2020. 2) The revenue in 2020 is expected to reach KRW 940.2 billion, i.e., an increase of KRW 5.777 billion or 159% over 2010. 3) Although an increase of the absolute emission amount can be delayed, realistically speaking its reduction will be difficult as Woongjin Coway continues growing. 4) However, the rate of revenue growth will be much higher than that of greenhouse gas emission growth, and it is expected that the goal of reducing greenhouse gas emissions by 50% on a basic unit basis by 2020 will be achieved. 5) This analysis is based on the 33 vendors who formed carbon partnerships with Woongjin Coway.

### 3.1d

Please provide details on your progress against this target made in the reporting year

ID	% complete (time)	% complete (emissions)	Comment
A-1	10	0	In 2011, Woongjin Coway's greenhouse gas emissions increased by 90tCO <sub>2</sub> e or 1.68% over 2010.
A-2	10	0.64	The total greenhouse gas emissions of the 33 carbon partners of Woongjin Coway in 2011 decreased by 288tCO <sub>2</sub> e or 0.64% over 2010.
B-1	10	9.67	Although Woongjin Coway's greenhouse gas emissions in 2011 increased by 90tCO <sub>2</sub> e or 1.63% over 2010, its revenue increased by 12.56%, indicating a decrease of 9.67% in terms of the basic unit.
B-2	10	9.18	The total greenhouse gas emissions of Woongjin Coway's 33 carbon partner vendors in 2011



ID	% complete (time)	% complete (emissions)	Comment
			decreased by 288tCO <sub>2</sub> e as an absolute amount, while their revenue increased by 9.41%, representing a basic unit decrease of 9.18%.

3.1e

Please explain (i) why not; and (ii) forecast how your emissions will change over the next five years

3.2

Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?

Yes

3.2a

Please provide details (see guidance)

### 1. Carbon Emission Reduction through Improvement of Product Energy Consumption Efficiency

#### 1) How emissions are avoided

Based on the Korean Ministry of Environment's definition of the carbon footprint, more than 90% of the greenhouse gas emitted by Woongjin Coway's hot/cold water purifiers is caused by the electricity used throughout their product lifespan (5 years).

Woongjin Coway strives to reduce its greenhouse gas emissions by introducing carbon-labeling certified products. Such activities resulted the CHP-06DL receiving Korea's first low carbon goods certification under the two-step carbon labeling system offered by the Ministry of Environment in 2011.

#### 2) Avoided emissions

Woongjin Coway's CHP-06DL, which received Korea's first low carbon goods certification in 2011, reduced greenhouse emissions by 116kgCO<sub>2</sub>e from 1,354kgCO<sub>2</sub>e to 1,238kgCO<sub>2</sub>e per unit, for a product lifespan of 5 years. The development of insulating material and a change in the design improved energy consumption efficiency and reduced of greenhouse emissions by 23.3kgCO<sub>2</sub>e annually per unit. Some 12,188 units were sold for a total greenhouse gas emission of 283tCO<sub>2</sub>e in 2011. Moreover, the CHP-210L model is currently being certified as a low carbon good. It reduces carbon emissions by 49.6kgCO<sub>2</sub>e per unit annually for a total of 248kgCO<sub>2</sub>e over the product lifespan. In 2011 some 18,914 units were sold, resulting in a greenhouse gas reduction of 938tCO<sub>2</sub>e. In 2011, based on the evaluation enabled standard, greenhouse gas emissions were reduced by 1,221tCO<sub>2</sub>e as a result of the use of such products.

## **2. Greenhouse Gas Reduction via Refurbished Goods**

### **1) How emissions are avoided**

Woongjin Coway's Refurbished Goods policy involves the resale at lower prices of goods returned by buyers who change their mind, after thoroughly cleaning them under the consumer protection regulation.

### **2) Avoided emissions**

Woongjin Coway lowered the environmental load and reduced emissions by 2,616tCO<sub>2</sub>e by refurbishing 40,000 units in 2011.

## **3. Greenhouse Gas Reduction via the Collection/Recycling of Plastic Waste**

### **1) How emissions are avoided**

Woongjin Coway collects and recycles plastic waste under a voluntary agreement with the Ministry of Environment. The recycled plastic is used as a plastic material for automobile parts.

### **2) Avoided emissions**

Woongjin Coway recycled 6,094 tons of plastic in 2011, resulting in the recycling of 7,180tCO<sub>2</sub>e of greenhouse gases.

## **4. Greenhouse Gas Reduction via the Collection/Recycling of Waste Purifier Refrigerant (R-134a, R-12)**

### **1) How emissions are avoided**

Because of the characteristics of its rental business, Woongjin Coway collects all products to be disposed of. The cooling water purifier uses a refrigerant, all of which is discharged during disposal. Woongjin Coway collects and recycles the refrigerant from the disposed product in order to reduce greenhouse gas emissions.

### **2) Avoided emissions**

In 2011, Woongjin Coway collected and recycled 1,680kg of R-134a refrigerant and 3,230kg of R-12 refrigerant, thereby reducing GHG emissions by 1,747tCO<sub>2</sub>e and 28,166tCO<sub>2</sub>e, respectively.

## **5. Methodology, assumptions, EFs and GWP the GHG Protocol standards used in calculations**

Korean Ministry of Environment Carbon Labeling Certification Standard

- 1) Guideline on calculating carbon emissions of energy-consuming products
- 2) Greenhouse gas emission of products (excluding the usage phase for each product group)
- 3) Application of carbon emission coefficient according to waste treatment method
- 4) Application of greenhouse gas emissions by refrigerant coefficient (GWP R-134a=1,300/R-12=10,900)

## **6. CERs or ERIs within CDM or JI (UNFCCC)**

Woongjin Coway currently does not own any CER and is considering entering the CDM business related to refrigerant recovery/incineration, the CDM business by replacing with eco-friendly and high-efficiency products, and the CDM business by supporting the reduction efforts of its vendors. It is also considering entering the CDM business by investing in new and recycled energy.

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### **3.3**

**Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)**

Yes

3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings (only for rows marked *)
Under investigation		
To be implemented*		
Implementation commenced*		
Implemented*	1	136
Not to be implemented		

3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings	Annual monetary savings (unit currency)	Investment required (unit currency)	Payback period
Energy efficiency: building services	Although Woongjin Coway is not subject to Korea's greenhouse gas/energy target management policy, the company voluntarily implements various programs aimed at actively addressing climate change. Its SNU R&D Center switched from a centralized cooling/heating system (Scope1) that uses city gas to a standalone cooling/heating system (Scope2) that uses electricity in consideration of the characteristics of individual labs in 2011. With an investment of KRW 150 million, savings of KRW 33.199 million won for city gas and KRW 1.625 million won for electricity bill were achieved, resulting in total energy cost savings of KRW 17.573 million won in 2011. Thanks to the change of the fuel for the cooling/heating system and green office activity, GHG emissions were reduced by 136tCO2e in 2011, which represents 2.5% of the total Scope1 and Scope2 emissions of	136	17573978	150000000	>3 years

Activity type	Description of activity	Estimated annual CO2e savings	Annual monetary savings (unit currency)	Investment required (unit currency)	Payback period
	5,455tCO2e generated by Woongjin Coway in 2011.				

### 3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Woongjin Coway actively participates in government policy by developing the greenhouse gas inventory, voluntarily verifying greenhouse gas emissions, distributing the low carbon green management system through carbon partnerships with vendors, and jointly conducting pilot projects to develop green products in partnership with vendors. Moreover, it operates the shared growth cooperation fund to support the operating capital and replace the aged equipment of vendors.
Dedicated budget for low carbon product R&D	Woongjin Coway strives to develop low carbon goods. It has set and is pursuing the mid-to-term carbon emission reduction goal based on the Korean Ministry of Environment's carbon labeling policy. The company invests more than KRW 20 billion in R&D with the aim of 1) improving the energy consumption efficiency classification; 2) developing low carbon products; 3) applying refrigerant-free, eco-friendly (products and materials?); and 4) developing promising low- carbon products/technologies.
Partnering with governments on technology development	Woongjin Coway operates green partnerships with its vendors to jointly respond to environmental issues, and helps its vendors to deploy the low carbon green management system based on a carbon partnership jointly with the government in a drive to proactively cope with climate change. Green product partnerships are adopted not only to reduce emissions at vendor sites, but also to reduce the carbon emissions of the parent company's products. Woongjin Coway strives to ensure shared growth by strengthening product competitiveness hand in hand with the participating companies in response to climate change. Each year the company invests KRW 350 million of government subsidies and grants along with its own capital in green product partnerships to develop the infrastructure required to cope with climate change.

### 3.3d

If you do not have any emissions reduction initiatives, please explain why not

4.1

Have you published information about your company's response to climate change and GHG emissions performance for this reporting year in other places than in your CDP response? If so, please attach the publication(s)

Publication	Page/Section Reference	Identify the attachment
In voluntary communications (complete)	14-21	2011 Sustainability report
In voluntary communications (complete)	all	2011 Carbon Report

Further Information

Woongjin Coway has become the first home-wellness company to issue carbon management report. This report contains information on what Woongjin Coway has been doing to address climate change issues, including greenhouse gas reduction activities.

Attachments

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/\(영문 최종\) 2011 SR-웅진코웨이.pdf](https://www.cdproject.net/Sites/2012/73/21673/Investor%20CDP%202012/Shared%20Documents/Attachments/InvestorCDP2012/4.Communication/(%EC%9C%BC%20%EC%A0%BD%20%EC%A0%B8) 2011 SR-%EC%A0%B8%EC%A0%B8%EC%A0%B8.pdf)

5.1

**Have you identified any climate change risks (current or future) that have potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

5.1a

**Please describe your risks driven by changes in regulation**

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
a-1	International agreements	As a result of the international treaty, regulation of the use of refrigerants, which are destructive to the ozone layer, is expected. Currently, R-134a refrigerant is used in Woongjin Coway's water purifiers. However, the company is developing a technology that will enable conversion to an eco-friendly refrigerant (R-600a) as well as refrigerant-free products in response. An increase in the cost of technology development and equipment replacement is expected as a result of the development of an eco-friendly refrigerant and related technology. If the company fails to promptly respond to the international treaty, deterioration of its global product competitiveness is expected, which will in turn lead to a significant loss of revenue.	Increased capital cost	Current	Direct	Virtually certain	High
a-2	Emission reporting obligations	Although Woongjin Coway is not subject to Korea's greenhouse gas/energy target management policy, it may yet be as its business expands and if the scope of government regulation is expanded. In that case, an increase of operating and administrative costs is expected due to the replacement of aged equipment and investment in high-efficiency equipment.	Increased operational cost	1-5 years	Direct	Likely	Low-medium
a-	Product	Under the provisions of Article 15 of the Energy Usage	Reduced demand	Current	Direct	Virtually	Medium-

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
3	efficiency regulations and standards	Rationalization Act, the regulation of energy-using products is becoming increasingly restricted according to the efficient equipment operation rule. In 2011, the power consumption classification of Woongjin Coway's air purifiers was changed in line with the more restrictive classification standard. As a result, products which used to be rated class 1 are now rated class 3-4. Moreover, the energy consumption efficiency standard for water purifiers has been strengthened further still in 2012, which could lead to fewer purchases by consumers. As such, an increase in R&D costs to cope with stricter energy consumption efficiency and the idle power standard is expected. If the company does not respond to the newly enforced consumption-efficiency regulation, it is expected to lead to a deterioration of competitiveness.	for goods/services			certain	high
a-4	Product labeling regulations and standards	The carbon labeling and environmental mark certification policy enforced by the Korean Ministry of Environment discloses the carbon emissions and environmental impact of certified products, which has helped increase both recognition of and demand for eco-friendly products among consumers. Therefore, enterprises must obtain the low carbon goods certification, carbon labeling certification, and environmental mark certification to cope with the ongoing climate change, and this is expected to lead to increased costs due to higher certification and analysis costs as well as the additional recruitment of specialized human resources.	Increased operational cost	Current	Direct	Virtually certain	Medium-high

### 5.1b

**Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions**

**ID: (a-1)1)financial implication** Woongjin Coway uses a refrigerant gas (R-134a) to improve the cooling performance of its water purifiers. As refrigerant gas has a higher potential impact on global warming (GWP) than carbon dioxide, reduction of the greenhouse gas emitted by the refrigerant is essential. Woongjin Coway

transfers waste products to Pocheon Factory for disposal, and refrigerant gas is discharged in the process. If Woongjin Coway delays or even fails to deliver water purifiers using an eco-friendly refrigerant, it will lose its product competitiveness. Assuming that 10% (around 7,000 units) fewer units will be sold as a result, there is a risk of revenue loss of as much as KRW 70 billion (7,000 units \* KRW 1 million/unit). **2) methods** To prevent the aforementioned regulatory risk, Woongjin Coway's Pocheon Factory invested around KRW 50 million in a refrigerant recovery machine between 2008 and 2009 in order to reduce greenhouse gas emissions from discharged refrigerant and increase the refrigerant recovery rate. The reduction of greenhouse gas emissions resulting from R-134 collection in 2011 amounted to 1,747tCO<sub>2</sub>e/year, which represents a 250% improvement over 2009. The company also collects R-12 refrigerant, whose production was terminated, and supplies it for AS. Although R-12 refrigerant is not categorized as one of six greenhouse gases, Woongjin Coway nevertheless collects it. The reduction of greenhouse gas emissions resulting from R-12 collection in 2011 came to 22,166tCO<sub>2</sub>e/year, which represents a 77% improvement over 2009. In 2012, Woongjin Coway introduced products fitted with eco-friendly cooling technologies that use a natural refrigerant in place of R-134a or even no refrigerant at all, after analyzing its competitors' eco-friendly refrigerant products. **3) costs** Woongjin Coway had invested KRW 500 million in refrigerant recovery system by 2011, which resulted in an improvement of the refrigerant recovery rate from 5% to 45%. The company plans to invest around KRW 300 million in its Pocheon Factory in 2012, including the purchase of more advanced refrigerant recovery system. **ID: (a-2)1) financial implication** In 2011, Woongjin Coway sold 1.3 million units of its products, for a product collection rate of around 50%. If the company does not implement greenhouse gas reduction programs throughout the entire process, it is expected to discharge more than 10,000 tons by 2015 and become subject to the mandatory issuance of an emission report. Such a measure will in turn cause operating costs to increase in order to reduce greenhouse gas emissions. In fact, the predicted annual cost of procuring high-energy consumption efficiency equipment and replacing aged equipment would be more than KRW one billion. **2) methods** To reduce the greenhouse gas emissions and fulfill its social responsibility, Woongjin Coway built the Recycling Center at its Pocheon Factory in 2008, and, by diversifying its production of refurbished goods and recycling plastics, the company reduced its greenhouse gas emissions by 19,010tCO<sub>2</sub>e between 2009 and 2011. Moreover, the Woongjin Coway Production Division uses water to test the quality and functions of its completed water purifiers. After extensive research on reducing the use of water, it developed the world's first system for testing water purifiers using nitrogen and a vacuum instead of water. As a result, it was able to save 1,320tCO<sub>2</sub>e of water (and thus further reduce greenhouse gas emissions) annually. **3) costs** In 2011 the Woongjin Coway Production Division invested more than KRW 100 million in testing the eco-friendly refrigerant R-600 to reduce the generation of greenhouse gas and minimize the environmental impact during the manufacturing process. **ID: (a-3) 1) financial implication** Because of the more enactment of stricter energy consumption efficiency standards in 2011 and 2012, the energy consumption efficiency of Woongjin Coway's electric water purifiers and air purifiers was downgraded from classes 1 or 2 to classes 3 or 4. Assuming that 200,000 fewer units will be sold because of lost competitiveness if the company does not invest in eco-friendly technologies to improve these products' efficiency to class 1, a likely revenue loss of around KRW 200 billion will be incurred. **2) methods** The development and commercialization of technology designed to maintain air purifiers' idle power consumption at 0.1W or less resulted in electricity cost saving and carbon emission reduction. A small, eco-friendly model of water purifier featuring instantaneous heating and cooling due to the incorporation of a semiconductor thermo element was introduced in early 2012 to a great consumer response, as its power consumption rate of 20kwh/month was greatly superior to that of competing products. The company is continuing with the development of low-energy-consuming eco-friendly technologies and is expected to introduce products which consume less power in the future. **3) costs** Since the product efficiency standard is expected to become increasingly restrictive, the company spent KRW 21.7 billion in 2009, KRW 22.0 billion in 2010, and KRW 27.7 billion in 2011 in its response to climate change issues. Furthermore, the company plans to invest around 1.62% or more of its revenue on R&D in 2013. **ID: (a-4)1) financial implication** Woongjin Coway has been managing the environmental impact of its products through carbon labeling and environmental market certification since 2009. Without the introduction of new products in response to climate change, it is estimated that greenhouse gas emissions would have increased by 1,221tCO<sub>2</sub>e in 2011. **2) methods** The company conducts simplified LCA for carbon labeling certification and recycling evaluation, with eight products being affected as of 2011, including six water purifiers (CP-07BLO, black, / CP-07BLO, white)/ CHP-06DL/ CHP-06DU/ CHP-08AL, silver/ CHP-08AL, gold), one air purifier (AP-1008CH), and one bidet (BA14). In 2011, the company conducted an evaluation of the carbon labeling certification of the eight water purifier, air purifier, and bidet models, as well as an evaluation of the product labeling of 14 models through third-party verification and internal verification. **3) costs** The company spent around KRW 40 million on carbon labeling certification in 2011, and plans to spend a further KRW 25 million on certification in 2012.



5.1c

Please describe your risks that are driven by change in physical climate parameters

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
b-2	Change in temperature extremes	. Operating costs are expected to rise in line with the increased use of air conditioners and heaters due to the prolonged summer and winter seasons, and the proliferation of abnormal weather conditions such as floods, heavy snowfall, typhoons, and yellow dust. In particular, the yellow dust blown from China is getting thicker and stronger, resulting in an increasing number of product/part defects, which in turn leads to a rise in the A/S expense of installed equipment and products.	Increased operational cost	Current	Direct	Very likely	High
b-3	Change in mean (average) precipitation	If product delivery and services are not executed promptly due to heavy summer rainfall, then customer complaints and, ultimately, reduced demand for goods or services will result.	Reduced demand for goods/services	Current	Direct	Very likely	Medium-high
b-4	Change in precipitation pattern	As heavy rainfall in summer and heavy snowfall in winter occur more frequently, the risk of water purification and wastewater treatment system malfunction at water treatment plants will increase, and it will become increasingly difficult to enter the new water business.	Reduced stock price (market valuation)	1-5 years	Direct	Likely	Medium
b-5	Induced changes in natural resources	Climate change can cause a reduction of eco diversity and lead to difficulties in applying anti-virus filters and purchasing eco-friendly materials for cosmetics, as well as making it difficult to sources natural resources and raising purchase costs.	Increased operational cost	6-10 years	Direct	Likely	Medium

5.1d

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions

(b-2)1)financial implication If greenhouse gas emissions increase by 107tCO2e as a result of the extended operation of air conditioners and heaters due to prolongation of the summer and winter seasons caused by climate change, the company could sustain financial losses of as much as KRW 7 million (KRW 6,500

per ton). Moreover, if the number of product defects continues to increase due to abnormal weather conditions, it is expected that costs will rise to more than KRW 100 million won per product defect (assuming KRW 10,000 per case and 10,000 cases). **2)methods**In 2011, Woongjin Coway implemented various energy-saving programs such as the 'energy peak system' and 'increased production process efficiency' in an enterprise-wide drive to reduce the use of air conditioners and heaters. It also installed the latest equipment in its warehouses to improve the product storage environment and reduce defects caused by yellow dust and general dust.**3)costs**In 2011 the company invested more than KRW 900 million in equipment to improve production process efficiency and manage the energy peak system. It also spent more than KRW 1 billion on warehouse equipment. **(b-3) 1)financial implication**If the rainy season in summer is extended, it may well lead to problems with logistics and product delivery, meaning that customers will not receive services or product installation promptly. If one assumes that 50,000 customer accounts will be lost as a result, the company will sustain losses of KRW 10 billion or more in purchases and rental fees. **2)methods** Woongjin Coway's 'HEART service' is a differentiated service that respects the company's pledge to its customers and ensures healthy living. The company operates not only an A/S but also a call center 365 days/year in order to maintain products in the optimal condition during the customer's use of the rental service. If there is a delivery problem, the customer will be notified in advance, and the best efforts are made to guarantee the customer's satisfaction with the company's services and products. Each year, the company receives feedback on the HEART service from customers and specialized coordinators and reflects it in the service. The company operates a strategic VOC management system to fulfill customer demands concerning the products and services. The business processes are continuously improved so that such activities are promptly and effectively executed, and more than 550 call center operators are systematically trained each month so that they can carry out their duties as vital customer contact points. **3)costs**The company invests significantly in training programs and professional capability enhancement initiatives. The scale of investment in such programs is expected to increase each year.**(b-4) 1)financial implication**If the company's water purification and wastewater treatment systems malfunction ten times a year due to climate change, it is expected to generate a risk equivalent to KRW 2.5 billion, representing 5% of the company's total revenue due to lost contracts in 2011.**2)methods** Woongjin Coway operates a number of programs designed to minimize business risks caused by changes in precipitation pattern. To obtain competitive superiority in the water treatment business, the company invests in the development of new technology (such as the Woongjin brand engineering method) and future technology by participating in national government programs **3)costs** The company acquired KC Samyang in order to improve its competitiveness in urban drinking water and sewage treatment equipment, plant pure water treatment, and wastewater treatment. **(b-5) 1)financial implication** If the cost of parts increases by 5% because sourcing natural resources becomes more difficult due to a deterioration of eco diversity, annual purchasing costs will increase by KRW 6 billion or more (assuming the monthly purchasing cost of cosmetics and air purifier parts to be around KRW 10 billion). **2)methods** Woongjin Coway develops and uses eco-friendly materials. For example, its wet filter-based antimicrobial humidifying air purifier integrates primary air purification with a powerful filter system and a secondary antimicrobial humidifying function. It uses an antivirus HEPA filter composed of a sterilizing material derived from a natural plant such as ginkgo leaves or sumac extract. Moreover, it introduced an oriental herbal cosmetics range refined with Woongjin Coway's in-house-developed eco-friendly technology as well as a skin treatment natural cosmetics lineup using rare substances, attracting a great response from consumers. Back in 2003 the company launched a leading social voluntary program, the Yugucheon Stream Cleaning Campaign, with the aim of reviving local rivers and eco diversity, in Gongju City, Chungcheongnam-do, where one of the company's branches is located. By planting self-cleaning plants and carrying out water quality improvement and bio restoration activities, the number of species increased and eco diversity expanded along the Yugucheon Stream. **3)costs** As the application of eco-friendly materials is predicted to increase threefold or more by 2020 compared to 2010, the costs of development and investment are expected to rise continuously. The investment in the project to restore the Yugucheon Stream by reviving and expanding its eco diversity amounted to KRW 600 million between 2009 and 2011.

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## 5.1e

**Please describe your risks that are driven by changes in other climate-related developments**

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
c-1	Reputation	Woongjin Coway discloses its climate change related activities and information through CDP or DJSI, and uses a sustainable management index assessment to improve its brand value and corporate value. If it received a low score from the world's accreditation agencies, its reputation would be degraded and investors' interest in its products and services would decrease.	Reduced stock price (market valuation)	Current	Direct	Very likely	Medium-high
c-2	Changing consumer behaviour	Consumers prefer high-energy-efficiency products, energy-consumption-efficiency class 1 products, and convergence products. Given that the home appliance business is particularly affected by consumption trends, a decline in product and service sales would most likely result from the company's failure to introduce products that reflect customer needs.	Reduced demand for goods/services	Current	Indirect (Client)	Virtually certain	High

## 5.1f

**Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; (iii) the costs associated with these actions**

### **ID: (c-1) Reputation**

#### [1\)financial implication](#)

If product and service sales fell by 5% because of a tarnished company reputation caused by a low CDP ,DJSI(Dow Jones Sustainability Indexes),FTSE,MSCI[Morgan Stanley Capital International index] assessment, massive revenue losses of around KRW 86.9 billion could be expected to follow.

#### [2\)methods](#)

Woongjin Coway has been disclosing its climate change related activities and outcomes in accordance with the principle of transparency through the CDP survey since 2009, and has been publishing a sustainable management report and disclosing ESG to actively respond to the global sustainable management index assessment since 2006. In recognition of the company's efforts to disclose environmental information, it was selected as the outstanding company leader in choice consumer goods by CDP Korea in 2009~2011, and was added to CDP Global Leaders Management Club in 2011.

Moreover, its inclusion in the DJSI Asia Pacific improved its reputation worldwide and attracted the interest of investors, as well as helping the company to increase its revenue by 10% or more each year.

#### [3\)costs](#)

The company spent more than KRW 800 million on funding its participation in climate change and environment related conferences worldwide, PR campaigns, and operation of the system. It plans to continuously expand its investment in climate change related activities in 2012.

**ID: (c-2) Changing consumer behaviour**

**1)financial implication**

If a competitor was to introduce a high-efficiency and/or energy-saving product that fully reflected consumer needs before Woongjin Coway was able to do so, it would pose a significant risk to demand for its products and services.

If the revenue of the living environment home appliance division decreased by 1% because of a delay in the introduction of a product differentiated from those of the competitors and highly suited to customer needs, a revenue loss of KRW 15 billion could be expected.

**2)methods**

Woongjin Coway spares no effort or investment in fulfilling the various needs of its many customers based on its unique in-house technology and outstanding product stability. Its Human Sensibility Research Center offers a good example of the company's dedicated efforts on behalf of its customers. The center is renowned not only in Korea but also in many other countries for its customer-centered use of space when designing products that are essential to its customers. In 2011, it developed a high-efficiency, energy-saving mini water purifier and introduced a convergence product that combines humidification and air purification functions. The CHP-06DL, certified as an energy consumption efficiency class 1 product, received a highly favorable customer response. The number of rental and membership accounts reached 5.45 million in 2011, representing an increase of 7% over 2010.

**3)costs**

In 2011, 395 researchers – including holders of MS and PhD degrees - were involved in the company's R&D efforts, in which it invested KRW 27.7 billion.

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5.1g

Please explain why you do not consider your company to be exposed to risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

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5.1h

Please explain why you do not consider your company to be exposed to risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

5.1i

Please explain why you do not consider your company to be exposed to risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

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6.1

**Have you identified any climate change opportunities (current or future) that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

6.1a

**Please describe your opportunities that are driven by changes in regulation**

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
d-1	International agreements	Woongjin Coway expects that the identification of new and recycled energy sources and the development of new growth businesses to cope with climate change related international treaties will generate opportunities	New products/business services	1-5 years	Direct	Very likely	Medium-high

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
		for new company revenue growth.					
d-2	Cap and trade schemes	Once Woongjin Coway starts performing voluntary greenhouse gas reduction activities under the greenhouse gas reduction quota imposed by the government, the sales of reduction and financial profit increase are expected.	Reduced operational costs	1-5 years	Direct	Likely	Medium-high
d-3	Emission reporting obligations	Woongjin Coway belongs to the electric/electronic industrial group, which generates relatively low greenhouse gas emissions. Nonetheless, the introduction of differentiated products which incorporate green and eco-friendly technologies will comply with the greenhouse gas/energy target management regulation, and can be expected to greatly contribute to revenue growth. Furthermore, once the eco-friendliness (extended product lifespan and increased recyclability) of its rental business has been certified, a further increase in revenue may be expected.	Increased demand for existing products/services	1-5 years	Direct	Very likely	High
d-4	Product efficiency regulations and standards	The regulation on energy-consuming products is becoming increasingly restrictive under the provisions of the energy efficiency management equipment operation regulation of Article 15 of the Act on Energy Usage Rationalization. Woongjin Coway expects that investment in the development of the energy consumption efficiency class 1 model and the application of eco-friendly technologies will stimulate consumer demand and eventually increase revenue.	Increased demand for existing products/services	Current	Direct	Virtually certain	High
d-5	Product labeling regulations and standards	The company has been asked by the government and customers to disclose its carbon emission and environmental management information. The company expects that, if the development of products which incorporate low carbon technology results in the certification of low carbon products, it will be able to use that as a sales point and increase the demand for the company's products and services.	Increased demand for existing products/services	Current	Direct	Virtually certain	High
d-6	Voluntary agreements	Under the provisions of the Act on the Promotion of Saving and Recycling Resources, Woongjin Coway signed a voluntary agreement with the Ministry of	Reduced capital costs	Current	Direct	Virtually certain	High

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
		Environment to recycle resources and restrain the generation of waste. As a result, exemption from the waste burden charge and the recycling of resources are expected to generate economic profits to the company.					

## 6.1b

**Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions**

**(d-1) 1)financial implication**In responding to climate change issues in accordance with the prevailing international treaties, Woongjin Coway expects to record an operating profit of KRW 280 billion from its new home appliance, water treatment, and cosmetics businesses using eco-friendly materials in 2012.**2)methods** Concerning its new growth businesses in 2012, Woongjin Coway plans to release a differentiated product lineup, develop an eco-friendly self-sterilizing water generator, obtain original filtering technology, produce an innovative vacuum cleaner using a vibration free motor, aggressively enter the water treatment business, and introduce and eco-friendly cosmetics and expand their sales channels. **3)costs** Woongjin Coway plans to invest KRW 14.6 billion in expanding its home appliance, water treatment and cosmetics businesses in 2012.**(d-2)1)financial implication** As a result of its internal and external greenhouse gas reduction activities, Woongjin Coway was able to reduce GHG emissions by 37,090tCO<sub>2</sub>e in 2011, which is equivalent to financial benefits of around KRW 200 million (KRW 6,500 per ton/ECX basis). **2)methods** The company's internal greenhouse gas reduction activities in 2011 included the deployment of a refrigerant recovery system at the Pocheon Factory, recycling of plastic waste, improvement of production process efficiency and management of the energy peak system, and introduction of an individual lab heating/cooling system; while its external greenhouse gas reduction activities include carbon partnerships with vendors and the development of carbon emission reduction technology.**3)costs** In 2011, Woongjin Coway spent KRW 50 million on the deployment of a refrigerant recovery system at its Pocheon Factory; KRW 50 million on plastic waste recycling equipment; and KRW 1.7 billion on carbon partnerships and the development of carbon emission reduction technology. The company will additionally invest KRW 300 million in the refrigerant recovery system in 2012, and plans to strengthen its greenhouse gas emission reduction programs and investment in the future.**(d-3)1)financial implication** Woongjin Coway introduced the CHP-270, a self-sterilizing water purifier featuring eco-friendly technology. Compared to the 2010 model, it reduces greenhouse gas emissions by 6% or more. For 2011, the total reduction amounted to 1,230tCO<sub>2</sub>e (calculation: 72kgCO<sub>2</sub>e emission reduction/unit \* 17,081 units installed). Woongjin Coway's mattress rental business was recognized for its thorough sanitation management, outstanding quality, and rational price, resulting in the sale of all 4000 units and thereby generating revenue of around KRW 120 million in two weeks. It also had the benefit of reducing greenhouse gas emissions by better caring the mattress.**2)methods** Woongjin Coway introduced the CHP-270, which was Korea's first self-sterilizing water purifier model to prove its differentiated technical capability (heat insulation/cold insulation technology). This water purifier eliminates various harmful materials using the sterilizing water generated by an electrical reaction. Its principal strength lies in its outstanding sterilization function, which is entirely harmless to the human body. A change in the mandatory rental period from two years to three years and a 10~30% increase in the rental fee for new member customers are expected to reduce greenhouse gas emissions generated by product disposal.**3)costs** Woongjin Coway invested around KRW 1.1 billion in the purchase of equipment to develop carbon emission reduction technology in 2011, and will continue pursuing its development of eco-friendly technology in 2012.**(d-4)1)financial implication** In 2011, Woongjin Coway sold more than 200,000 units of the CHP-06EI, which has been certified as an energy-consumption- efficiency

class 1 product, and posted revenue of KRW 20 billion. It also introduced the Hanppyeom (handy) water purifier and sold 15,000 units in the first twelve days, generating revenue of more than KRW 1 billion. Customer demand for the product is still increasing. The Hanppyeom water purifier delivers reduced power consumption of less than 20KWh, resulting in a 1,006kgCo2e reduction of greenhouse gas emissions (in terms of reduced electricity consumption). **2)methods** The Hanppyeom water purifier features innovative technology developed after two years and five months of R&D by 25 researchers at the Woongjin Coway Environmental Technology Research Center. Water purification, water cooling, and water heating functions have been successfully integrated into a small product with dimensions of 18cm by 37.5cm. The Hanppyeom water purifier not only reduces the size of the existing heating and cooling water purifier by 50%, but also features a nano trap filter that removes 99.9% of harmful materials (such as bacteria and viruses) and provides a sufficient flow rate by being directly connected to the tap-water line. **3)costs** It is estimated that around KRW 200 million, or 1% of the total investment in R&D, was invested in the development of the eco-friendly mini water purifier. **(d-5) 1)financial implication** In 2011, Woongjin Coway actively participated in climate change programs along with consumers and adopted the carbon labeling system and environmental mark system as certifications of eco-friendliness. In 2011, the company sold 436,150 units of (low) carbon labeled products, representing an increase of 40% over 2009. **2)methods** In order to acquire eco-friendly product certification, Woongjin Coway deployed Korea's first whole carbon process evaluation (Carbon LCA) IT, and uses it as a tool for evaluating the carbon competitiveness of its products throughout the whole production process from the initial development phase. **3)costs** Woongjin Coway spent around KRW 20 million on acquiring carbon labeling and environmental mark certification, and invested around KRW 200 million in the development of the Coway SAP EHS IT system. **(d-6)1)financial implication& methods&costs** After signing the voluntary agreement with the Ministry of Environment, the company actively conducted various waste collection/recycling programs and received tax exemptions worth KRW 900 million in 2011. In 2011, Woongjin Coway spent around KRW 50 million on a recycling line POP system to manage its recycling performance.

## 6.1c

Please describe the opportunities that are driven by changes in physical climate parameters

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
e-1	Change in temperature extremes	In 2011, there were many threats to the safety of the living environment in Korea due to radiation caused by the great earthquake in Japan, as well as foul odors and leachate resulting from the burial of livestock contaminated with foot-and-mouth disease. To cope with these and other environmental threats, the company developed a product capable of filtering radioactive materials, which is expected to increase product sales and, ultimately, company revenue..	Increased demand for existing products/services	Current	Direct	Virtually certain	High
e-2	Change in precipitation pattern	One particular physical factor, namely a change in precipitation patterns, has resulted in the development of a differentiated filter technology, which could lead to expansion of the company's water treatment business.	New products/business services	Current	Direct	Very likely	High



## 6.1d

**Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions**

ID: (e-1) Change in temperature extremes

1)financial implication

The introduction of a water purifier fitted with an antivirus filter to minimize the threat posed by radioactive materials and foot-and-mouth disease contributed to total sales of 95,000 units in the first quarter of 2011, representing an increase of 35% over the 70,000 sales posted in the same period last year, and an increase in revenue of more than KRW 10 billion.

2)methods

In 2011, there were many threats to the safety of the living environment in Korea due to radiation from Fukushima as well as foul odors and leachate from the burial of livestock contaminated with foot-and-mouth disease. To cope with such severe environmental threats, Woongjin Coway developed an antivirus filter that combines humidification and sterilization functions. The product received a favorable response from consumers as it removes 99.9% of heavy metals and fine dust containing radioactive materials from water.

3) Costs

Woongjin Coway spent around KRW 10 million on PR to expand the sales of its products fitted with the newly developed antivirus filter.

ID: (e-2) Change in precipitation pattern

1)financial implication

In 2011, Woongjin Coway sold more than 5,000 of its water purifier fitted with a nano trap filter, which ensures a flow rate sufficient to cope with the risk of water shortage due to the change in precipitation patterns.

Due to the development of its water treatment business, the company won the Busan Suyeongman Bay construction project, generating revenue of KRW 10.4 billion in 2011, as well as a project in Iraq (project size: KRW 1.9 billion), earning recognition for its international work capability.

2)methods

Woongjin Coway introduced Korea's first industrial level water purifier, which maintains a sufficient flow rate and delivers outstanding impurity filtering performance due to the application of nano technology to the purification filter. The nano trap filter uses a new 2mm nano material and has a high filtering rate, as it has a large surface area compared to its volume. It can also eliminate harmful matter such as viruses and bacteria.

Its leading model, the CHP-531N, offers superior water quality to the UF method, and is price competitive, thus helping the customers to expand their market share. Woongjin Coway acquired Green Environmental Technology in 2010, followed by KC Samyang in 2011, to lay the basis for expanding its water treatment business in Korea and other countries.

For example, the company received the order of a village water service pilot project in Ghana to supply a drinking water system in May 2011, and signed a water business MOU to strengthen its partnership in the domestic water treatment market.

3)costs

Woongjin Coway spent KRW 6.8 billion on acquiring the water treatment company KC Samyang in 2011, and plans to invest KRW 2.2 billion in water treatment equipment and R&D.

The company expects that a continuous physical response to water-related issues will create new opportunities and increase revenue.

6.1e

Please describe the opportunities that are driven by changes in other climate-related developments

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
f-1	Reputation	If a company receives a high sustainable management index evaluation as a result of transparently disclosing its climate change related risks and opportunities and greenhouse gas reduction activities and outcomes, its reputation will improve and its corporate value will be increased. Enhanced company reputation and brand preference will lead to revenue increase.	Increased stock price (market valuation)	Current	Direct	Very likely	Medium-high
f-2	Changing consumer behaviour	When a company introduces eco-friendly products that meet the consumers' LOHAS needs, this will lead to increased demand for its products and services and consequently to an improvement of its competitiveness.	Increased demand for existing products/services	Current	Indirect (Client)	Very likely	High

6.1f

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

ID: (f-1)Reputation

1)financial implication

As a result of continued improvement of the company's reputation and value, Woongjin Coway recorded revenue growth of 13% in 2011.

2)methods

Woongjin Coway has been disclosing information on climate change related risks and opportunities and its carbon emissions since 2009. It also discloses

quantitative and transparent environmental information to the DSI and KSI assessments to improve the company reputation. For example, the company was enlisted in the Global Leaders Club as a result of the CDP assessment and its award of the highest AA~AAA rating from a company rating agency in 2011. Moreover, the company presented itself as a model company that fulfills its social responsibilities in the area of environmental issues at the UNGC (UN Global Compact) Global SCR Conference in November 2011.

### 3)costs

Woongjin Coway actively invests in systems, equipment, communication and consulting with the aim of improving its reputation and brand value. It spent around KRW 1.8 billion to that end in 2011 and plans to invest a further KRW 2.5 billion in 2012.

## ID: (f-2)Changing consumer behaviour

### 1)financial implication

Consumers nowadays prefer eco-friendly products characterized by a unique design and powerful functionality.

Woongjin Coway introduced the P-220L, a water purifier model with a premium design that reflects customer needs, and the BB10, an eco-friendly, wellbeing water softener. The company sold a combined total of 15,000 units of these products, generating revenue of around KRW 500 million in 2011.

### 2)methods

Woongjin Coway introduced various water purifier models featuring an emotional design and user-friendliness for the general public.

One such leading example is the P-220L, which reflected such diverse consumer needs as large-capacity fixed-amount dispensing, compact size, and suitability for use as a conventional vessel. It also introduced a slim water softener model fitted with an oriental herbal filter to reflect the consumer demand for eco-friendly materials. The oriental herbal filter with a chamomile component is known to prevent allergies and as such was enthusiastically accepted by consumers.

### 3)costs

When the bottle-type P-220L water purifier was initially launched, the company installed the cooking water purifier free of charge for every customer as a promotional gambit. More than KRW 50 million was spent on the initial sale of 5,225 units (5,225 units \* KRW 10,000/unit).

Furthermore, the company spent around KRW 5 million on BAF (British Allergy Foundation) certification for the BB10, an oriental herbal filter with a slim water softener.

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6.1g

Please explain why you do not consider your company to be exposed to opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

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6.1h

Please explain why you do not consider your company to be exposed to opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

6.1i

Please explain why you do not consider your company to be exposed to opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

## Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading [Investor]

### Page: 7. Emissions Methodology

7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Base year	Scope 1 Base year emissions (metric tonnes CO2e)	Scope 2 Base year emissions (metric tonnes CO2e)
Fri 01 Jan 2010 - Fri 31 Dec 2010	576	4789

7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

**Please select the published methodologies that you use**

ISO 14064-1
Other

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**7.2a**

**If you have selected "Other", please provide details below**

- 1) The Kyoto Protocol to the United Nations Framework Convention on Climate Change - 11December 1997
- 2) The GHG Protocol of the WBCSD/WRI - Revised March 2004
- 3) IPCC Guideline for National Greenhouse Gas Inventories - Revised 2006
- 4) ISO14064 Part 1 & 3 - Issued 2006
- 5) Base Metals Smelting/Refining Guidance : Emissions calculation formula.
- 6) Guidelines on Greenhouse Gas/Energy Target Management Operation

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**7.3**

**Please give the source for the global warming potentials you have used**

<b>Gas</b>	<b>Reference</b>
CO2	IPCC Second Assessment Report (SAR - 100 year)
N2O	IPCC Second Assessment Report (SAR - 100 year)
CH4	IPCC Second Assessment Report (SAR - 100 year)
HFCs	IPCC Second Assessment Report (SAR - 100 year)

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**7.4**

**Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data**

Fuel/Material/Energy	Emission Factor	Unit	Reference
Kerosene	69300	Other: kgCO <sub>2</sub> per TJ	IPCC Guidelines 2006_Volume2
Liquefied petroleum gas (LPG)	63100	Other: kgCO <sub>2</sub> per TJ	IPCC Guidelines 2006_Volume2
Diesel/Gas oil	74100	Other: kgCO <sub>2</sub> per TJ	IPCC Guidelines 2006_Volume2
Electricity	465.3	kg CO <sub>2</sub> e per MWh	Modulus of Guidelines on Greenhouse Gas/Energy Target Management Operation
Refinery gas	63100	Other: kgCO <sub>2</sub> per TJ	IPCC Guidelines 2006_Volume2
Liquefied Natural Gas (LNG)	56100	Other: kgCO <sub>2</sub> per TJ	IPCC Guidelines 2006_Volume2

#### Further Information

While the refrigerant R-134a, which is discharged during the waste water purifier collection and disposal process, was included in Scope1 for verification in 2010, the opinion that the refrigerant should be managed as miscellaneous information according to the national standard was raised and became a key issue for verification in 2011. As a result, the baseline year was reset.

The volume of emissions disclosed during the 2010 verification and CDP survey amounted to 9,940tCO<sub>2</sub>e, but the figure given for emissions in 2010 as disclosed in the 2011 report excludes the refrigerant (R-134a, 4,584tCO<sub>2</sub>e) emissions generated during the waste water purifier collection and disposal from Scope1.

(attach) Verification Opinion Woongjin Coway.,Ltd.and its suppliers

#### Attachments

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/7.EmissionsMethodology/Verification Opinion Woongjin Coway.,Ltd.and its suppliers.pdf](https://www.cdproject.net/Sites/2012/73/21673/Investor%20CDP%202012/Shared%20Documents/Attachments/InvestorCDP2012/7.EmissionsMethodology/Verification%20Opinion%20Woongjin%20Coway.,Ltd.and%20its%20suppliers.pdf)

**Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Operational control

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**8.2a**

**Please provide your gross global Scope 1 emissions figure in metric tonnes CO2e**

368

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**8.2b**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e - Part 1 breakdown**

Boundary	Gross global Scope 1 emissions (metric tonnes CO2e)	Comment

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**8.2c**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e - Part 1 Total**

Gross global Scope 1 emissions (metric tonnes CO2e) – Part 1 Total	Comment

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**8.2d**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e - Part 2**

Boundary	Gross global Scope 1 emissions (metric tonnes CO2e)	Comment
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**8.3a**

**Please provide your gross global Scope 2 emissions figure in metric tonnes CO2e**

5087

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**8.3b**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e - Part 1 breakdown**

Boundary	Gross global Scope 2 emissions (metric tonnes CO2e)	Comment
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**8.3c**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e - Part 1 Total**

Gross global Scope 2 emissions (metric tonnes CO2e) - Total Part 1	Comment
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**8.3d**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e - Part 2**



Boundary	Gross global Scope 2 emissions (metric tonnes CO2e) - Other operationally controlled entities, activities or facilities	Comment
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8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions which are not included in your disclosure?

8.4a

Please complete the table

Reporting Entity	Source	Scope	Explain why the source is excluded
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8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions which are not included in your disclosure?

Yes

8.4a

Please complete the table

Source	Scope	Explain why the source is excluded
6 overseas subsidiaries	Scope 1 and 2	The international subsidiaries of Woongjin Coway are sales organizations and hence do not own the factory. As they mostly rent the office buildings, it is difficult to obtain accurate figures for the combustion and electricity usage of each building. Therefore, they were excluded from the report.
Domestic branch operations	Scope 1 and 2	As domestic branch operations mostly rent the office buildings, it is difficult to obtain figures for the combustion and electricity usage for each building. Therefore, they were excluded from the report. Since the buildings are managed by a third-party contractor, the scope of definition is not clear, and it is difficult to obtain accurate information. While the electricity usage of the rented offices is managed by an IT system, there are errors in data accuracy according to the individual meter reader installed at each building. Therefore, this report excludes emissions generated by branch offices managed by third parties. Currently, the volume of greenhouse gas emissions generated by the electricity usage of 800 or so branch offices is estimated to be 6,600tCO <sub>2</sub> e.
Affiliated company and Investment Company	Scope 1 and 2	Woongjin Coway has either a controlling or minor stake in each of Aimkorea Co.,Ltd., Green Entech, Samyang Water Systems and Woongjin Chemical Co.,Ltd. The company reports their greenhouse emissions based on criteria that it can directly control; therefore the emissions generated by the subsidiaries or those in which it has a minor stake are excluded from this report.

## 8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and Scope 2 figures that you have supplied and specify the sources of uncertainty in your data gathering, handling, and calculations

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
Less than or equal to 2%	Data Management	Most of the fuel is used for the heating of business sites and vehicles. As the purchase bills are managed by the meter at the gas station or point of purchase, measurement uncertainty is considered to be low. However, there can be some uncertainty about omissions, and the reliability of the data is evaluated by 3rd-party verification each year. 8.6b In the opinion of this auditor, the company appropriately has reported its greenhouse	Less than or equal to 2%	No Sources of Uncertainty	Woongjin Coway's scope 2 has only purchased electric power, so the power is measured by the gauges managed by KEPO. Power consumption amount is billed by KEPCO, thus lowering uncertainties.

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
		gas emissions from the viewpoint of importance according to the target management guidelines set in 2011.			

8.6

Please indicate the verification/assurance status that applies to your Scope 1 emissions

Verification or assurance complete

8.6a

Please indicate the proportion of your Scope 1 emissions that are verified/assured

More than 90% but less than or equal to 100%

8.6b

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Reasonable assurance	Other: Guidelines on Greenhouse Gas/Energy Target Management Operation	In the opinion of this auditor, the company appropriately has reported its greenhouse gas emissions from the viewpoint of importance according to the target management guidelines set in 2011. (document attached)

8.7

**Please indicate the verification/assurance status that applies to your Scope 2 emissions**

Verification or assurance complete

8.7a

**Please indicate the proportion of your Scope 2 emissions that are verified/assured**

More than 90% but less than or equal to 100%

8.7b

**Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Reasonable	Other: Guidelines on Greenhouse	In the opinion of this auditor, the company appropriately has reported its greenhouse gas

Level of verification or assurance	Relevant verification standard	Relevant statement attached
assurance	Gas/Energy Target Management Operation	emissions from the viewpoint of importance according to the target management guidelines set in 2011. (document attached)

## 8.8

**Are carbon dioxide emissions from the combustion of biologically sequestered carbon (i.e. carbon dioxide emissions from burning biomass/biofuels) relevant to your company?**

No

### 8.8a

Please provide the emissions in metric tonnes CO<sub>2</sub>e

## Further Information

(8.6b) (8.7b) Verification Opinion Woongjin Coway.,Ltd.and its suppliers

Although the greenhouse gas emissions of Woongjin Coway were voluntarily submitted to 3rd-party verification according to the international standards until 2010, the figure for 2011 was voluntarily verified by a 3rd party according to the Korean government's greenhouse gas/energy target management guideline.

## Attachments

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/8.EmissionsData\(1Jan2011-31Dec2011\)/Verification Opinion Woongjin Coway.,Ltd.and its suppliers.pdf](https://www.cdproject.net/Sites/2012/73/21673/Investor%20CDP%202012/Shared%20Documents/Attachments/InvestorCDP2012/8.EmissionsData(1Jan2011-31Dec2011)/Verification%20Opinion%20Woongjin%20Coway.,Ltd.and%20its%20suppliers.pdf)

9.1

Do you have Scope 1 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?

No

9.1a

Please complete the table below

Country	Scope 1 metric tonnes CO2e
---------	----------------------------

9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division

9.2a

Please break down your total gross global Scope 1 emissions by business division

Business Division	Scope 1 metric tonnes CO2e
Seoul Office	0
R&D Center	96
Cosmetice Research Institute	0
Yugu Factory(Head Office)	90

<b>Business Division</b>	<b>Scope 1 metric tonnes CO2e</b>
InCheon Factory	41
Pocheon Factory	141
Yugu Logistics Center	0

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9.2b

Please break down your total gross global Scope 1 emissions by facility

<b>Facility</b>	<b>Scope 1 metric tonnes CO2e</b>

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9.2c

Please break down your total gross global Scope 1 emissions by GHG type

<b>GHG type</b>	<b>Scope 1 metric tonnes CO2e</b>

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9.2d

Please break down your total gross global Scope 1 emissions by activity

<b>Activity</b>	<b>Scope 1 metric tonnes CO2e</b>

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**Further Information**

- 1) Woongjin Coway reported the emissions generated by facilities within the organization's boundary as Scope 1.
- 2) Although figures for electricity usage by its Seoul office, which rents a part of a building (Joonang Ilbo Building), can be obtained, the figure for stationary combustion used for heating cannot be obtained and thus it is excluded from this report.
- 3) The Cosmetics Research Center and the Yugu Logistics Center building use individual heating and cooling and have no stationary combustion emission source other than electricity.

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**Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)**

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**10.1**

**Do you have Scope 2 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?**

No

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**10.1a**

Please complete the table below

Country	Scope 2 metric tonnes CO2e

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**10.2**

**Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)**

By business division

---

**10.2a**



**Please break down your total gross global Scope 2 emissions by business division**

<b>Business division</b>	<b>Scope 2 metric tonnes CO2e</b>
Seoul Office	436
R&D Center	1592
Cosmetice Research Institute	155
Yugu Factory(Head Office)	1556
InCheon Factory	766
Pocheon Factory	352
Yugu Logistics Center	230

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**10.2b**

**Please break down your total gross global Scope 2 emissions by facility**

<b>Facility</b>	<b>Scope 2 metric tonnes CO2e</b>
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**10.2c**

**Please break down your total gross global Scope 2 emissions by activity**

<b>Activity</b>	<b>Scope 2 metric tonnes CO2e</b>
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**Further Information**

- 1) Woongjin Coway opened the Yugu Logistics Center in July 2011, and the verified emission report includes the data available for July.
- 2) Yugu Factory data includes the figure for its dormitory (rented apartment). The company constructed its own dormitory in July 2011, and the data from July reflects this. They are also verified as part of the Yugu Factory data.

11.1

**Do you consider that the grid average factors used to report Scope 2 emissions in Question 8.3 reflect the contractual arrangements you have with electricity suppliers?**

Yes

11.1a

You may report a total contractual Scope 2 figure in response to this question. Please provide your total global contractual Scope 2 GHG emissions figure in metric tonnes CO<sub>2</sub>e

11.1b

Explain the basis of the alternative figure (see guidance)

11.2

**Has your organization retired any certificates, e.g. Renewable Energy Certificates, associated with zero or low carbon electricity within the reporting year or has this been done on your behalf?**

No

11.2a

Please provide details including the number and type of certificates

Type of certificate	Number of certificates	Comments
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#### Further Information

Woongjin Coway has the contract with KEPCO for supply of the electricity.

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### Page: 12. Energy

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#### 12.1

**What percentage of your total operational spend in the reporting year was on energy?**

More than 0% but less than or equal to 5%

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#### 12.2

**Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has consumed during the reporting year**

Energy type	MWh
Fuel	636
Electricity	10911
Heat	0
Steam	0
Cooling	0

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#### 12.3

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Liquefied petroleum gas (LPG)	4.89
Diesel/Gas oil	201.31
Liquefied Natural Gas (LNG)	256.37
Kerosene	41.70
Propane	129.44
Butane	1.89

#### Further Information

Each type of fuel used was converted to electricity according to the following formula:

1) Electricity conversion = [Fuel usage (l, kg, Nm<sup>3</sup>) \* Net heat value (MJ/l, kg, Nm<sup>3</sup>)]/electricity conversion net heat value (MJ)

2) The net heat value data used in the formula were referred to from the [Attachment] Energy Conversion Standard in the Enforcement Rule of the Energy Act in Korea.

### Page: 13. Emissions Performance

#### 13.1

How do your absolute emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Increased

#### 13.1a

Please complete the table

Reason	Emissions value (percentage)	Direction of change	Comment
Change in boundary	1.68	Increase	The Scope 1 and Scope 2 emissions by Woongjin Coway amounted to 5,365tCO <sub>2</sub> e in 2010, the baseline year, and 5,455tCO <sub>2</sub> e in 2011. In 2011, an increase of emissions amounting to 230tCO <sub>2</sub> e was caused by the construction of the Yugu Logistics Center in July 2011, and of 2tCO <sub>2</sub> e due to the construction of the new dormitory. Comparing the same condition and disregarding the change in the organization's boundary, emissions in 2011 were 142tCO <sub>2</sub> e or 2.64% lower than in 2010.
Emissions reduction activities	4.93	Decrease	Scope1 and Scope2 emissions in 2010 amounted to 5,365tCO <sub>2</sub> e. Comparing the same organization's boundary in 2011, emissions decreased by 264tCO <sub>2</sub> e or 4.93% as a result of process improvement and line efficiency increase, the use of individual heating/cooling systems at the research center, and the adoption of green office programs by all employees even through total production in 2011 was higher than in 2010.

### 13.2

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO<sub>2</sub>e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
0.319	metric tonnes CO <sub>2</sub> e	unit total revenue	9.67	Decrease	In 2010, Woongjin Coway's revenue amounted to KRW 1.519 trillion and its emission were 5,365tCO <sub>2</sub> , resulting in a basic unit of 0.353tCO <sub>2</sub> e/KRW 100 million, whereas in 2011 its revenue was KRW 1.71 trillion and its emissions were 5,455tCO <sub>2</sub> e, resulting in a basic unit of 0.319tCO <sub>2</sub> e/KRW 100 million, indicating a decrease of 9.67% in the basic unit in 2011 compared with the previous year.

### 13.3

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO<sub>2</sub>e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
1.20	metric tonnes CO2e	FTE Employee	6.25	Decrease	In 2010, the total number of employees at Woongjin Coway was 4,188 and emissions were 5,365tCO2, resulting in a basic unit of 1.28tCO2e/person, whereas in 2011 the total number employees was 4,537 and emissions were 5,455tCO2e, resulting in a basic unit of 1.20tCO2e/person, indicating a decrease of 6.25% in 2011 compared with the previous year. (The number of employees includes the contract manpower based on the sustainable report for 2011.)

13.4

Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
1.106	metric tonnes CO2e	unit of production	15.7	Decrease	The carbon labeling scheme managed by the Ministry of Environment is designed to evaluate carbon emissions according to the usage of specific products. For instance, the carbon labeling of Woongjin Coway's heating/cooling water purifiers, when evaluated according to the carbon labeling standard, was 1,312kgCO2e(1.312tCO2e)/product (on the basis of a 5-year product lifespan) in 2010 and 1,106kgCO2e(1.106tCO2e)/ product (5-year product lifespan) in 2011, showing a decrease of 206kgCO2e(0.206tCO2e) or 15.7%.

14.1

**Do you participate in any emission trading schemes?**

No, but we anticipate doing so in the next two years

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**14.1a**

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
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**14.1b**

**What is your strategy for complying with the schemes in which you participate or anticipate participating?**

Although none of Woongjin Coway's production sites are subject to the Korean government's greenhouse gas/energy goal management scheme or emission right trading scheme because its Scope1 and Scope2 emissions were low at 5,455tCO2e in 2011, the company is considering the following with regard to emission right trading and carbon credits to actively respond to climate change issues.

1. Carbon emission reduction by improving product energy efficiency and using eco-friendly refrigerants

Because of the characteristics of the rental business, Woongjin Coway can recollect products after their sale. The company is considering linking the reduction of greenhouse gas emission from the development of high-efficiency products and conversion to an eco-friendly refrigerant with CDM.

2. Greenhouse gas reduction via the collection and incineration of the discarded water purifier refrigerant

Woongjin Coway is considering introduction of CDM by developing technology to incinerate the refrigerant (R-134a) generated during the disposal of collected water purifiers.

3. Greenhouse Gas Emission Offset

Woongjin Coway is considering the purchase of K-CER conducted by the Ministry of Environment and supporting the greenhouse gas reduction efforts of its vendors. It is also considering offsetting Scope1 and Scope2 emissions with the installation of new and recycled energy systems.

4. Expansion of Scope of Climate Change Management

Woongjin Coway has devised a comprehensive climate change response strategy that takes into consideration not only the reduction of carbon emissions as a home appliance manufacturing and service company, but also the related water treatment business and eco diversity-related cosmetics business from the mid-to-long-term perspective.

14.2

Has your company originated any project-based carbon credits or purchased any within the reporting period?

No

14.2a

Please complete the following table

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits retired	Purpose e.g. compliance

15.1

Please provide data on sources of Scope 3 emissions that are relevant to your organization

Sources of Scope 3 emissions	metric tonnes CO2e	Methodology	If you cannot provide a figure for emissions, please describe them
Employee commuting	49	The calculation of the emissions generated by employee commuter buses (mobile combustion) operated by third parties for each fuel source and emission coefficient applies the same formula as that used for Scope1 in this report.	
Other (downstream)	44822	The Scope1 and Scope2 emissions generated by the 33 vendors in carbon partnerships with Woongjin Coway were calculated in the same way as those of Woongjin Coway.	



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**15.2**

**Please indicate the verification/assurance status that applies to your Scope 3 emissions**

Verification or assurance complete

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**15.2a**

**Please indicate the proportion of your Scope 3 emissions that are verified/assured**

More than 90% but less than or equal to 100%

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**15.2b**

**Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Reasonable assurance	Other: Guidelines on Greenhouse Gas/Energy Target Management Operation	In the opinion of this auditor, the company appropriately reports its greenhouse gas emissions from the viewpoint of importance according to the target management guideline set in 2011. (reference: document attached)

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**15.3**

**Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?**

Yes

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**15.3a**

Please complete the table

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Other (downstream)	Emissions reduction activities	0.64	Decrease	The reported emissions of vendors in 2010 were 44,202 tons, but the 900 tons generated by one vendor were omitted because of delayed data collection during the verification process. Moreover, a further 9 tons of emissions generated by another vendor were found to have been omitted in the post-verification monitoring. Therefore, the actual total volume of emissions by the vendors in 2010 amounted to 45,111 tons. Total emissions by vendors in 2011 came to 44,822 tons, indicating a decrease of 289 tons or 0.64% over 2010. Although there may be some differences according to each vendor's individual efforts to reduce carbon emissions or changes in production, the performance is the result of reduced energy consumption on the part of the vendors, due to a reduction of heat loss because the latter needed to replace fewer molds following an upgrade of Woongjin Coway's ordering system, which is based on small-quantity batch production and the improvement of high-energy consuming parts.

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**Further Information**

attch : Verification Opinion Woongjin Coway.,Ltd.and its suppliers

The data of both Woongjin Coway and the vendors were audited by Deloitte Anjin LLC.

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**Attachments**

[https://www.cdproject.net/Sites/2012/73/21673/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/15.Scope3Emissions/Verification Opinion Woongjin Coway.,Ltd.and its suppliers.pdf](https://www.cdproject.net/Sites/2012/73/21673/Investor%20CDP%202012/Shared%20Documents/Attachments/InvestorCDP2012/15.Scope3Emissions/Verification%20Opinion%20Woongjin%20Coway.,Ltd.and%20its%20suppliers.pdf)

**Module: Sign Off**

**Page: Sign Off**

**Please enter the name of the individual that has signed off (approved) the response and their job title**

Woongjin Coway Co.,Ltd.  
THE ENVIRONMENT MANAGEMENT TEAM

NAME: Yang Eun-Sil  
Job title : Assistant Manager

**CDP 2012 Investor CDP 2012 Information Request**