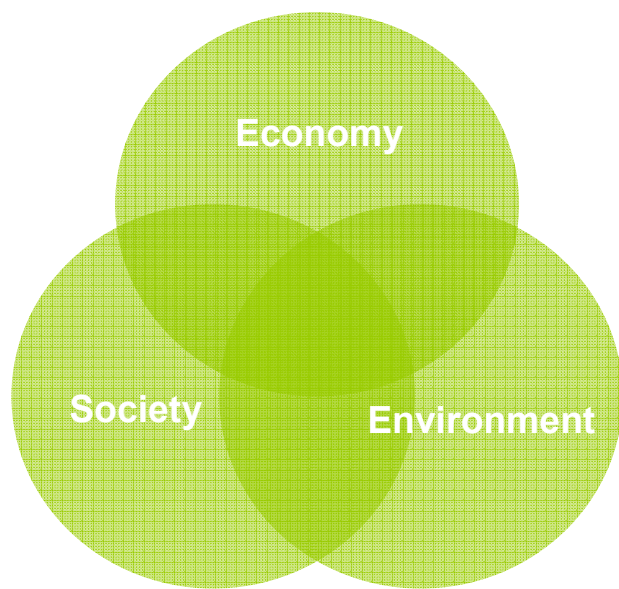


**We Build Tomorrow**  
**HDEC Sustainability Report**  
**2011**

## Report Overview

As part of its efforts to help preserve the environment and fulfill its social responsibility, HDEC has for many years been pursuing sustainable management. The aim of this 2011 Report on Sustainable Management is to provide an integrated account of HDEC's efforts and activities related to sustainable management coupled with its financial performance, so as to allow stakeholders to check the company's achievements in both financial and non-financial respects.



### Integrated Report

The 2011 HDEC Report on Sustainable Management combines the company's economic, environmental, and social activities and performances together. This is in large part in order to report how the company's efforts for sustainable management affect not only the company's own growth, but the sustainable growth of our society at large.

This report, in other words, not only describes what activities and performances HDEC has led in economic, environmental, and social arenas, but also shows how those activities and performances affect and influence one another. In particular, the company's environmental and social achievements have been converted into monetary terms (KRW) so as to clarify their links to the company's economic performance.

HDEC remains committed to communicating the results of its sustainable management to all stakeholders by providing an integrated account of the company's economic, environmental and social activities and of how those activities affect the sustainable growth of society at large.

### Format

This report on sustainable management, published for the second time this year (2011), has been created following the G3.1 guideline of the Global Reporting Initiative. Reports of similar formats will continue to be published every year. The report also reflects the ten principles of the UNGC as well as the main ISO 26000 agenda. This year's report contains detailed descriptions of HDEC's economic, environmental, and social activities and performances that took place at the headquarters and offices both at home and abroad from January 1, 2010, through December 31, 2010. The statistical data from the previous three years have also been included so as to allow a view of trends and patterns in quantitative changes.

### Verifying the Report

HDEC submitted its Report on Sustainable Management to an independent third-party to have the report's reliability verified. The third-party verification was conducted in accord with the AA1000AS (2008) standard, based on the three principles of AA1000APS (2008). The report also received a grade of A+ in the Global Reporting Initiative (GRI) check.

You can view the HDEC Report on Sustainable Management on the company's website at [www.hdec.kr](http://www.hdec.kr). Should you have any queries or comments, please contact us at the following contact information. We welcome diverse opinions and feedbacks from stakeholders!

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HDEC Building, 140-2 Gye-dong, Jongno-gu, Seoul, Republic of Korea (Postal Code: 110-920)  
Tel. +82 2 756 2240      Fax. +82 2 746 4856      e-mail: [sr@hdec.co.kr](mailto:sr@hdec.co.kr)

### Icons Used in the Report

The 2011 HDEC Report on Sustainable Management report various company activities according to the guidelines on sustainable management provided by the GRI, ISO 26000, UNGC, and so forth. Part of the information contained in the report is also provided online at the company's official website. The letter 'I' used in this report indicate information that has been compiled according to the ISO 26000 guideline, while the letter 'U' indicate the guideline provided by the ten principles of the UNGC. 'www' indicate that more detailed information can be found on the company website.

## Overview of Progress : Our Performance at a Glance

The table below lists the aims and results of major activities of HDEC's sustainable management practiced in the year 2010, while also suggesting the company's future aims in this area. Each item was selected as a result of the content importance analysis. Please refer to the company website for more detailed information.

● Aims met ● Aims not met ● In progress

Item	Growth and Profits Generated (p xx)	Management Stability (p xx)	Eco-friendly Technology Development (p xx)	Eco-friendly Construction (p xx)
Approach	Creating sustainable economic values by encouraging the growth of new industries and pioneering new markets overseas.	Pursuing greater stability in growth patterns by ensuring transparency in the management structure, proactive risk management, and ethical management system.	Securing early eco-friendly technology, high-performance new materials, high-efficiency facilities, and other sources of future growth.	Minimizing harmful effect on the environment by making all processes "greener."
Effects on HDEC	<ul style="list-style-type: none"> <li>• Increase in the company's value and investment potential.</li> <li>• Increase in return to the shareholder.</li> <li>• Sustained investment and other sources of growth secured.</li> </ul>	<ul style="list-style-type: none"> <li>• Risk factors removed through risk management.</li> <li>• Enhanced transparency in management.</li> <li>• Increase in the company's value and investment potential.</li> </ul>	<ul style="list-style-type: none"> <li>• Grounds prepared for expansion into the new green industries.</li> <li>• Enhanced competitiveness through technological strengthening.</li> </ul>	<ul style="list-style-type: none"> <li>• Active response to climate change.</li> <li>• Proactive environmental risk management.</li> <li>• Improved company image.</li> </ul>
Anticipated Benefits for Stakeholders	<ul style="list-style-type: none"> <li>• Sustained, high returns on investment.</li> <li>• Proactive risk management for each project executed.</li> <li>• Re-investment in the created economic results.</li> <li>• Increased profit through fair competition.</li> <li>• Fair allocation of economic values created.</li> <li>• Stakeholders' opinions reflected in the decision-making by the management.</li> </ul>		<ul style="list-style-type: none"> <li>• Sources for further growth secured by joining the eco-friendly market early.</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental performance improved in a sustained manner.</li> <li>• Effects of construction on the environment managed and shared.</li> </ul>
Goals for 2010	<ul style="list-style-type: none"> <li>• Revenue: 10 trillion KRW</li> <li>• Orders secured:</li> <li>• Net term profit: x%</li> </ul>	<ul style="list-style-type: none"> <li>• Creating a system for reports on risk management and handling.</li> <li>• Expanding the scope of ethical management.</li> </ul>	<ul style="list-style-type: none"> <li>• Encouraging open innovation.</li> <li>• Commercializing secured techniques and technology.</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing green purchasing.</li> <li>• Creating a system for response to climate change.</li> <li>• Strengthening reporting regarding the site and ecological environments.</li> </ul>
Activities and Results in 2010	<ul style="list-style-type: none"> <li>• Revenue: 10 trillion KRW</li> <li>• Orders secured: 18.3 trillion KRW</li> <li>• Net term profit: 5.3%</li> </ul>	<ul style="list-style-type: none"> <li>• A system for step-by-step risk management and handling created.</li> <li>• HDEC Green CSR, a code of ethics, enacted.</li> </ul>	<ul style="list-style-type: none"> <li>• Open innovation active – 20 projects in progress.</li> <li>• 7 new technologies already commercialized and 6 more in progress.</li> </ul>	<ul style="list-style-type: none"> <li>• Green Purchasing Standard established.</li> <li>• Greenhouse Gases Inventory established.</li> <li>• Exemplar Green Management System recognized.</li> </ul>
Evaluation	●	●	●	●
Future Goals	<ul style="list-style-type: none"> <li>• Revenue: 11.4 trillion KRW</li> <li>• Diversifying markets overseas.</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforcing risk management system for climate change.</li> <li>• Strengthening the CSR committee.</li> <li>• Providing training on communicative ethical management.</li> </ul>	<ul style="list-style-type: none"> <li>• Expanding green businesses.</li> <li>• Increasing investment in developing eco-friendly technology.</li> </ul>	<ul style="list-style-type: none"> <li>• Improving the stability of the systems.</li> <li>• Managing and improving refined environmental indicators.</li> </ul>

Employee Capacity Development (p xx)	Mutual Cooperation (p xx)	Product Safety and Responsibility (p xx)	Strategic CSR (p xx)
Developing programs that can cultivate world-class leaders of construction, while reinforcing individual employees' capacities depending on their positions and tasks.	Fulfilling social responsibility by seeking mutual growth with business partners. Creating grounds for mutual growth by supporting business partners.	Strengthening customers' trust by ensuring product safety and quality. Quality assurance and improvement monitored and conducted in accord with global standards on safety and environmental responsibility.	Establishing main themes for strategic CSR activities. Establishing a systematic organization and processes. Developing HDEC's own unique CSR activities that can contribute to local communities.
<ul style="list-style-type: none"> <li>• Efficient HR management.</li> <li>• Reinforcing future competitiveness.</li> <li>• Cultivating global talents.</li> </ul>	<ul style="list-style-type: none"> <li>• Seeking measures for mutual growth.</li> <li>• Establishing a fair and transparent culture of business partnership.</li> </ul>	<ul style="list-style-type: none"> <li>• Applying standards on safety and environmental responsibility.</li> <li>• Operating on-site safety management system.</li> <li>• Creating a quality assurance system.</li> </ul>	<ul style="list-style-type: none"> <li>• Maximizing the company's performance through strategic CSR activities.</li> <li>• CSR activities to be connected to the construction industry at large.</li> </ul>
<ul style="list-style-type: none"> <li>• Making performance evaluations fair.</li> <li>• Encouraging employees to become global talents.</li> <li>• Providing various fringe and welfare benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• Expanding training opportunities for business partners.</li> <li>• Making terms of business equal with excellent partners.</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing disasters through thorough pre- and post-event management.</li> <li>• Securing new technology through quality improvement.</li> <li>• Creating a world-class safe environment system.</li> </ul>	<ul style="list-style-type: none"> <li>• Contributing to the growth of local communities.</li> <li>• Systematic, sustained activities.</li> <li>• Improving transparency through specialized management.</li> </ul>
<ul style="list-style-type: none"> <li>• Strengthening internal communications.</li> <li>• Strengthening information and training networks.</li> <li>• Expanding systemic support for employees.</li> </ul>	<ul style="list-style-type: none"> <li>• Providing training and financial support for business partners.</li> <li>• Strengthening communications with business partners.</li> <li>• Improving quality through satisfaction surveys.</li> </ul>	<ul style="list-style-type: none"> <li>• Operating HDEC's own quality assurance system.</li> <li>• Promoting company-wide safe management system.</li> <li>• Distributing HES manual.</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing the strategy and vision for CSR activities.</li> <li>• Providing mileage benefits for employees contributing to CSR activities (45,374).</li> <li>• Green Tree of Hope launched (providing support of 3.4 billion KRW).</li> </ul>
●	●	●	●
Education on post-retirement support expanded.	Fair trade culture established. Support for business partners expanded. Lowest-price bidding system improved.	Safety management promoted and education provided. Quality improvement now linked to customer satisfaction services.	Global CSR activities launched. Various CSR events developed, reflecting construction as theme.

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## Chairman's Message



“Hyundai Engineering & Construction (HDEC), now a member of the Hyundai Motor Group, is facing a new opportunity to take a further leap into the future. I urge you to continue to support us with your interest and attention so that HDEC may become a leader of the global construction industry.”

Dear supporters of HDEC,

It is my pleasure to have this occasion to communicate with you about our commitment to sustainable management.

The year 2010 will serve as an important turning point in our company's history. It was the year in which HDEC became the first company in the Korean construction industry to record an annual revenue of 10 trillion won. In the same year HDEC was named as a leader of the construction industry category in the Dow-Jones Sustainability Index (DJSI) World, a world-renowned authority on systematic sustainable management and related activities. All these were results of focusing on realizing sustainable management across all areas of our businesses and activities in an effort to enhance our future competitiveness and discover new sources of growth, despite the rapid changes in the construction industry worldwide.

HDEC will not satisfy itself with these achievements alone, however. It is now take a new step forward into a greater, better future. By joining the Hyundai Motor Group in April 2011, HDEC has established itself as one of the three key sources of the entire group's growth, along with automobiles and steel production. Now a globally recognized leader in the field of construction and engineering, capable of generating high added values in all areas of construction including plant building, power provisions, civil engineering, architecture, housing and nuclear plant building, HDEC is ready to take on the world. By maximizing the synergy it has with the Hyundai Motor Group, HDEC will continue to focus on growth externally, while seeking sustainable management internally.

The year of 2011 will see yet another phase in HDEC's glorious growth that will result from our commitment to sustainable growth and achieving maximum synergy with other companies within the Hyundai Motor Group. We will continue in our march toward becoming the unsurpassed leader of the worldwide construction and engineering market. I hope this Report on Sustainable Management conveys well the kind of dreams and visions HDEC has to all its supporters and stakeholders for creating a better future.

And I ask you to continue to support us with your interest and encouragement.

Thank you.

Chung Mong-goo, Chairman  
Hyundai Motor Group

## CEO's Message



“Through maximizing the synergy HDEC has with the Hyundai Motor Group, we will seek to become an undisputed leader of the construction market worldwide.”

Greetings to all!

It is my great pleasure to reach and communicate with you like this through the publication of the 2011 Report on Sustainable Management.

Despite continued hardships and difficult external factors throughout its history, Hyundai Construction & Engineering (HDEC) has continued its trajectory of growth undeterred, and is now Korea's best and unsurpassed leader of construction. Its history attests to the almost infinite potential and competitive power it has. Having recently joined the Hyundai Motor Group, HDEC is now intending to use this year as a stepping stone for its further growth. By becoming one of the core sources of the entire group's growth and prosperity and continuing investment, HDEC will also seek to establish itself as an undisputed leader in the construction market worldwide. To this end, HDEC has established its official vision for its global expansion. It is as follows:

First, HDEC will become a provider of general engineering services.

Whereas its history up to now has focused mainly on construction, HDEC will in the future focus on becoming a provider of general construction and engineering services, from planning via engineering to operation. It will seek to diversify its business portfolio especially overseas by pioneering new markets, while seeking to lead the international construction and engineering industry by establishing an optimal management infrastructure.

Second, HDEC will create and maintain organic ties of cooperation with related industries.

HDEC will create and maintain organic ties of cooperation with other related industries in order not only to harness its traditional leading position in design and construction, but also to expand its reach into a wider range of related services, including resource development, real estate development, transportation infrastructure development, facilities maintenance and operation, and so forth. At the same time HDEC will continue to strengthen its ground for green growth by expanding its participation in creating the infrastructure for electric cars, building recyclable energy plants, and engaging in other environmental projects.

Third, HDEC will lead the way for future technology and industrial fusion and convergence.

HDEC will lead the way for developing the next phase of industries in which various unit technologies of different sectors and industries are organically integrated and converged with one another. As an integrated mediator of industries with the capacity to operate such technological fusion and convergence effectively, HDEC will serve as a catalyst for the growth of new industries, including resource development and energy saving projects.

Based on all these efforts, HDEC will create the ground for a better life for all humanity.

'Humanity' will indeed become the ultimate guiding value of all of HDEC's new efforts in creating better grounds of living for all clients around the world, as the company continues to create and shape a better future by working and growing with all stakeholders.

As a leader and creator of a better tomorrow for everyone, HDEC will continue to challenge the global market with its creativity and originality, and fulfill its responsibilities as a global corporate citizen. Please continue to support us with your interest and encouragement.

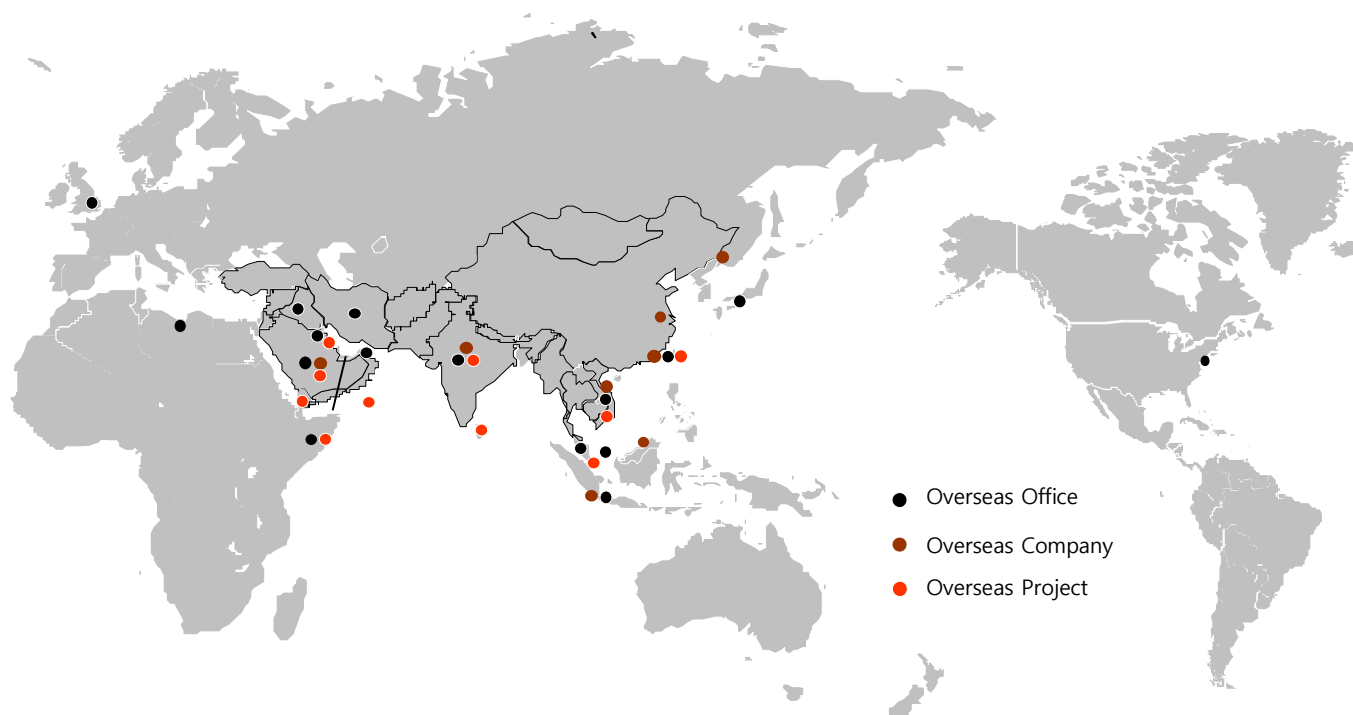
Thank you.

Kim Chang-hee, Vice-Chairman and CEO  
Hyundai Construction & Engineering Company Limited (HDEC)

## Company Overview

In 2010, HDEC, under its goal to become the global leader of its field, focused on plant building, civil and environmental engineering, architecture, housing, nuclear power plant building, and real estate development as the main areas of its business, especially in the regions of the Middle East and Asia. It employs a total of 6,408 employees around the world, spread over six offices within South Korea, and twenty-one offices and sixteen companies abroad. Having recently joined the Hyundai Motor Group, HDEC will continue its journey in 2011 toward becoming a world-renowned global leader of its field by maximizing its synergy with the other member companies of the group.

## Global Network



## Employees by Region

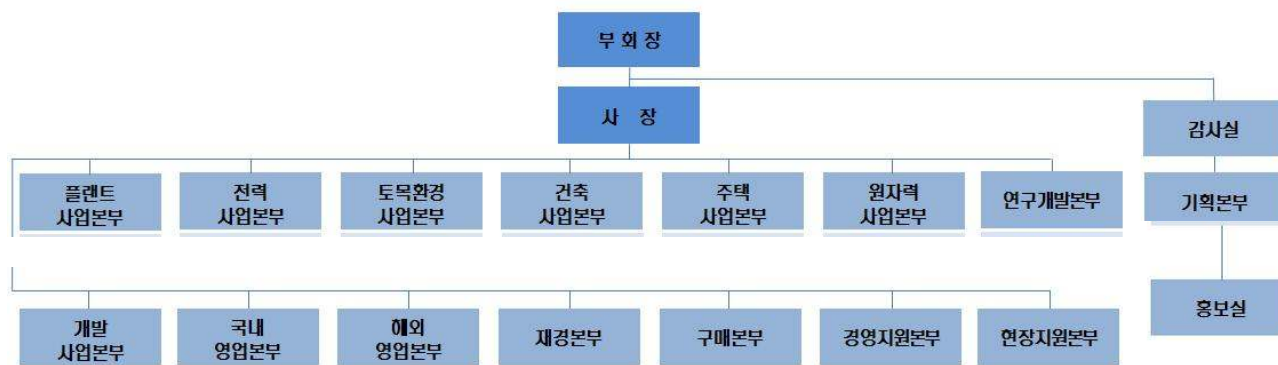
Korea	M.E./Africa	Asia	Others	Total
5,510	716	179	3	6,408

## Revenue by Region

(In 1M KRW)

Korea	M.E. / Africa	Asia	Others	Total
4,824,438	3,837,602	1,068,000	274,518	10,004,558

## Organization



## Core Management Principles: “Together for a Better Future”

HDEC newly joined the Hyundai Motor Group in April 2011. The recent membership will enable HDEC to become a leader in international construction market by maximizing its synergy with the Hyundai group and securing sustained investment and growth as the company adheres to the core management principles and values of the Hyundai group.

### Management Vision:

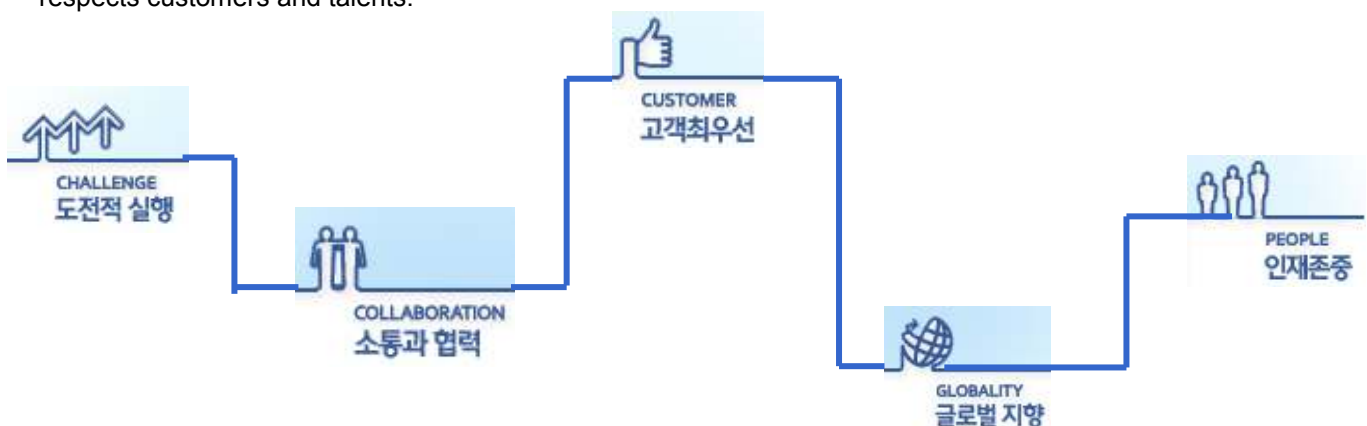
“Bringing humankind closer to achieving its best dreams by creating a new future through creative thinking and ceaseless risk-taking.”

### Core Principles:

<b>Unlimited Responsibility</b>	<ul style="list-style-type: none"> <li>• Responsibility to promote growth of the company so as to ensure wellbeing for all employees, their family members, and the employees of business partners and their family members.</li> <li>• Responsibility to ensure top-class quality for all products and services so as to protect the safety and happiness of customers and clients.</li> </ul>
<b>Realizing Potential</b>	<ul style="list-style-type: none"> <li>• A company DNA structure designed to pursue unlimited growth and development.</li> <li>• An entrepreneurial spirit that refuses to settle down with the status quo and that always seeks to pioneer new areas of business despite risks.</li> <li>• Creating high added values at the fundamental levels by turning even small potentials into reality.</li> </ul>
<b>Humanity</b>	<ul style="list-style-type: none"> <li>• Making contributions to improving the quality of life for all humankind by ensuring that the best-quality services and products are provided to an ever-increasing number of people around the world.</li> <li>• Becoming an active corporate citizen of the global village by responding actively to environmental concerns and increasing participation in activities that share greater wealth with others.</li> </ul>

### Five Core Management Values of Hyundai Motor Group:

The core values of Hyundai Motor Group shape the activities that its members pursue and the decisions they make. These five values are based on the group’s success DNA that is optimized to realize the future visions of its members. By sharing and internalizing these core values with the group, HDEC will put those values of challenging and collaboration into practice on a daily basis, while creating a creative corporate culture that respects customers and talents.





## HDEC Projects

The business portfolio and range of projects in which HDEC is involved is indeed far and wide, encompassing plant development, power infrastructure building, civil and environmental engineering, architecture, housing, nuclear power development, real estate development, and so forth.

### Plant Development

The Plant Development HQ is capable of providing optimal, most efficient plant development experience, based on the world-class technology it possesses as well as its world-renowned reputation. As an early pioneer of overseas development and construction that has helped usher in today's era of international competition, HDEC will continue to do its best to ensure maximum satisfaction for all clients by ensuring quality in all its services.

### Electricity

Based on its extensive experience and network of developing major power plants both at home and abroad, HDEC is now leading the way for freshwater hydro-power plants around the world. In its self-understanding as a "Total Power and Utility Provider," HDEC engages in active marketing targeting countries in Africa, South and Central America, and East Europe, while at the same time paving the ground for future industries by participating in developing new U (ubiquitous) cities and developing new and recyclable sources of energy, such as the sunlight and wind power.

### Civil and Environmental Engineering

Based on its extensive experience and expertise accumulated in over 130 sites in across twenty countries over time, HDEC is now a leading provider of civil and environmental engineering services around the world, especially in Southeast Asia and the Middle East. The company will continue to harness and expand its position in the global market by diversifying its business portfolio overseas and securing original technologies in new fields of growth.

## Architecture

The architectural portfolio of HDEC will continue to evolve as it seeks increasingly to realize the state-of-the-art spaces hitherto imagined only in which man, information, nature, and technology harmonize. To this end HDEC will enhance its capacities in the architecture for green buildings, ultra-high skyscrapers, and complex development projects and pioneer new markets overseas, consolidating its competence and reputation as a world-class leader of international architecture.

## Housing

Housing today is not only about creating basic functional shelters against the external environment, but is about creating spaces in which human spirits reside and which represent our ways of life. Under its philosophy of “realizing all the values to be embodied by housing,” HDEC continues to provide customized designs, green smart designs, longer-lifespan housing, and other forms of living spaces in which ‘history and culture harmonize for the wellbeing of all human residents.’

## Nuclear Power

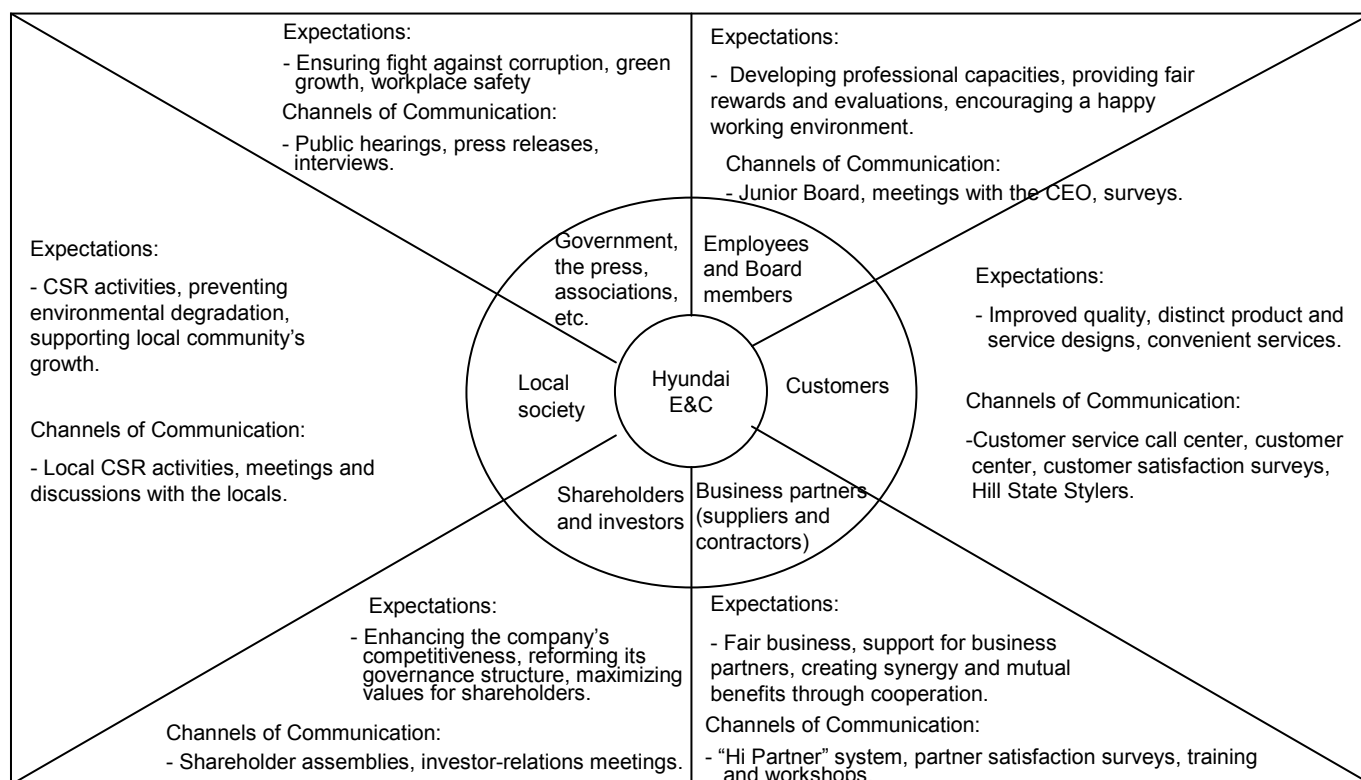
HDEC was the first to open the chapter of nuclear power in Korean history by constructing the first-ever nuclear power reactor in the land in the 1970s. In 1979, it had its technology and skills in nuclear power development certified in 1979 by the American Society of Mechanical Engineers (ASME), the world’s most prestigious authority on the subject. We live in an age and a world in which concerns and demand for nuclear power are rapidly increasing simultaneously. HDEC will continue to provide reassurance by developing best-quality, most safe nuclear power plants around the world.



## Stakeholder Relations

HDEC began to publish its reports on sustainable management last year so as to collect and analyze better feedbacks and opinions from stakeholders both inside and outside the company on its economic, environmental, and social responsibility and performances. At the same time, HDEC sought to enlarge stakeholders' participation in these matters by inviting them to discussions and other events.

### Who Are Stakeholders?



### Collecting and Investigating Opinions

Primary Groups		Secondary Groups		Tertiary Groups	
Participants	Means of Investigation	Participants	Means of Investigation	Participants	Means of Investigation
6,408 employees and Board members	Surveys *	200 business partners* <small>* Suppliers and contractors listed as "Exemplary Partners."</small>	Surveys	Governments and the press	Laws
	Interviews		Discussions		Media
100,000 customers	Company newspapers		Satisfaction surveys	Local societies	Surveys
	Surveys	Shareholders and investors	Surveys		Discussions
	Hill State Stylers		Investor Relations (IR) activities	Related organizations and associations	Media
	Official Websites				Discussions

\* There is a wide range of different types of survey targeting different groups of stakeholders. The survey on stakeholders' views about HDEC's sustainable management took place from May 2011 to June 2011.

## Discussions with Stakeholders

. HDEC held for the first time in its history discussions with various groups and representatives of stakeholders in 2011 on the economic, social, and environmental issues affecting the company. The invaluable opinions and feedbacks provided by the discussion participants about the company's sustainable management will continue to guide HDEC's future activities.



Cho Jun-hyeon, President  
Construction  
Association of Korea



Cho Bong-hyeon,  
Vice-CEO HSBC  
Securities



Yang Chun-seung,  
Senior Director, KoSif



Jang Ji-in, Chair  
CDP Korea Committee



Ko Sun-hyeon,  
Director  
Eco Frontier HQ



Cho Wook-hwan,  
CEO  
Samwoo E&I



Lee Seok-jin, Secretary  
Anti-Corruption & Civil  
Rights Commission



Choi Hyeok-jun, CEO  
Lime Glove

### Aim and Procedure:

In order to incorporate stakeholders' opinions and concerns more actively into its management, HDEC held discussions with various representatives of stakeholders on the economic, environmental, and social issues affecting the company. The discussions were organized and run by the Korea Productivity Center, an authority on sustainable management, so as to ensure the autonomy and diversity of views represented.

### Main Agenda:

HDEC sought to identify the issues in construction industry in general and sustainable management that do or could affect the company. The participants exchanged a wide range of opinions that enabled HDEC evaluate its own past and performances, while allowing the company also to identify various future opportunities and risk factors.

### Future Plan:

The opinions and suggestions raised in these discussions with stakeholders will be actively incorporated into the policies and activities of HDEC's sustainable management. Their results and achievements will be reported by publication of the Reports on Sustainable Management. The economic, environmental and social issues identified and discussed in these meetings have indeed been regarded as crucial factors in the analysis of the importance of various company activities. Some of the results obtained have already been included in this report. Other areas that need further observation and improvement will be reported in subsequent reports. HDEC will remain open and welcoming to a diverse range of opinions and feedbacks from our stakeholders and respond actively to the issues and concerns they raise.

### Main Issues of Discussion:

1. Activities and Achievements of HDEC's Sustainable Management as Viewed by Outsiders:
  - Economic (in terms of feasibility, profitability, and public interests);
  - Environmental (general environmental management and responses to climate change);
  - Social (ethical management, human rights, labor activities, local communities, mutual growth)
2. Main Issues and Alternatives in Sustainable Management for HDEC and Construction Industry in General:
  - 1) Economic
  - 2) Environmental
  - 3) Social
3. Suggestions and recommendations for sustainable management.

The sustained growth of HDEC will take the following as preconditions. First, the company must be ready to respond actively to the changes in the construction market. The higher the national income becomes, the lower the demand for new construction and the higher the demand for maintenance. We need to pioneer new markets accordingly.

Second, instead of taking up all and any orders from overseas, we need to become better at identifying the more profitable ones and selectively enter the world market. At the same time we must improve our profitability also by improving our efficiency. These would be the main ways in which HDEC can continue to grow.

*"HDEC must be ready to respond actively to the changes in the construction market in order to sustain its growth."*



*"HDEC needs to provide accurate and reliable information in response to the demands from social-responsibility investors (SRIs)."*



What the social-responsibility investors demand from companies is that, first, they disclose important information about their economic, social and environmental activities and impact. A company can enhance its value and appeal for investors by ensuring the accuracy and reliability of these types of information it discloses about itself. Another important factor is the company's governance structure. The main issues associated with governance structure arising in the SRI area is the company's ability to incorporate not only shareholders' demands, but also the expectations of all its stakeholders into its decisions. HDEC needs to communicate to its stakeholders how their expectations and demands are reflected in the company's governance structure. This, in turn, calls for a greater role for the CSR Committee.

It is true that domestic construction is not as much favored by investors as overseas construction. This is because the certainty each domestic construction company has for domestic businesses and their profitability is not as high in general. In order to dissolve away these doubts and worries about domestic businesses, we need more thorough reviews of the profitability of the order balance.

To enhance HDEC's market value in the long run, it needs to invest more in our workforce and differentiate its strategy for entering overseas markets. The core assets of any construction company can be found in the workers it employs. Now that it has joined the Hyundai Motor Group, HDEC needs to make greater investments into attracting more and better workforce, while developing different tactics for entering overseas markets such as that of North Africa.

*"To enhance HDEC's market value in the long run, it needs to invest more in its workforce and differentiate our strategy for entering overseas markets."*



*"As a representative construction company in Korea, I hope HDEC would display leadership fit for its name in responding to the global trend in managing climate change."*



The U.S. federal government made it mandatory as of February 2010 that companies disclose the risks they pose to climate change in the SEC. At the same time pressures from international organizations to include information on climate change in the IFRS Accounting Guideline are also increasing. In October this year, the ISO14053 will be effectuated, requiring companies to adopt material flow cost accounting (MFCA) and other systems of environmental accounting.

Environmental accounting systems provide strong tools for environmental management, requiring companies to identify not only their environmental costs and investments, but also to quantify their original environmental costs and the savings they can expect by reducing pollution. Construction industry is in dire need to adopt systems like these. I hope HDEC would set and lead the environmental management trends for construction industry by adopting environmental accounting systems of its own.

Even though HDEC's sustainable management results have been regarded favorably internally, the company's achievements are not well known to the outsiders in large part because the company did not actively engage in external communications, disclosing information about its sustainable activities and making policy recommendations to the government.

In order to facilitate its external communications on the subject, I suggest that HDEC develop its own sustainable management performance index. The qualitative and quantitative indicators of the company's environmental management will make it easier for outside stakeholders to understand its activities and achievements, while also enabling the company to incorporate those indicators into establishing its intermediate and long-term management strategies and improvement activities. In other words, such an index will help the company fine-tune its environmental management better with its overall management strategy.

*"HDEC needs to fine-tune its environmental management better with its overall management strategy."*



What all suppliers and contractors wish in working with large corporations is to have assurances of fair transaction, stability in supplies and services required, and the appropriateness of the size of orders and demands from large corporations. As Korean construction companies increasingly work overseas, suppliers and contractors in Korea face increasingly hard times. HDEC needs to consider its movements overseas more carefully and cautiously, while working on developing a system of cooperation that is fairer and more beneficial for its business partners. Transparency in transaction must also be enhanced by simplifying the procedures and customs in purchasing raw materials, placing orders for contracting, distribution of goods and services, and so forth.

*"The more businesses HDEC takes up overseas, the more emphasis is placed on ensuring mutual growth and benefits in the relationship between HDEC and its business partners."*



*"HDEC needs to engage in more bilateral communications with its employees about its ethical management."*



*"The CSR Committee attests to the genuineness and depth of HDEC's commitment to its social responsibility."*



HDEC complies with most of guidelines and principles on ethical management, following major domestic accounting standards, fighting against corruption, and establishing more autonomous management systems. I suggest that HDEC expand the scope of its efforts to ensure ethical management, by communicating the CEO's commitment to ethical management and transparency while educating employees about the company's code of ethics.

In the process, HDEC must actively seek continuous feedbacks from employees and Board members and honest opinions about the ethical dilemmas the company has faced or is facing, making greater efforts to find solutions for these ethical issues company-wide. These efforts will help make HDEC's risk management better, helping it become a more reliable, trustworthy company for its customers.

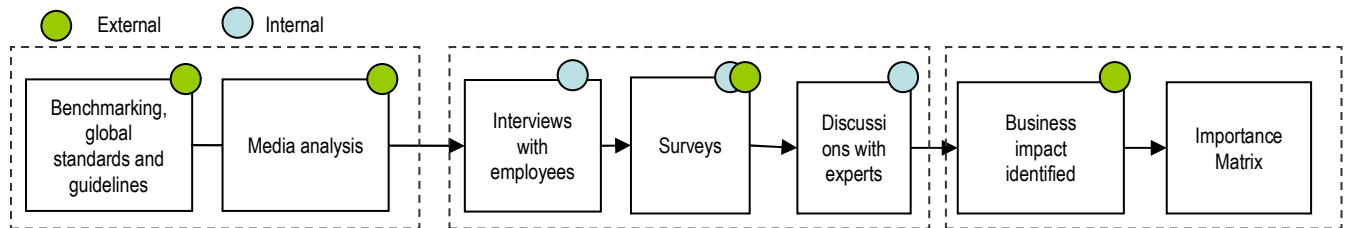
HDEC is already operating a range of appropriate and effective CSR programs based on its clarion vision, slogan, and road map about its future activities. The CSR Committee in which every Board member is a member attests to the genuineness and depth of the company's commitment to its social responsibility.

However, HDEC can still do better by developing more strategic CSR programs in which it can display and affirm its value as a unique company. In addition, HDEC needs to engage more actively in global CSR activities and communicate their achievements better. HDEC could also encourage the volunteerism of its employees by providing company-wide incentives and so forth.

# Importance Evaluation

In order to identify the main areas and issues of sustainable management to be included in its report, HDEC held internal meetings on strategy as well as interviews with employees and Board members, sought to benchmark precedents in the construction industry, conducted media analysis, and organized discussions with stakeholders. The issues derived from those activities were then subjected to importance evaluation by external surveyors and internal assessors before finally being included in the report.

## Importance Evaluation Process



### Step 1: Deriving Issues

- Identifying issues of sustainable management;
- Creating an issue pool.

### Step 2: Measuring Interest

- Measuring people's interest in the issues and their activities in the identified areas:
  - Collecting opinions from employees, Board members, external stakeholders and experts.
- Identifying need for improvement and alternatives.

### Step 3: Deriving Main Issues

- Identifying evaluation results and their impact on the main issues;
- Identifying main issues based on evaluation.

## Main Issues Identified in Importance Evaluation

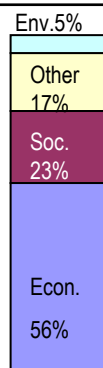
### Analyzing Benchmark Models and Global Standards and Guidelines:

In order to identify major issues of sustainable management, HDEC conducted an analysis of the models to be benchmarked as well as globally used standards and guidelines.

Type	Description
Benchmark Models	<ul style="list-style-type: none"> <li>• Models: 10 construction companies at home and abroad; 10 DJSI members at home.</li> <li>• Main Areas of Benchmarking:                             <ul style="list-style-type: none"> <li>- Construction industry: environment, climate change, public safety and health, etc.</li> <li>- Korean companies: support for business partners, CSR activities, stakeholder participation, etc.</li> </ul> </li> </ul>
Global Standards and Guidelines	<ul style="list-style-type: none"> <li>• ISO 26000, UNGC, GRI 3.1, DJSI</li> </ul>

### Media Analysis:

In order to measure external stakeholders' interest in each potential issue of sustainable management, HDEC analyzed a total of 1,148 articles concerning HDEC (including overlapping contents) featured in Korean daily newspapers, business dailies, Internet news systems, etc. from January 2010 through December 2010. These articles revealed the important activities of HDEC as perceived by external stakeholders.

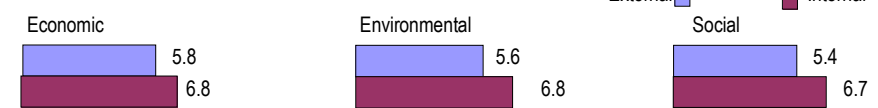


Area	Main Article Contents
Economic	<ul style="list-style-type: none"> <li>• Securing an order for building facilities for a nuclear plant;</li> <li>• Securing construction orders at home and abroad;</li> <li>• Meeting the targets for revenue and overseas orders, etc.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>• Winning the Minister of Environment Award for Green Life Competition;</li> <li>• Realizing green offices and sites;</li> <li>• Promoting eco-friendly, energy-saving, carbon-reducing designs;</li> <li>• Signing Green Partnership agreements with business partners.</li> </ul>
Social	<ul style="list-style-type: none"> <li>• Creating a fund for mutual benefits and growth with business partners;</li> <li>• Interns' volunteer activities (supporting starved children, inheriting traditional culture and customs, signing an MOU for greater support for artists).</li> </ul>

## Surveys

HDEC conducted surveys in May 2011 involving internal and external stakeholders about their perceptions regarding the levels of HDEC's sustainable management activities. Respondents were asked to evaluate the level of HDEC's involvement in economic, social and environmental activities. The issues identified in these surveys were then subjected to importance evaluation.

### Survey on Sustainable Management Activities (in points)



	Economic	Environmental	Social
<b>Good</b>	<ul style="list-style-type: none"> <li>재무적 안정성</li> <li>국가경제발전에 기여</li> </ul>	<ul style="list-style-type: none"> <li>에너지 절감활동</li> <li>온실가스 감축 노력</li> </ul>	<ul style="list-style-type: none"> <li>기부 및 봉사활동</li> <li>지역사회 발전 참여</li> </ul>
<b>Need for improvement</b>	<ul style="list-style-type: none"> <li>신사업 기회발굴 노력</li> <li>수익에 대한 공정한 배분</li> </ul>	<ul style="list-style-type: none"> <li>환경을 고려한 연구개발</li> <li>생태환경 보호 노력</li> </ul>	<ul style="list-style-type: none"> <li>근로자 및 협력업체의 인권보호</li> <li>협력업체와의 상생</li> </ul>

## Business Impact

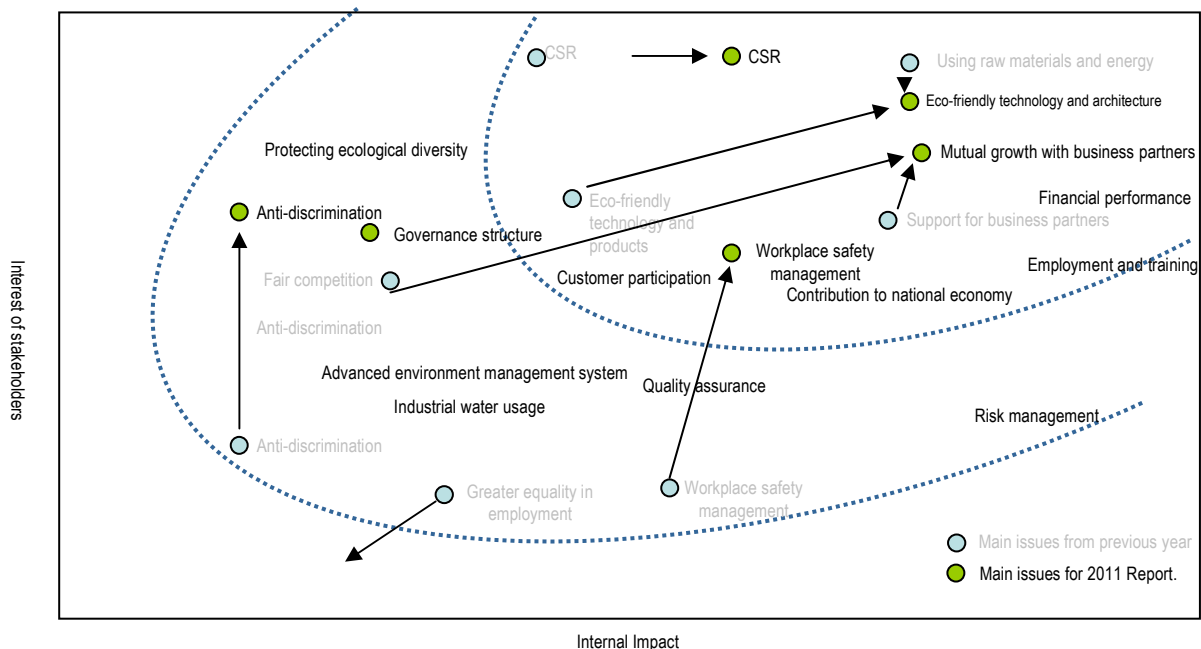
In order to measure the internal importance of the identified issues of sustainable management, they were subjected to a business impact evaluation as well. Factors that could affect the business were identified along with the needs for improvement.

### Factors of Business Impact Evaluation

	Factors of Evaluation	Description
Business Impact	Financial Impact	Short-term project goals, intermediate and long-term management goals
	Management Vision	Management philosophy, core values, Green CSR Declaration
	Core Performance Indicators	Relevance to performance indicators.
	Business Risks	Financial and non-financial.

## Importance Matrix

The issues identified in importance evaluation were finally analyzed from both the internal and the external perspectives before deciding which issues would be included in the report. Changes were noteworthy, in comparison to the previous year, in the areas of workplace safety management, eco-friendly technology and governance structure. Internal impact was also increased for the area of corporate social responsibility. Importance of anti-discrimination and greater equality in employment decreased, however.



## Our Management Approach

### Principles & Policy

As a world-class provider of general engineering solutions, HDEC seeks to create better grounds for living by leading the way for future technology and industrial convergence based on the organic relationship it has with other related industries. To this end the company has successfully globalized much of its business structure, its position in new industries, and its management infrastructure. The company is also seeking to ensure greater stability in its management activities by establishing an advanced system of ethical management and ensuring company-wide risk management. In addition to continuously creating new economic values, HDEC will also pave the grounds for a better future everyone, growing together with stakeholders and society at large.

### Key Issues & Activities

### Roles & Responsibilities

Economic Value	Advanced business structure and enhanced business portfolio; Enhancing global competitiveness through continuous R&D investments.	Each HQ and dept.: secures orders and carries out construction. Planning HQ: establishes mid- to long-term plans and business goals.
Stability	Enhancing the autonomy of governance structure by appointing independent directors; Expanding ethical management through the Green CSR Declaration; Enhancing risk management and reporting systems through proactive risk targeting.	Financial HQ (Office of Finan. Mgmt.): ensures autonomy and qualifications of the Board and committees. Planning HQ (Office of Mgmt. Planning): provides training on ethical management and operates cyber auditing systems. Financial HQ (Office of Finan. Mgmt.): manages financial risks and the risk reporting systems. Work sites: non-financial risk management.
Public Interest	Public architectural works and construction of social infrastructure; Investment into local communities; Fair distribution of values to stakeholders.	Development HQ: manages and executes social projects. Planning HQ (Office of Mgmt. Planning): establishes and implements investment plans for local communities. Financial HQ (Office of Acc'ting): pays taxes and other costs.

### Key Performance Data

Area	Item	2008	2009	2010	Remarks
Economic Performance					
Economic Value	Revenues and net profits (KRW)	7.3T/5.1%	9.3T/4.9%	10T/16.2%	
	New orders and order balances (KRW)	16.4T/41.7T	15.1T/47.6T	18.3T/48.4T	
	R&D investments (KRW)	89.8B	151.9B	229.4B	
Stability	Debt ratio (%)	181.49	167.64	152.90	
	Own capital ratio (%)	35.53	37.36	39.5	
	Credit rating (based on company bonds)	A+	AA-	AA-	
Public Interest	Investments in local communities (KRW)	4.9B	7B	6B	
	Domestic employment	70,850 persons	73,310 persons	75,990 persons	
	Domestic production (KRW)	12.7T	13.2T	10.8T	

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**HDEC ceaselessly generates new economic values.**

## **Economic Value**

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**It continues to grow by encouraging new industries, pioneering new markets overseas, achieving innovations in cost management, and improving processes.**

### **Growth**

By securing a new source of growth in new industries and high-added-value orders overseas, and diversifying its business portfolio, HDEC's avenue has grown by 7.8% from that of the previous year.

#### **Revenue**

In 2010 HDEC achieved an annual revenue of 10.46 trillion KRW in total, a 7.8 increase from the previous year. The increase in the amount of revenue generated overseas was enough to offset the decrease in the currency (i.e., the won-dollar ratio decreased to 1.156.26 from 1.276.40), enabling the company's revenue to grow by 7.8%. In the dollar, this means a growth of 25.3%. The revenue generated at home amounted to 4.971 trillion KRW, a 2.9% increase from the previous year.

HDEC expects to continue its trend of growth by securing orders for massive infrastructure- and energy-related projects in Asia and the Middle East, respectively. HDEC will continue to expand its overseas business basis by diversifying its business portfolio in foreign markets, while carrying out a strategy to secure actively the massive public projects occurring in these countries.

#### **New Orders**

The number of orders HDEC was able to secure in 2010 grew at a record level, allowing HDEC to generate a new revenue of 18.3555 trillion KRW in new orders alone, a 16.9% increase from the previous year, notwithstanding the recession in the domestic construction market. The amount of revenue from new orders is an important indicator of how well the company will fare in the future. The amount of overseas orders HDEC secured in 2010 amounted to 12.7682 trillion KRW in revenue, a 130.1% increase from the previous year.

The exponential growth in this area represents the various great efforts HDEC has been making in recent years to ensure its continued growth, by securing projects in the Middle East, and diversifying its profit-generating model and business portfolio in response to the rising demand for nuclear power, offshore work, environmental projects, new and recyclable sources of energy, and complex development abroad.

### **Construction Capacity Evaluation**

For two consecutive years since 2009, HDEC again topped the list of companies with most competence in general construction capacities, assessed and published by the Ministry of Land and Maritime Affairs. The construction capacity evaluation considers each company's construction performance, management conditions, technological competence, newness to the market, and so forth. HDEC was rated at the top, with its value assessed to be 10.22 trillion KRW.

#### **R&D Investment**

The continued growth of HDEC is also a direct result of the company's ceaseless efforts to secure the world's best original technologies. The company's Technology and Quality Development Center has been researching new construction techniques, new processes, ways to integrate on-site IT assistance, and measures to ensure quality and process assurance. HDEC also seeks to become a leader in the international market by developing new technologies to be commercialized, while providing integrated IT assistance based on the EPC that encompasses quality assurance, process assurance, and project management. All these efforts allow HDEC to maximize its synergy with the Hyundai Motor Group, adopt incubating, generate new sources of future growth, and build a global-standard EPC support system. The amount of investment the company made for its R&D increased by 51% from the previous year, which had a dramatic effect on the company's overall enhanced competitiveness in the international market.

### **Profitability**

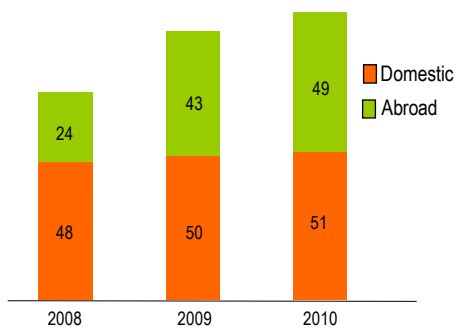
In considering what economic values it creates, HDEC considers not only continued growth, but the need to ensure improving profitability over time. The ceaseless innovations in cost management and internal processes have helped company fare better in terms of profitability measured by all indicators. The operating income in 2010 was 584.3 billion KRW, a 39.4% increase from the previous year; the net profit was 530.4 billion KRW, another 16.1% increase from the previous year. Thanks to such increases, the net profit ratio of the overall revenue was 5.3%, while the dividend rate for shareholders was 14.7%.

## Main Indicators of Growth and Profitability

Area	Item	2009	2010	Remarks
Growth and Activity	Revenue increase rate	27.6%	7.8%	↑
	Net profit increase rate	22.3%	16.2%	↑
	Total asset increase rate	-0.6%	11.1%	↑
Profitability	Profit-revenue ratio	7.8%	10.5%	↑
	Operating income rate	4.5%	5.8%	↑
	Net profit rate	4.9%	5.3%	↑

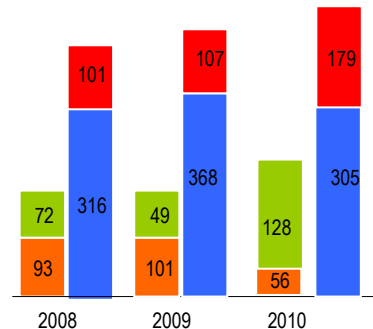
### Revenue

(In 100B KRW)



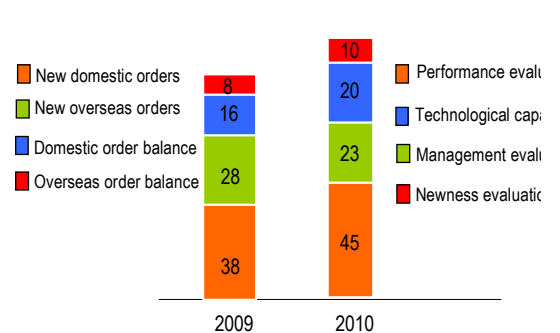
### New Orders & Order Balance

(In 100B KRW)



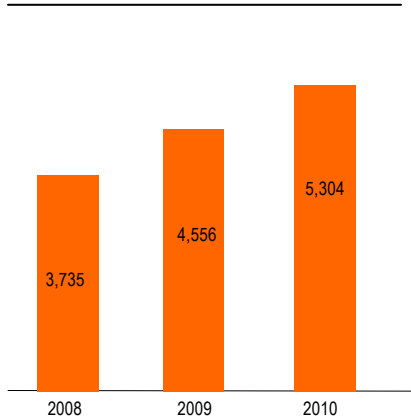
### Construction Capacity Worth

(In 100B KRW)



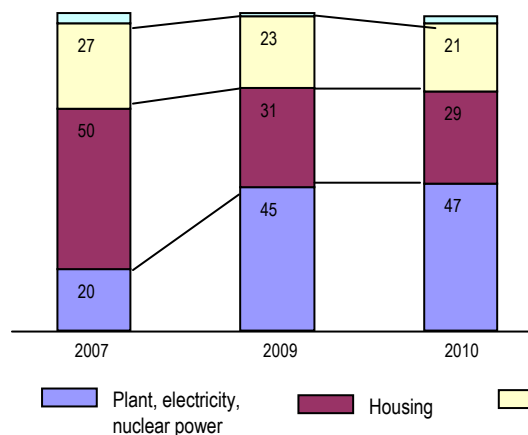
### Net Term Profit

(In 100M KRW)



### Change in Revenue by Business Area

(%)



HDEC has steadily diversified its business portfolio over the years so as to secure sources of continued growth and business overseas. The proportions in revenues represented by plant development, electricity and nuclear power are steadily increasing, compared to 2007 until which the company continued to focus exclusively on housing.

# Stability

The continued growth of HDEC's economic value is based on stability ensured in its transparent governance structure, advanced risk management, and ethical management systems. The company will continue to enhance the stability of its financial structure and management transparency.

## Governance Structure

HDEC makes great efforts to protect and ensure healthy stability in its governance structure, by promoting the values of Value-Creating Management, Global Future-Oriented Management, and Sustainable Management under the supervision of an autonomous Board, which allows the company to maintain balance between the interests of shareholders, customers, employees, etc.

### Board of Directors

The HDEC Board of Directors makes important decisions concerning the operation of the company. The Board sets the basic direction in which the company should aim, and bears responsibilities for all areas of operation based on its decisions. The scope of the Board's main activities encompasses: (1) strategy building; (2) auditing; (3) risk management (including environmental and social risks caused by climate change, water shortage, etc.); (4) finances and accounting; (5) overseeing major changes in the organization; (6) appointing the CEO and other members of the Board; (7) deciding rewards for the CEO and other members of the Board; and (8) ensuring that the company fulfill its social responsibilities.

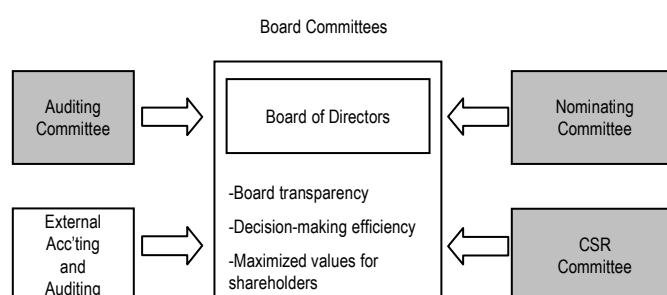
**Board Structure:** The CEO also serves as the chair who presides over the Board meetings. A separate committee of auditing, comprised of independent directors, ensures transparency of the Board's activities. The Board consists of three in-company directors and four external directors. It complies with the Articles of Incorporation, which rules that "members of the Board who have special interests in a given issue submitted to the Board's decision may not exercise their votes lest their interests conflict with the interests of the company."

**Board Operation:** The Board decides on issues mandated by laws and the company's Articles of Incorporation, as well as on issues assigned to it by the shareholders' assembly and other issues concerning the basic principles and policy of management. The Board also assesses the validity and legality of the company's actions. The Board may be convened regularly or provisionally. Regular Board meetings take place every quarter, while provisional meetings may be summoned whenever necessary. In 2010, a total of 12 Board meetings were summoned to deliberate and decide upon main issues of management. The average rate of attendance by external directors is 98%.

**Evaluation and Remuneration:** The 2010 HDEC Articles of Incorporation include terms and conditions for the Board's self-assessment and evaluation by third parties. Accordingly the Board must assess itself and submit itself to third-party evaluations of its performances. The results of the performance evaluation are then reported to shareholders and form the basis of remunerations for the Board members.

## Committees

The Board may install and operate committees to handle more in-depth deliberation of issues assigned to them by the Board. As of the end of 2010, there were three committees: The Committee for the Nomination of External Director Candidates; the Auditing Committee; and the CSR Committee.



**Auditing Committee:** The Auditing Committee is to comprise of three or more directors. Currently it has four external directors. Their responsibilities include: auditing the company's accounting and financial activities; and auditing business accounting and other tasks with respect to other directors. The committee may establish its own internal measures to control access to necessary management information, demanding reports from other directors on the company's activities and financial state, and collecting opinions and testimonials from related Board members and other third parties as necessary.

**Committee for the Nomination of External Directors:** In order to ensure the autonomy of its Board, HDEC includes four directors from outside in its Board structure. An external director must: not have worked for HDEC or any other related company; not have formed or maintained special relationships of interest with the company; or not have engaged in any financial transactions with the company in the last five years. He or she must also have expertise on the related industry or area. The committee, consisting of four external directors, nominates candidates for the positions of external directors, who are then to be elected by the general shareholders' assembly.

**CSR Committee:** The committee decides on the issues of the company's economic, social and environmental activities for sustainable growth. Consisting of all the registered directors of the Board, the committee consults and seeks advices from stakeholders on these areas of concern, while enhancing the company's strategic performance in these areas. Every year, the committee reports the company's yearly performance in economic, environmental and social areas to the Board and use the information to set anew or revise the company's CSR plans.



## Share Structure

Of all the shares issued by HDEC, 34.8% are owned by the Hyundai Motor Group, as of April 1, 2011. Shareholders' suggestions and opinions concerning the company's management are subjected to in-depth review and deliberation, and may be incorporated into the company's policy and management.

## Board Meetings

	2008	2009	2010
No. of meetings held	14	12	12
Attendance rate (%)	97.9	100	98

## Board Structure

	Name	Title, Position	Committee Membership
Internal Director	Kim Chang-hee	Chief Executive Officer Vice-Chairperson	Board President; Committee for the Nomination of External Directors (President); CSR Committee.
External Directors	Lee Seung-jae	Director, Central Region Branch of the National Tax Service	Auditing Committee; Committee for the Nomination of External Directors; CSR Committee.
	Park Sang-ok	Director, North Seoul District Prosecutors' Office	Auditing Committee; Committee for the Nomination of External Directors; CSR Committee.
	Shin Hyeon-yun	Professor, Dept. of Law at Yonsei Univ.	Auditing Committee (President); Committee for the Nomination of External Directors; CSR Committee.
	Seo Chi-ho	Professor, Dept. of Architecture and Engineering at Konkuk Univ.	Auditing Committee; Committee for the Nomination of External Directors; CSR Committee.
Non-standing Director	Lee Jeong-dae	Vice-Chair, HMG	-

## Risk Management

With the rising significance of overseas projects for HDEC, so is the importance of risk management increasing. HDEC continues to make great efforts to ensure thorough and advanced risk management that is vital to the stability of its businesses.

### Risk Reporting

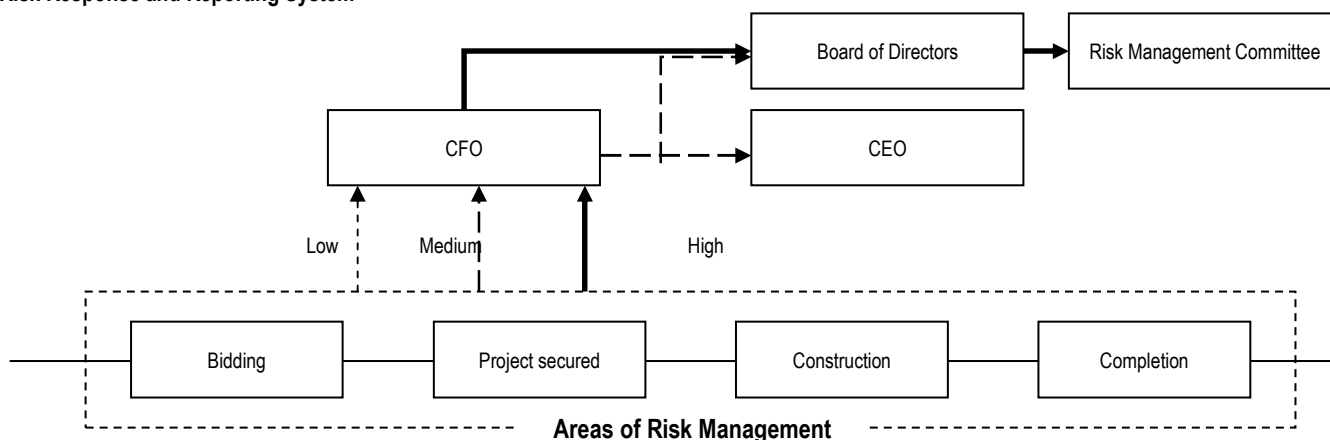
HDEC defines, identifies and analyzes various types of risks that need constant monitoring and prediction. Defined risks are categorized into 'high', 'medium', and 'low', based on the analysis and quantification of their relative severity, likelihood of occurring, consequences, and so forth. Each level of risks has its own risk reporting system. High risks are immediately reported to the Board.

### Risk Management and Response

HDEC divides its risk management activities between financial and non-financial risks.

**Financial Risks:** HDEC has a separate system for managing various financial risks, including fluctuations in the currency exchange rates and oil prices. The importance of such risk management cannot be overemphasized as HDEC is taking on more and more projects overseas. HDEC has in place **plans to reduce risks** associated with currency exchange rates in bidding, raw material purchasing, and contracting and subcontracting. It has also established an intranet so as to enable real-time, effective monitoring of exchange rates across various nations.

### Risk Response and Reporting System



**Business Risks:** HDEC also monitors and analyzes the construction market around the world so as to manage and prepare for risks associated with economic ups and downs, material supplies, and other aspects of business. Predicting the demand for potential projects, assessing the capacities of contractors, and the financial conditions of investors are all forms of risk management. The HDEC Dispute Management System also enables the company to respond systematically and professionally to various legal risks inherent in projects. The system provides case studies of different types of risks associated with disputes, develops solutions, and contacts internal experts on the disputes at hand.

**Proactive Risk Management:** HDEC risk management encompasses all phases of a project, from bidding to facilities removal and disposal. Responses to all types of possible risks are undertaken by relevant departments and other organizational structures. The system allows HDEC to respond to and handle possible risks proactive, thereby minimizing financial and non-financial damages associated with them.

Financial risks	Risks in liquidity, exchange rates, raw materials and resources, and costs.
Non-financial risks	Risks in securing orders/projects, implementing projects, on-site safety, contractors and subcontractors, national conditions, market conditions, local conditions, and the environment.

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## Ethical Management

All employees and business partners (suppliers and contractors) of HDEC share a strong commitment to certain ethical values, which are reflected in the company's policies and code of ethics. HDEC introduced the Green CSR Declaration in 2010, incorporating its core values more clearly.

### Strengthening the System of Ethical Management

In 2010 HDEC sought to strengthen the system of its ethical management through various efforts. The Green CSR Declaration was adopted and strengthened, while continual training and information were provided. Ethical management was enhanced not only with respect to employees and Board members of HDEC, but also with respect to business partners.

### Practicing Ethical Management

**HDEC Green CSR Declaration:** In order to establish ethical management on a more comprehensive scale, HDEC enacted the new Green CSR Declaration, expanding the scope of its ethical concerns to the company's responsibilities owed to sustainable management, the environment, and stakeholders. In doing so the company expressed its strong commitment to its social responsibilities.

**Expanding the Scope:** HDEC's ethical management is practiced in collaboration with all the stakeholders relevant to its projects. They include not only the employees and Board members at the company and its offices, but also investors who have invested, whether directly or indirectly, in the affiliates and business partners of HDEC. HDEC always seeks to ensure transparency and trust in its relationship with these stakeholders.

**Diagnosis of Company-wide Ethical Management** HDEC at the same time also conducted a diagnosis of its company-wide ethical management. In the process of identifying various obstacles to genuine ethical management, the company succeeded in creating a shared ethos and stronger commitment among its employees to its ethical values, thereby finding ways to improve its ethical practices. In the survey targeting all the employees in June 2010, the respondents answered that, while the company's commitment to and strategy for ethical management are indeed admirable, the company could still do better in terms of the actual practices, system and culture.

**Improving Compliance:** HDEC also strengthened its systems for ensuring compliance with the rules of ethical management by accepting relevant queries and reports of complaints. A hotline incorporating the telephone, the fax, and the Internet was installed so as to receive and integrate all the complaints and reports. Depending on their relative seriousness, some reports were classified for special report to and review by the management and the Board in due process.

**More Education for Ethical Management:** HDEC also sought to strengthen each individual employees' commitment to the company's ethical management, especially by incorporating new contents into the SPIRIT training program. The company also provided enhanced training contents in terms of sustainable management, sexual harassment, and dealing with lower organizations.

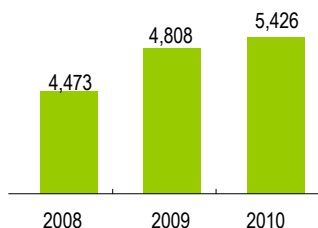
**Introducing New Rewards:** HDEC introduced new rewards for exemplary employees and Board members who make contributions to the company's ethical management. 400 employees and Board members received awards in various categories of ethical management. The award-winning employees were also given preferential treatment in performance evaluation and personnel decisions.

### HDEC Green CSR Declaration

Sustainability	Environment	Stakeholders
<ul style="list-style-type: none"><li>• Products and services</li><li>• Transactions and competition</li><li>• Internal control</li><li>• Protecting main assets and information</li></ul>	<ul style="list-style-type: none"><li>• Environmental management system</li><li>• Products and service procedures</li><li>• Construction sites</li><li>• Responding to climate change</li></ul>	<ul style="list-style-type: none"><li>• Shareholders</li><li>• Employees and Board members</li><li>• Customers</li><li>• Business partners</li><li>• Local communities</li></ul>

## 2010 Cyber Education for Ethical Management

Ethical Management Education (people)

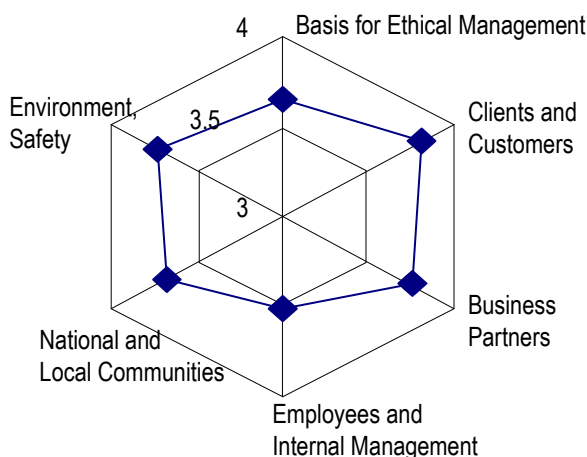


\* Members of business partners not included.

As part of its efforts to establish ethical management company-wide, HDEC provided cyber education for all employees and Board members in August 2010 so as to strengthen their commitment to ethical values and help entrench a stronger culture of ethical management. The activity also proved to be an occasion on which participants shared greater understandings of HDEC's CSR activities, sharing, and green management.

HDEC will continue to strengthen its ethical management by providing more opportunities for its members to learn about it, by holding meetings with the CEO, collecting employees' feedbacks on the CEO's approach and commitment to ethical management, and leading them to engage in greater depth with various ethical dilemmas HDEC has faced.

## Employees and Board Members' Assessment of HDEC's Ethical Management



HDEC employees and Board members gave lower ratings to the internal aspects (employees and internal management) of ethical management than to its external aspects.

Based on this self-diagnosis, HDEC has strengthened the ethical compliance system, enlarged opportunities for education and training, and introduced new rewards for exemplary ethical commitments and behavior.

Internal: 3.66

External: 3.77



**Enhancing Internal Capacity**

## Integrated Cyber Monitoring ("Hotline")

All stakeholders	"Cyber Reporting Service" on the HDEC website
Employees	Reporting internal corruption
Business partners	HDEC intranet for business partners

Hotline:

[http://www.hdec.kr/sustainability/ethic\\_app\\_eal.asp](http://www.hdec.kr/sustainability/ethic_app_eal.asp)

The Office of Auditing at HDEC not only monitors the offline sites of HDEC projects and activities, but also monitors the feedbacks it receives regarding the company's activities from all stakeholders. The Green CSR Declaration and rules of ethical practice are all displayed on the official company website, clearly communicating the rules and values of ethics all employees must comply with in carrying out their jobs and roles and reaching clients, customers and business partners beyond the company.

The various channels of online reporting were merged together in 2010 into the Integrated Cyber Monitoring Office or the Hotline. Stakeholders, including customers, business partners, employees and Board members can now report the incidents of corruption and unfairness they observe as well as suggest new ideas that can help the company improve. This online channel will facilitate the company's greater innovation and ethical status, while making it easy for reporters to see how their claims and reports are handled and processed.

In 2010 the new hotline received various reports, including two reports concerning corruption. The two incidents were processed duly according to the company's rules of conduct. Other matters were reviewed by relevant departments and offices and were reflected on subsequent steps taken to improve the company's practices.

## Indicators of Stable Management

Whereas the debt ratio of HDEC reached 780% in 2001, the company has steadily transformed itself since 2002 into a profit-generating structure, lowering the debt ratio down to 181.5% in 2008, to 167.4% in 2009, and finally, to 152.9% in 2010, thanks to the realization of visible profits. As of the end of 2010, the amount of total cash the company possessed was 457.8 billion KRW, as non-debt-based management was virtually actualized.

	2008	2009	2010
Liquidity ratio	120.8	116.2	133.8
Debt ratio	181.5	167.4	152.9
Own capital ratio	35.5	37.4	39.5

## Credit Rating

In ratings by the three major credit rating agencies working within Korea, HDEC received an AA- for company bonds and A1 for corporate promissory notes. These ratings reflect the significant improvement in the company's management and financial structures, achieved by the high brand value of Hill State, the company's construction performance and technological capacity, the enhanced ability to handle fluctuations in economic circumstances thanks to the diversified overseas business portfolio, the great number of overseas projects and orders the company has secured, and the ability to realize good non-operating income by reducing financial and other types of costs.

As HDEC continues to reduce financial costs thanks to the decreased interest rate on its company bonds and corporate promissory notes, and the improvement in domestic and international financial conditions continues, the company can now expect to enhance its business capacity, improve its reputation abroad, and increase its value by benefitting from the enhanced stability of its financial structure.

	June 2008	September 2009	June 2010
Company bonds	A+	AA-	AA-
Corporate promissory notes	A2+	A1	A1
Note) rated by Korea Ratings Corp., Korea Investors Service, and Korea Information Service.			

## Summary Balance Sheet

	2008	2009	2010
Current assets	5,281,577	6,010,105	5,599,445
Fixed assets	2,862,233	3,081,176	3,393,135
Total assets	8,143,810	8,091,281	8,992,580
Current debts	4,372,216	4,311,171	4,185,010
Fixed debts	878,500	754,411	1,251,669
Total debts	5,250,716	5,065,582	5,436,679
Capital	555,486	557,273	557,273
Capital surplus	807,468	828,181	828,181
Capital adjustment	(2,805)	(4,042)	(5,098)
Other comprehensive income and loss	446,023	156,286	223,998
Surplus earnings	1,086,921	1,488,001	1,951,547
Total capital	2,893,093	3,025,699	3,555,901

## Summary Statement of Income and Loss

	2008	2009	2010
Sales revenue	65,235	85,537	89,584
Maintenance expenses	2,673	3,060	4,619
Non-operating income	6,013	5,910	6,023
Non-operating expenses	5,335	4,223	4,799
(Interest cost)	(812)	(658)	(430)
Corporate tax	1,745	1,309	1,763
Net term profit	3,735	4,566	5,304
Sales cost ratio	89.7%	92.2%	89.5%
Operating income ratio	6.6%	4.5%	5.8%
Income ratio before tax	7.5%	6.3%	7.1%
Net profit ratio	5.1%	4.9%	5.3%

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## Public Interest

**HDEC continues to fulfill its corporate social responsibility, by investing into continuous improvement of social infrastructure, ensuring fairer distribution of the economic values it generates, and creating ripple effects and benefits.**

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### Social Contribution

HDEC makes its contribution to the growth of our society by carrying out its main role in developing and maintaining social infrastructure and ensuring greater fairness in the distribution of economic values it generates to all its stakeholders.

#### Infrastructure Investment

As a leading construction company in Korea, HDEC continues to invest in infrastructure for the social good and public interest, thereby enabling Korean society and economic to generate added values. The new projects of infrastructure HDEC has taken up include: the Ganghwa Wind Power Plant; the Daegoksosa Double-lane Subway; the Seobu Express Underground Road; the Southeastern Distribution Center; and the underground construction of the Jemulpo Road to Seoul.

#### Distribution to Stakeholders

HDEC also seeks to fulfill the responsibilities it owes to stakeholders and society at large by seeking to ensure greater fairness in the distribution of its economic values to employees and Board members, business partners, shareholders, local communities, and the nation.

**Purchasing and Manpower:** HDEC paid out a total of 7.326 trillion KRW in 2010 in the form of buying manpower, services and goods. This represents 73.5% of the yearly revenue.

**Labor Cost:** HDEC also paid out 653.8 billion KRW in the form of wages and rewards for its Board members and employees. These include the manufacturing costs, selling and administrative expenses, development costs, non-operating expenses, severance indemnifications, and other welfare and fringe benefits.

**Taxes and Other Capital Expenses:** HDEC also paid 203.5 billion KRW to the government in taxes, and 121 billion KRW to the market, including dividends for shareholders.

### Ripple Effects

The ripple effects and benefits HDEC creates in continuing its activities that are usually long-term in nature also create opportunities for multiple economic actors to participate by opening up new employment and chances for production.

#### Creating Jobs at Home

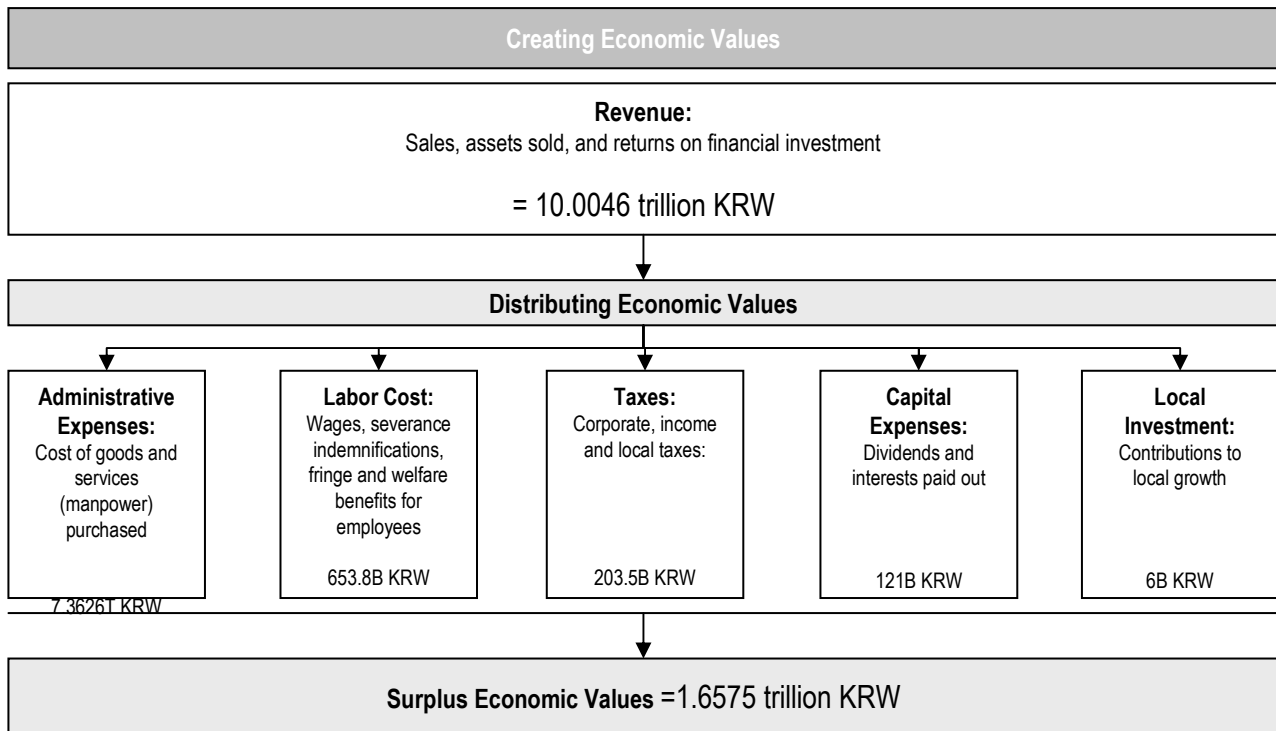
A company may create new jobs and generate employment either directly, indirectly, or through other intermediaries. Because business partners participate in HDEC's purchase of goods and services in securing raw materials, designs and the labor for construction, HDEC's activities generate larger demand for related industries, and indirectly create new jobs. All these benefits add up not only to the economic benefits HDEC creates, but also to the public interest it serves.

In 2010, the Industrial Chart and the Appendix on Employment published by the Bank of Korea detailed the direct and indirect employment effects of HDEC. The report showed that in 2010 HDEC generated new jobs for 75,990 persons within South Korea.

#### Production Inducement at Home

The effect on production inducement refers to the increase in the overall production in other industries corresponding to each 1 KRW increase in the production of the construction industry. The effect on added value creation refers to how much the added values of other industries increase in correspondence to each 1 KRW increase in the values added generated by the construction industry.

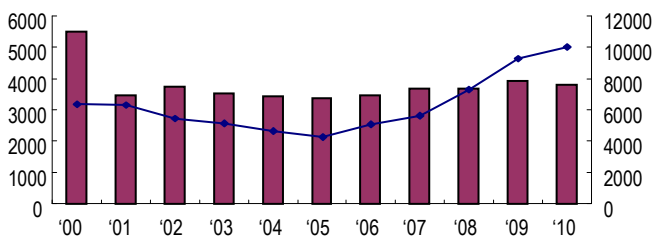
In 2010, HDEC significantly contributed to the Korean national economy by inducing the generation of added values worth 3.8199 trillion KRW in total and production worth 10.863 trillion KRW in total.



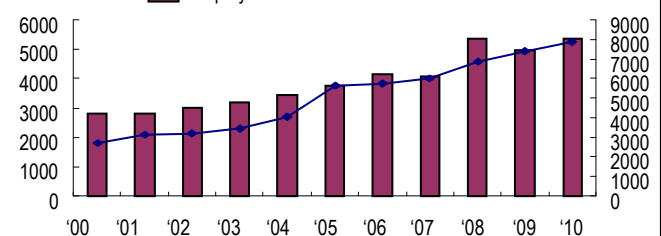
#### Correlation between Corporate Performance and Employee Competence

Compared to other industries, construction industry is especially prone to the effect of employees' capacities and competence on the amount of revenues it can generate. In order to analyze this connection between the increase in revenues and the increase in the number of employees, HDEC has compared its employee record and performance from 2001 through 2010 to those of its competitors in the same industry over the same period of time. The comparison showed that, while the number of employees HDEC employed over time did not significantly increase, its performance fared significantly better than the performances of other companies. This attests to the superior capacity and competence of HDEC employees. HDEC will continue to enhance its competitiveness by hiring more talented people and enhancing the capacities of its employment, thereby contributing to the national economy as well.

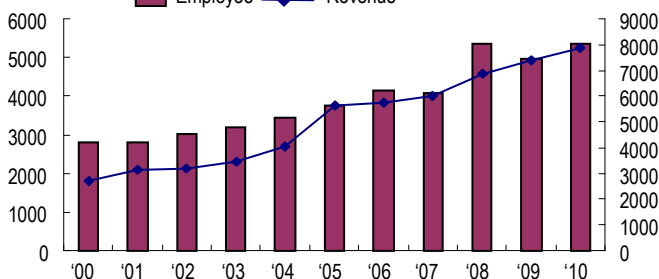
**HDEC**      ■ Employee    ◆ Revenue



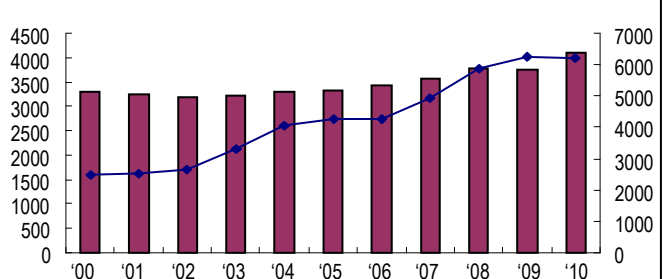
**Company A**      ■ Employee    ◆ Revenue



**Company B**      ■ Employee    ◆ Revenue



**Company C**      ■ Employee    ◆ Revenue



\*Source: HSBC Securities

# Our Management Approach

## Principles & Policy

With the launching of the Green CSR Declaration HDEC has also established and implemented systems of environmental management according to its mid- to long-term strategies. It is paving the ground to respond better to customers' changing demands by researching and developing new and better eco-friendly and energy-saving technologies. It has also reformed and improved the related processes, including the Green Purchase Guideline and the Standard Green Purchase System. In addition the company has created a systematic organization applicable to both the offices and construction sites for environmental management, continuously reducing and preventing environmental pollution associated with each phase of construction from site paving to the completion of projects. Firmly believing that green management is directly relevant to the company's sustainability and growth, HDEC will continue to lead the way to become an advanced green company by adhering to global environmental standards.

## Key Issues & Activities

## Roles & Responsibilities

Integrated Environmental Management System	Establishing and implementing environmental strategies; Preparing infrastructure for green management.	Field Assistance HQ (Office of HSE Innovation): responds to demands for low-carbon green growth and climate change. Field Assistance HQ (Office of HSE Innovation): handles implementation of the ISO 14001, OHSAS, and KOSHA.
Technological Development	Developing new green technologies and businesses.	R&D HQ (Office of R&D): develops green technologies and businesses. R&D HQ (Office of R&D): establishes the roadmap for technological development.
Design	Developing and implementing eco-friendly designs and facilities.	R&D HQ: develops eco-friendly technologies and facilities.
Materials / Transportation	Purchasing and developing eco-friendly materials.	Purchasing HQ (Office of Purchasing): operates the green purchase system. R&D HQ (Office of R&D): develops high-performance eco-friendly materials.
Transportation	Saving energy used in transportation and preventing pollution.	Field Assistance HQ (Office of HSE Innovation):
Construction	Optimizing the efficiency of using materials and energy; Protecting the surrounding ecology; Managing waste materials.	Field Assistance HQ (Office of HSE Innovation): controls greenhouse gas emissions and energy usage. Field Assistance HQ (Office of HSE Innovation): promotes the adoption of green technology on sites.
Operation	Saving energy and recycling materials.	R&D HQ (Office of R&D): develops energy-saving techniques.
Removal	Strict handling of harmful substances and waste.	Field Assistance HQ (Office of HSE Innovation): establishes and manages controlling rules and standard. On Site: handles and reduces waste materials and harmful substances.

## Key Performance Data

Area	Item	2008	2009	2010	Remarks
Environmental Achievements					
Raw Material	Amt. of recycled frame materials used (M3)	25,947	48,106	19,450	
Energy	Direct energy used (TJ/100M KRW)	0.009	0.009	0.013	
	Indirect energy used (TJ/100M KRW)	0.024	0.018	0.018	
Greenhouse Gases	Emission (TCO-2e/100M KRW)	8.8	7.9	8.0	
Water	Amount used (ton/100M KRW)	39.6	81.4	48.0	
Waste Material	Amount generated (ton/100M KRW)	13.1	28.8	9.0	
	Recycling rate (%)	22.3	6.3	2.3	
Investment	In environmental preservation (100M KRW)	719	256	297	

# Integrated Environmental Management System

In order to minimize its impact on the environment, HDEC enforces strict principles and systems of environmental management in all its business activities, following the three main strategies.

## Environmental Management

### Principles

HDEC strictly adheres to various rules and regulations on environmental protection both at home and abroad. Where necessary, it also leaves all its environment-related activities documented so as to make it easier to control and limit its impact on the environment. HDEC voluntarily supports and endorses all international environmental initiatives relevant to its business activities. Internally, it has established environmental management strategies shared across the entire organization and implemented in all its practices. In conducting its business HDEC always seeks to improve its processes and techniques so as to ensure environmental protection. It pioneers new markets abroad and enhances its competitiveness by adopting advanced green technologies.

### Responding to Climate Change

HDEC's carbon management system enables the company to control carbon emissions and reduction in a systematic, effective manner. Climate change raises a number of new concerns and risks that could be fatal to the company's operations around the world, so HDEC manages those risks by employing appropriate strategies. In addition, the company also operates a water control strategy in response to water shortage around the world, which enables the company to maximize efficiency in managing water while maintaining its operations around the world.

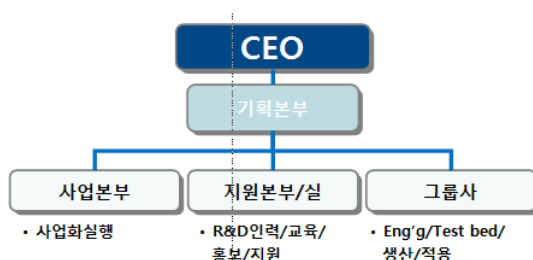
## Environmental Management System

### Organization

The environmental management organization is largely divided between the corporate office part and the site part. The organization is presided over by the CEO and serves as the control tower for the company's environmental management. It meets twice regularly a year so as to evaluate and review various environmental concerns and conditions, while ensuring environmental management company-wide.

#### [Organization for Environmental Management]

(Office)



In addition, the Office of Purchasing, the Department of Safe Environmental Management, and the R&D Center perform their roles to support the company-wide activities for environmental management. The on-site organization is headed by each related department and is based on the on-site supervision and monitoring by environmental managers, supervisors, and agents.

### ISO14001

In 1996 HDEC became the first construction company in Korea to acquire the international certificate of environmental management system, ISO14001. In January 2009, the company overhauled and renewed its system according to the new ISO14001:2004 standard.

Each year the company reviews and renews the ISO14001 certificate by having its management assessed by independent parties. Internal experts also conduct evaluations of projects on sites around the world. These internal experts of the company operate according to due procedures of review and assessment at work on each site. Domestic sites are reviewed every quarter, and overseas sites twice a year.

### Performance Evaluation Process

All project sites of HDEC are given itinerary visits and evaluations by the Department of Safe Environmental Management at least once a year to have their impact on the environment checked. Incidents of abuse or misuse of the environment are reported to the company for corrective measures. To ensure objectivity and impartiality of evaluations, external reviews by third parties are also conducted.

### Education for Environmental Management

HDEC seeks to enhance employees' and Board members' understanding and knowledge about environmental management and issues by engaging them in a variety of activities. The company provides environmental education on new sites, legally mandated training for managers, environmental education concerning harmful and risky materials and situations, environmental education for business partners, environmental education for different positions and employees, training for on-site managers, ISO14001 training, and so forth. By providing customized training for each different type of job and position, HDEC ensures that its environmental policy is thoroughly implemented at all levels.

(Sites)





# Material Flow

HDEC will consolidate its green management policy and become a leader of green development around the world by enforcing rigorous green policies in all the seven phases of its activities. These phases are: R&D, design, material purchasing, transportation, construction, operation, and removal.

	Strategy	INPUT																																																																																																																																																																					
Eco-friendly R&D	<ul style="list-style-type: none"><li>▪ Enhanced green R&amp;D.</li><li>▪ Expanded efforts for developing green businesses.</li><li>▪ Encouraging open innovations.</li></ul>	<div>[ Eco-friendly R&amp;D Investment]</div> <table><tr><th></th><th>Amt.</th><th>2008</th><th>2009</th><th>2010</th></tr><tr><td>Investment</td><td>100M KRW</td><td>159</td><td>91</td><td>154</td></tr><tr><td>Proportion</td><td>%</td><td>18</td><td>6</td><td>7</td></tr></table>		Amt.	2008	2009	2010	Investment	100M KRW	159	91	154	Proportion	%	18	6	7																																																																																																																																																						
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Eco-friendly Design	<ul style="list-style-type: none"><li>▪ Developing eco-friendly design techniques.</li><li>▪ Ensuring efficiency in design and facilities.</li></ul>																																																																																																																																																																						
Eco-friendly Material Purchasing	<ul style="list-style-type: none"><li>▪ Enforcing the HEGS.</li><li>▪ Developing eco-friendly, high-performance materials.</li></ul>	<div>[Amounts of Materials Used]</div> <table><tr><th></th><th>Amt,</th><th>2008</th><th>2009</th><th>2010</th></tr><tr><td>Rebar</td><td>ton</td><td>334,084</td><td>366,728</td><td>195,121</td></tr><tr><td>Ready-mixed concrete</td><td>m3</td><td>386,548</td><td>331,380</td><td>1,688,205</td></tr><tr><td>Cement</td><td>ton</td><td>136,515</td><td>101,216</td><td>89,003</td></tr><tr><td>Sand</td><td>m3</td><td>340,470</td><td>261,014</td><td>440,530</td></tr><tr><td>Aggregate</td><td>m3</td><td>272,634</td><td>354,685</td><td>717,921</td></tr><tr><td>Ascon</td><td>ton</td><td>46,844</td><td>59,788</td><td>87,734</td></tr><tr><td>LO2</td><td>liter</td><td>720,000</td><td>1,079,126</td><td>-</td></tr><tr><td>Smaller lump coal</td><td>kg</td><td>2,272,523</td><td>2,933,082</td><td>749,525</td></tr><tr><td>Timber</td><td>1M KRW</td><td>27,649</td><td>11,196</td><td>59,278</td></tr></table> <div>[Amount of Rebar Recycled]</div> <table><tr><th></th><th>Amt.</th><th>2008</th><th>2009</th><th>2010</th></tr><tr><td>Amt. used</td><td>10,000m3</td><td>2.5</td><td>4.8</td><td>1.9</td></tr><tr><td>Proportion</td><td>%</td><td>9</td><td>14</td><td>3</td></tr></table> <div>[Amount of Industrial Water Used]</div> <table><tr><th></th><th>Amt.</th><th>2008</th><th>2009</th><th>2010</th></tr><tr><td>Water supply</td><td>10,000t</td><td>159.9</td><td>270.7</td><td>236.1</td></tr><tr><td>Surface water</td><td>10,000t</td><td>11.8</td><td>54.8</td><td>1.1</td></tr><tr><td>Underground</td><td>10,000t</td><td>18.0</td><td>39.1</td><td>7.0</td></tr><tr><td>Rain water</td><td>10,000t</td><td>-</td><td>1.2</td><td>-</td></tr><tr><td>Recycled</td><td>10,000t</td><td>-</td><td>42.7</td><td>-</td></tr><tr><td>Total</td><td>10,000t</td><td>189.7</td><td>408.5</td><td>244.2</td></tr></table> <div>[Amount of Energy Used]</div> <table><tr><th></th><th>Amt.</th><th>2008</th><th>2009</th><th>2010</th></tr><tr><td>Diesel</td><td>TJ</td><td>278.38</td><td>317.52</td><td>478.06</td></tr><tr><td>Gasoline</td><td>TJ</td><td>36.55</td><td>35.38</td><td>26.04</td></tr><tr><td>Kerosene</td><td>TJ</td><td>49.45</td><td>54.61</td><td>42.26</td></tr><tr><td>(Total oil)</td><td>TJ</td><td>364.39</td><td>407.52</td><td>546.36</td></tr><tr><td>LNG</td><td>TJ</td><td>28.84</td><td>26.92</td><td>55.79</td></tr><tr><td>LPG</td><td>TJ</td><td>9.99</td><td>6.36</td><td>5.83</td></tr><tr><td>(Total gas)</td><td>TJ</td><td>38.83</td><td>33.27</td><td>61.62</td></tr><tr><td>Lignite</td><td>TJ</td><td>-</td><td>12.24</td><td>35.67</td></tr><tr><td>Local heating</td><td>TJ</td><td>0.09</td><td>0.53</td><td>0.34</td></tr><tr><td>Electricity</td><td>TJ</td><td>1,127.39</td><td>909.24</td><td>907.69</td></tr><tr><td>(Total)</td><td>TJ</td><td>1,127.48</td><td>922.01</td><td>943.70</td></tr><tr><td>(Grand Total)</td><td>TJ</td><td>1,530.70</td><td>1,362.80</td><td>1,551.67</td></tr></table>		Amt,	2008	2009	2010	Rebar	ton	334,084	366,728	195,121	Ready-mixed concrete	m3	386,548	331,380	1,688,205	Cement	ton	136,515	101,216	89,003	Sand	m3	340,470	261,014	440,530	Aggregate	m3	272,634	354,685	717,921	Ascon	ton	46,844	59,788	87,734	LO2	liter	720,000	1,079,126	-	Smaller lump coal	kg	2,272,523	2,933,082	749,525	Timber	1M KRW	27,649	11,196	59,278		Amt.	2008	2009	2010	Amt. used	10,000m3	2.5	4.8	1.9	Proportion	%	9	14	3		Amt.	2008	2009	2010	Water supply	10,000t	159.9	270.7	236.1	Surface water	10,000t	11.8	54.8	1.1	Underground	10,000t	18.0	39.1	7.0	Rain water	10,000t	-	1.2	-	Recycled	10,000t	-	42.7	-	Total	10,000t	189.7	408.5	244.2		Amt.	2008	2009	2010	Diesel	TJ	278.38	317.52	478.06	Gasoline	TJ	36.55	35.38	26.04	Kerosene	TJ	49.45	54.61	42.26	(Total oil)	TJ	364.39	407.52	546.36	LNG	TJ	28.84	26.92	55.79	LPG	TJ	9.99	6.36	5.83	(Total gas)	TJ	38.83	33.27	61.62	Lignite	TJ	-	12.24	35.67	Local heating	TJ	0.09	0.53	0.34	Electricity	TJ	1,127.39	909.24	907.69	(Total)	TJ	1,127.48	922.01	943.70	(Grand Total)	TJ	1,530.70	1,362.80	1,551.67
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Lignite	TJ	-	12.24	35.67																																																																																																																																																																			
Local heating	TJ	0.09	0.53	0.34																																																																																																																																																																			
Electricity	TJ	1,127.39	909.24	907.69																																																																																																																																																																			
(Total)	TJ	1,127.48	922.01	943.70																																																																																																																																																																			
(Grand Total)	TJ	1,530.70	1,362.80	1,551.67																																																																																																																																																																			
Eco-friendly Transportation	<ul style="list-style-type: none"><li>▪ Reducing energy used in transporting and shipping.</li><li>▪ Operating eco-friendly vehicles.</li></ul>																																																																																																																																																																						
Eco-friendly Construction	<ul style="list-style-type: none"><li>▪ Efficient usage and reduction of resources used.</li><li>▪ Protecting the site and surrounding ecology.</li><li>▪ Rigorously controlling waste materials.</li><li>▪ Systematically reducing greenhouse gas emissions at all levels.</li></ul>																																																																																																																																																																						
Eco-friendly Operation	<ul style="list-style-type: none"><li>▪ Optimizing energy efficiency.</li><li>▪ Minimizing need for maintenance.</li></ul>																																																																																																																																																																						
Eco-friendly Removal	<ul style="list-style-type: none"><li>▪ Minimizing environmental impact and accidents.</li><li>▪ Strict control of removed facilities and harmful substances and waste.</li></ul>																																																																																																																																																																						

## OUTPUT

## 2010 Achievements

## 2011 Plan

### [ Green Purchases]

	Amt.	2008	2009	2010
Amt. purchased	100M KRW	195	260	142

### [ Amounts of Waste Materials Generated and Recycled]

	Amt.	2008	2009	2010
Generated	ton	622,855	1,447,754	460,022
Recycled	ton	138,792	91,882	10,513
Recycled rate	%	22.3	6.3	2.3

### [Amount of Sewage]

	Amt.	2008	2009	2010
Discharged	ton		724,115	1,236,606

### [ Greenhouse Gas Emissions]

	Amt.	2008	2009	2010
Direct emission	tCO2-e	80,385	68,256	79,856
Indirect emission	tCO2-e	337,183	330,582	329,092

- 21 patents registered.
- 120 patents in application.
- 3 new environmental techniques.
- 3 new construction techniques.
- XX utility models in application.
- XX programs registered.

- Collaboration between the Green Management Committee and Technological Cooperation Committee to be expanded.
- New markets in recyclable energy and environment-friendly services.
- Diversifying approach and participation in governmental projects.
- Increased investment in R&D for the environment and energy.

- HEGS complete.

- Improving and consolidating the HEGS process.
- Increasing the amounts of green purchases.

- Installing emission-reducing devices to all on-site vehicles and equipment.

- Enhancing training for employees and drivers.

- Third-party certification of the Greenhouse Gas Inventory System.
- Targets for greenhouse gas reduction established.
- Habitats for 3 species restored.

- Enhancing overseas greenhouse gas emission control.
- Improving the GGIS.

- Developing and commercializing household energy-saving system.

- Developing energy-saving systems for larger housing units and entire cities.

- (To be added later)

- (To be added later)

## Eco-friendly R&D

HDEC ensures the development of more eco-friendly technologies and techniques step by step according to its mid- to long-term R&D plan and strategy. The company ensures minimization of the amounts of energy used and environmental impact from the R&D phase and onward.

### R&D Roadmap

Focusing on 'Creating New Spaces,' 'Building Green Cities,' 'Green Energy,' and 'Water and the Environment' as the four main areas of its R&D, HDEC has established and been following its 2015 roadmap phase by phase.

#### Creating New Spaces

Creating new spaces requires the development and refinement of various technologies and techniques, including those for building super-long bridges; designing and building underground spaces like underground cities and tunnels under the sea; designing and building floating harbors and other marine spaces like the FPSO; eco-friendly burial and landfill techniques; eco-friendly and high-performance materials; and building new structure models for bridges, tunnels, etc. As the demand for massive civil architecture and engineering projects will continue to rise worldwide, HDEC ceaseless prepares for the future by developing and commercializing these various new techniques and technologies.

#### Green Cities

Building state-of-the-art, green cities requires the development of various related techniques and technologies, including those for building skyscrapers, zero-energy facilities, and eco-friendly construction and innovation systems. Until 2013 HDEC will continue to focus on developing and securing new technologies for skyscrapers, the demand

for which is rising rapidly around the world. By 2015, HDEC also seeks to achieve at least 70% of the energy-saving targets it has set for itself in building green homes and buildings. By 2020, it will meet those goals in full, leading the way for complying with government energy regulations.

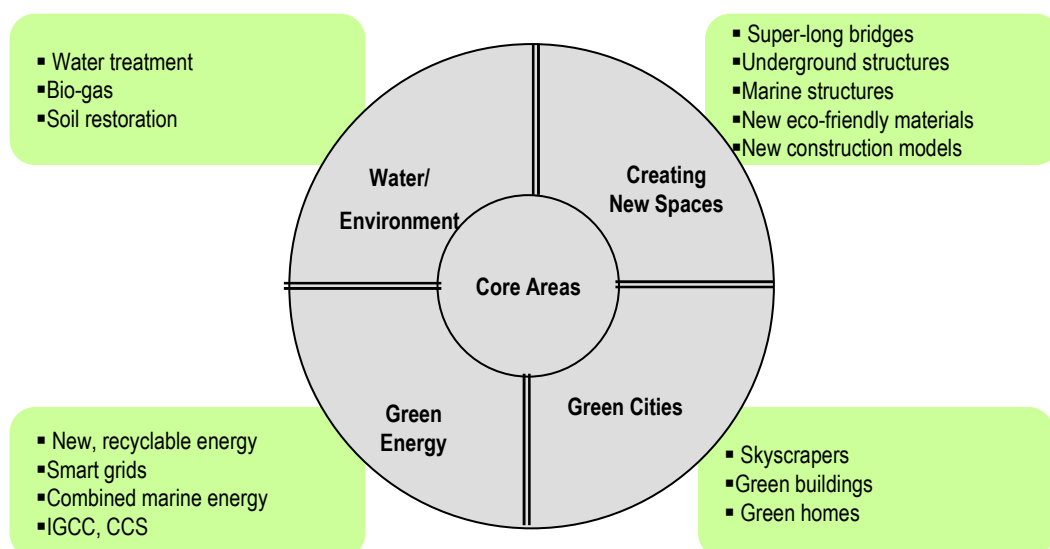
#### Green Energy

Areas of R&D related to the production and application of energy are the development of new or recyclable sources of energy, smart grids, IGCC, and CCS. By participating actively in governmental projects and cooperating fully with related industries, HDEC will secure new technologies and clean sources of energy in preparation for the depletion in oil sources and climate change.

#### Water and the Environment

R&D related to water and the environment focus on general techniques for recycling water, restoring polluted soil, and turning waste materials into resources. HDEC will secure water-recycling techniques by 2015 that will help it process water at high altitudes, improve water quality standards, find markets for recycled water, and achieving an economy of scale in this area. The soil restoration technology will be perfected by establishing the standard soil cleanness model and optimizing the soil washing system. The project of creating resources out of waste materials is also in the phase of early commercialization, as HDEC encourages its bio-gas projects in response to the government's low-carbon green growth policy.

#### [Four Core Areas of R&D]



## Organization for R&D

The R&D Headquarters at HDEC is the main center and driving force of the company's eco-friendly innovation. The R&D HQ handles the development of new technologies and techniques as well as quality and procedure control and assurance. It is Korea's large corporate research center in the construction sector. The Committee on Technological Cooperation, comprised of members from each HDEC headquarters, the Office of Planning and Budget, and HMG, establishes mid- to long-term R&D roadmaps.

## Technological Development Process

The internal technological development process at HDEC consists of four phases intended to ensure maximum effectiveness and efficiency in R&D. The ideas suggested by each division or department is subjected to market and demand analyses. Only the ideas whose feasibility are ascertained by these tests are put into development. Technologies and techniques whose development and verification are completed are then transferred to the Business HQ to be put into practice.

## Open Innovation

Open Innovation refers to the open R&D processes in which the company seeks to secure and utilize various sources of innovation both inside and outside the company, no longer restricting its inspiration to the internal resources and assets it already possesses. HDEC also actively promotes technological collaboration with agents and institutes outside so as to accelerate internal innovation and develop new techniques and technologies by combining brilliant ideas from both the inside and the outside. The company also seeks to maximize values it creates by seeking marketing channels both inwardly and outwardly. Working not only with the major members of HMG such as Hyundai Engineering, Hyundai Steel and Engineering Industries, Hyundai Design Agency, and Hyundai City Corporation, but also with world-renowned research institutes, advanced construction companies, and small or medium companies with excellent technologies, HDEC steadily enhances its technological competitiveness. The company also actively participates in various governmental projects, helping the nation secure newer and better technologies.

### [Main Collaboration Projects]

Type	Project Title	Working with	Period
Governmental Projects	"Developing New Designs for Smart Highway Pavement@	Korea Road Corp., etc.	2008 ~ 2011
	"Developing Techniques for Natural Riverbed Restoration and Strengthening"	Korea Institute of Construction Technology, etc.	2008 ~ 2014
	"Developing Technology for Optimal Treatment of Soil Contaminated by Hazardous Heavy Metals through Soil Washing"	Seoul City University, Hanyang University, etc.	2009 ~ 2012
	"Developing Techniques to Verify the Integrated Process for High-Pressure Thermal Hydrolysis of Organic Sludge"	Research Institute for Advanced Technology, etc.	2010 ~ 2013
	"Localizing Filtering Devices for Turning Bio-gas into Auto Fuel"	Korea Gas Corporation, etc.	2010 ~ 2012
	"Developing the Suspension Bridge Cable System with High-Strength Steel Cables"	POSCO, etc.	2009 ~ 2014
	"Developing Installation Techniques and Equipment for Suspension Bridges"	Daelim Industries, etc.	2009 ~ 2011
	"Developing the Technique for Predicting Amounts of Settlement on Sea Bedrock"	Korea Institute of Construction Technology, etc.	2009 ~ 2015
Universities and Research Institutes	"Developing the Pumping Technique for Accelerated Construction Assistance"	Pohang Industrial Science Research Center	2009 ~ 2014
	"Developing a System for Turning Bio-gas into Energy"	Inha University, etc.	2009 ~ 2012
	"Developing Offshore Structures for New Marine Spaces"	Korean Register of Shipping	2009 ~ 2013
	"Developing the Household Energy Saving System"	Gyeongwon University, etc.	2010
	"Developing Multilayer Tidal Power Generator and the Wave Dissipating Structure for Current-based Power Generation"	Inha University, etc.	2010 ~ 2011
Small and Medium Businesses	"Developing the Design and the System for Controlling Oscillations in High-rise Buildings"	Dankook University, etc.	2010 ~ 2011
	"Developing High-Performance Concrete for High-rise Buildings"	GangwonRemicon, etc.	2010 ~ 2011
	고성능 숏크리트 및 타설 자동화 시스템 개발	Geotech Engineering, etc.	2009 ~ 2012
	"Developing Techniques for Building the New-Model Complex Bridges"	RC Korea, etc.	2008 ~ 2010
	"Developing the Circulation Unit for Exchanging Waste Heat "	Honeywell Korea, etc.	2010
Abroad	"Developing the Technique for Low-carbon, High-temperature Curing"	Hidea Solutions	2010
	"Research on Improving Different Grouting for Under-sea Tunnels"	Rocscience, etc.	2009 ~ 2011

## Major R&D Achievements of 2010

Area	Title	Description	Eco-Friendliness
Creating New Spaces	High-Performance, Eco-friendly Dredging Standard	minimizing environmental impact in the dredging zone and analyzing and optimizing the efficiency of dredging based on the ubiquitous monitoring system.	<ul style="list-style-type: none"> <li>Minimizes the amount of dredge floating on water.</li> </ul>
	CO2-Reducing, Low-Heat Concrete	A technique that produces CO2-reducing, low-heat concrete.	<ul style="list-style-type: none"> <li>Reduces CO2 emissions.</li> <li>Reduces temperature disparity and hydration heat.</li> </ul>
Green Cities	Building Energy Consumption Analysis Technique	A technique to analyze the patterns of energy consumption and predict the energy usage in a given building using a precise simulation program.	<ul style="list-style-type: none"> <li>Predicting CO2 emissions.</li> <li>Finding optimal designs.</li> </ul>
	TEEM System	Controlling the facilities so as to minimize energy consumption and optimize the indoor environment using various control algorithms, while providing a total household energy solution along with energy- and environment-related information to the resident.	<ul style="list-style-type: none"> <li>Saving heating and air-conditioning energy.</li> <li>Monitoring energy consumption and the indoor environment.</li> <li>Providing useful information (weather casts, etc.).</li> <li>All-automated energy-saving program.</li> </ul>
	HERV System	An optimized air-ventilation technique that saves energy and realizes a pleasant indoor environment using the indoor pollution detector that checks and controls indoor pollution and temperature.	<ul style="list-style-type: none"> <li>Saves energy in circulation.</li> <li>Ensures pleasant indoor environments.</li> </ul>
	Technique for Proving Eco-friendliness of Finishing Materials	A technique that measures and proves whether the harmful pollutants emitted by materials applied to finish an indoor environment fall below maximum standards.	<ul style="list-style-type: none"> <li>Improves the quality of indoor air.</li> <li>Improves residents' satisfaction by ensuring pleasant indoor environments.</li> </ul>
	Low-carbon, High-temperature Concrete Curing Technique	Cures concrete rapidly using an electric heating fan, while at the same time reducing the amount of carbon dioxides generated. The wireless thermometer system monitors the curing process of concrete constantly so as to ensure quality and minimize the period of non-working time.	<ul style="list-style-type: none"> <li>Reduces CO2 by 50% or more.</li> <li>Saves energy by 50%.</li> </ul>
Green Energy	Next-Generation Technique to Gassify Coals	A technique to create active carbons out of low-grade materials and refine them.	<ul style="list-style-type: none"> <li>Improves heating efficiency.</li> <li>Reduces emissions of harmful substances.</li> <li>Facilitates collection of carbon dioxides.</li> </ul>
	Hybrid Geothermal Heating and Air-Conditioning System	A hybrid system that provides both heating and air-conditioning, using the water tank and heat from the ground as sources of heating.	<ul style="list-style-type: none"> <li>Utilizes unused energy by using heat pumps.</li> </ul>
Water / Environment	System for Creating Bio-gas from Organic Waste	A technique that generates bio-gas energy from organic waste materials through anaerobic digestion and processes the digestive liquid.	<ul style="list-style-type: none"> <li>Produces bio-gas through anaerobic digestion.</li> <li>Isolates carbon and high-concentrate methane through the refining process.</li> <li>Removes high-concentrate nitrogen through ammonia stripping.</li> </ul>
	Soil Restoration Technique based on Soil Washing	Restoring soil quality and optimizing polluted soil by removing oil and other heavy metals from soil through soil washing.	<ul style="list-style-type: none"> <li>Removes harmful environmental risks.</li> <li>Increases efficiency in land usage.</li> </ul>
	Technique for Treating Organic Sewage and Collecting Nitrogen	Treating organic sewage containing high-concentrate nitrogen, through such processes as solid-liquid separation, ammonia stripping, and membrane installation.	<ul style="list-style-type: none"> <li>No need for external sources of carbon.</li> <li>Ammonia separated from the sewage can be used to create high-quality liquid fertilizer.</li> </ul>
	Technique to Control Sedimentations on Riverbeds	Restoring riverbed ecological systems by preventing the transformation of riverbeds into land.	<ul style="list-style-type: none"> <li>Creates riverbed ecological spaces.</li> <li>Restores aquatic ecology.</li> </ul>

Economic Benefits	Type	Development	Progress	Application
<ul style="list-style-type: none"> <li>Optimized delivery of high-concentrate solutions;</li> <li>Controls dredging moisture content.</li> </ul>	Procedural Optimization	Internal	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Measuring temperature in XX tunnel in North Gyeonggi-do.</li> </ul>
<ul style="list-style-type: none"> <li>Facilitates construction and improves durability.</li> <li>Reduces construction costs.</li> </ul>	Product Innovation	Collaborative	Planning Development Test / Evaluation Application	
<ul style="list-style-type: none"> <li>Predicts and analyzes energy consumption.</li> <li>Optimizes facility capacity.</li> </ul>	Procedural Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Predicting energy consumption of the KCC Architectural Environment Lab unit.</li> <li>Anti-freeze simulation of external air-conditioner device for Hill State I in Paju.</li> </ul>
<ul style="list-style-type: none"> <li>Saves heating cost and energy.</li> </ul>	Product Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>To be applied to collective housing starting in the latter half of 2011.</li> </ul>
<ul style="list-style-type: none"> <li>Saves air-conditioning and air-ventilation costs and energy.</li> </ul>	Product Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>To be applied to collective housing starting in the latter half of 2011.</li> </ul>
<ul style="list-style-type: none"> <li>Optimizes internal environments of green homes.</li> </ul>	Procedural Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Paju Hill State site.</li> <li>Seongbuk Hill State site.</li> </ul>
<ul style="list-style-type: none"> <li>Saves winter concrete cost by 20%.</li> <li>Reduces the non-working period in winter times.</li> </ul>	Procedural Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Yeongjong Hill State site, Incheon</li> <li>AID Reconstruction Site, Busan</li> </ul>
<ul style="list-style-type: none"> <li>Can be converged with fuel cell.</li> <li>Enables economic production of hydrogen.</li> </ul>	Procedural Innovation	Collaborative	Planning Development Test / Evaluation Application	
<ul style="list-style-type: none"> <li>Improves system efficiency.</li> <li>Reduces the length of the underground heat exchanger.</li> <li>Reduces the initial installation cost.</li> </ul>	Product Innovation	Internal	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Underground heat exchanger installation.</li> </ul>
<ul style="list-style-type: none"> <li>Increased profitability thanks to the increase in the amount of bio gas generated.</li> <li>High-quality fuel obtained from refined bio gas</li> <li>Minimized sludge and odor during processing.</li> </ul>	Product Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Cheongna Waste Water Bio-gassification, Incheon</li> </ul>
<ul style="list-style-type: none"> <li>Minimizes the amounts of waste generated, while optimizing processing facilities.</li> </ul>	Procedural Innovation	Collaborative	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Unsanitary landfill sites reform.</li> <li>Oil-polluted soil restored in Daejeon.</li> <li>Fluoride-polluted soil restored in Fukuoka.</li> </ul>
<ul style="list-style-type: none"> <li>Reduces maintenance cost by minimizing the necessary biological processing facility.</li> <li>Facilitates maintenance through automation of all steps of processes.</li> </ul>	Product Optimization	Internal	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Cheongna Waste Water bio-gassification, Incheon</li> <li>Waste Water Bio-gassification, Kimhae</li> </ul>
<ul style="list-style-type: none"> <li>Upgraded technology for downstream ecology.</li> <li>Optimized maintenance.</li> </ul>	Product Innovation	Internal	Planning Development Test / Evaluation Application	<ul style="list-style-type: none"> <li>Han River Bore 6, Yeosu District</li> <li>Palmii Stream Test Bed, Chuncheon</li> <li>Daejeon-Anyang River designs.</li> </ul>

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## Eco-friendly Design

From the design phase of each of its project, HDEC seeks to ensure maximum economic values and eco-friendliness, by incorporating the needs for energy saving, reduction in the amount of water required, ecological concerns, and a pleasant living environment.

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### Energy Saving Design

In order to reduce the amount of energy used and the generation of pollutants related to energy usage, HDEC ensures high energy efficiency in the designs of all its projects, including houses and buildings.

#### High Energy Efficiency

In 2007 HDEC became the first construction company in Korea to adopt carbon-free designs in apartment housing. By 2012, HDEC plans to provide apartment housing that saves up to 50% of energy compared to the housing standard. By 2020, the company seeks to realize its goal of reducing energy usage by 100%, by relying on energy generated by new and recyclable sources.

In order to ensure actual benefits of energy saving and reduced amounts of pollutants, HDEC applies various techniques to its designs, including optimal and high-efficiency insulation and insulators, high-function window frames, devices for circulating waste heat, and so forth. Eco-friendly designs are applied not only to the internal living environment, but to exterior considerations as well, applying no-carbon-emitting sunlight-based systems to the street lamps and so forth so as to reduce the amount of carbon emissions.

#### New and Recyclable Sources of Energy

In addition, HDEC is already applying various new or recyclable sources of energy to its housing and building projects, such as the sunlight, the small-scale wind power generation systems, geothermal systems, fuel cells, natural light systems, etc. The company steadily develops higher-efficiency and improved energy systems that provide top-quality lighting and other services in Korea.

### Reducing Amounts of Water Required

In order to reduce the amounts of water used, HDEC applies various techniques and facilities to its projects from their design phase onward.

#### Water Saving Facilities

The conventional 9-liter toilets in the apartment housing were replaced with the more efficient 6-liter toilets, while each household was also installed with water gauges. Intermediary water supply systems were also installed so as to recycle wastewater and sewage. Over 108 such water saving facilities, highly user-friendly systems, intermediate water supply systems, and pressure-reducing valves have been installed over the last 3 years.

### Water Recycling

The Technology & Quality R&D Center at HDEC currently has various plans for developing water-saving techniques and devices. It has so far introduced a wide range of integrated recycling techniques and devices, including the high-pressure filter, the ammonia stripping technique, and the technique for obtaining high-concentrate liquid fertilizer compounds from sewage, and so forth.

### Designs for Ecology

In order to minimize any negative impact its project might have on the surrounding ecology, HDEC always makes sure that it thoroughly preview areas of possible environmental concerns and seek various alternatives based on opinions and advices from internal and external experts. These are only some of HDEC's efforts to protect ecological environments and minimize environment-related complaints.

#### Topography

HDEC supplements parts of land that have been dug up or distorted in any other way by adding more soil or green plants. The company also installs fertile soil reservoirs around its project sites so as to prevent the loss of fertile soil from those sites due to necessary soil-removing works involved in construction as well as to provide pleasant landscaping works. In order to prevent the destruction of the ground structure HDEC also applies other various techniques, such as changing the road directions or adjusting the structures of bridges.

#### Water Quality

Bridges are designed with considerations of preventing possible water pollution caused by installing them. Separate rain-collecting lines are installed around bridge building sites so as to minimize the leakage of polluted water into the surrounding land in times of heavy precipitation. These projects are built with eco-friendly environments. Water-blocking membranes are also installed so as to minimize pollution of agricultural land surrounding project sites.

#### Animals and Plants

Preliminary investigations of the surrounding ecological habitats for native animals and plants are conducted, and designs are modified accordingly if they are likely to disrupt these habitats in any significant way. HDEC also always gives priority to eco-friendly materials to which the natural ecology can adapt well. In order to prevent destruction of the local forestry,

new trees are planted and damaged trees are recycled. Landscaping always involves connections to the surrounding natural ecological structure. In order to minimize damages to the surrounding habitats of fish and other aquatic organisms, small escape routes are installed for the living animals; ecological marshes are created; or else, artificial botanical islands are created.

## Designing Pleasant Living Environments

### Indoor Air Quality

From ensuring minimization of pollutants generated to incorporating both natural and machine-aided air ventilation in the flat design, HDEC ensures that the quality of indoor air is taken care of from the design phase onward. Even during construction process itself the company ensures that materials are stored in well aired areas so as to allow for maximal natural ventilation. After construction is completed, the indoor air quality is assessed according to the given process that quantifies the concentrations of pollutants found in air. All these help to ensure a pleasant living environment.

### Air Ventilation

Cities become islands where heat is trapped during hot seasons. Aware of this, HDEC is currently researching how to better arrange different units in multiunit housing projects so as to maximize the amount of ventilation and air currents, applying natural ventilation systems to its housing projects. In designing apartments and other buildings, HDEC considers topographical structures and wind directions native to the area so as to allow for maximum amounts of wind.

### Insulation

Optimal insulation systems are applied that are customized to the overall energy consuming patterns of the building as well as the residents' lifestyles. Connected to the control system, these insulation designs help to maintain the most pleasant mixture of indoor temperatures and humidity levels necessary for quality indoor living.

### Noise

Various audio-testing rooms are used at HDEC in order to find the best ways to minimize the generation and spread of unwanted noise. In these labs researchers study the characteristics of each different type of noises and seek to find noise-reducing alternatives. In order to minimize the amount of noise generated during the construction process itself, HDEC also applies techniques to control noise sources and predict noise-blocking capacities of various materials used in housing, such as the exterior materials and window frames.

### [Energy Saving Design: Case Study 1]

#### Energy Clock, Enabling Real-Time Monitoring of Energy Usage

Hill State IV in Keomdan, Incheon, became the first project site of HDEC to have an energy clock installed. An energy clock is a system that allows you to monitor on a real-time basis how energy is used throughout the household, by lighting apparatuses, heating systems, gas appliances, hot water, and so forth. The system is expected to help residents save significantly on the amount of energy they use, by showing them their energy consumption patterns by season or appliance, and the amounts of energy costs incurred thereby. Modeled after automobile meters, energy clocks allows you to check the amount of energy you have used in one glimpse, within just one or two seconds. The device is expected to help save energy by at least 5 ~ 15% in the future.



### [Energy Saving Design: Case Study 2]

#### TEEM (Total Energy and Environmental Management) System

As part of its efforts to ensure sustainable, low-carbon, green growth, HDEC has successfully developed the TEEM system, an automated system that provides integrated energy saving effects while at the same time maintaining the indoor air quality at its most pleasant. Combining the 'integrated heating control technique' (which automatically controls temperature in 0.1°C unit) and the 'all-automated optimized ventilation control technique' (which detects and adjusts indoor and outdoor environments), the TEEM system helps you to save energy by 20% in terms of heating and air-conditioning, and by up to 75% in terms of air circulation. These translate roughly into 400,000 KRW per year saved for each household and the reduction in carbon emission by 0.5t per year, which is equivalent in effect to planting 100 pine trees. This new innovative technology will be applied to Hill State apartments beginning in the latter half of 2011. With this as a start, HDEC will try to realize its dream of reducing energy-dependency by 100% in the future.

# Eco-friendly Materials

In securing and purchasing materials, HDEC gives priority to eco-friendly materials that can reduce environmental impact and pollution and save resources. To this end, HDEC also provides active support for its business partners' eco-friendly business practices.

## Purchasing Eco-friendly Materials

### Policy of Green Purchases

In order to minimize the environmental impact associated with the purchase and usage of construction materials, HDEC has developed and implements its Environmental Goods Purchasing Guideline, incorporating the three principles of 'reduction,' 'reuse,' and 'recycling.'

In addition, the company implements a separate Environmental Management Guideline for Purchasing Materials, which helps identify in advance and minimize factors of environmental impact. The guideline mandates that the materials purchased be subjected to thorough review of their environmental impact in all phases of handling, from shipping, warehousing and storage to usage and disposal. The review results form an important criterion for evaluating business partners. HDEC encourages not only existing, but also new business partners to develop more eco-friendly materials.

### Hyundai Environmental Goods Standard (HEGS)

In 2010 HDEC developed and began to implement the Hyundai Environmental Goods Standard (HEGS), which enables systematic management of all the data and information concerning the eco-friendliness of goods and materials HDEC purchases.

Goods qualified under this standard are those carrying environment-certifying marks, the GR (Green Recycled) marks, the Energy Efficiency Class 1 products, goods carrying energy-saving marks, goods carrying environment-related marks issued abroad, goods that have been produced in the most clean environments, goods from Green Management System (GMS)-certified companies, and goods with carbon performance certificates (HEGS codes 1 to 8). The record of goods of each category is closely monitored and communicated with employees working on sites and in purchasing matters. Employees who lag behind others in terms of purchasing and using eco-friendly materials are constantly trained and encouraged to convert to any of these certified goods.

The HEGS performance record will be used by the Field Assistance HQ later to assess the performance of each project site in the future. In

purchasing MRO products, HDEC will also differentiate between those meeting the HEGS codes and those that do not in an effort to strengthen the enforcement of its green purchasing system.

### Green Purchase Record

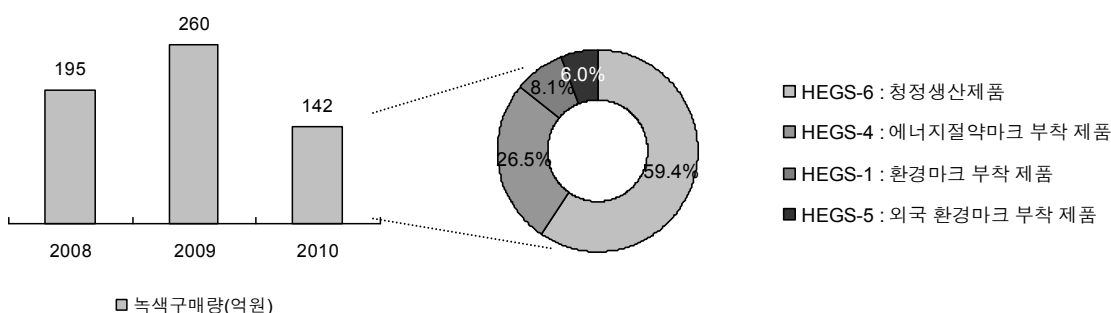
In 2010 HDEC spent a total of 14.2 billion KRW on purchasing eco-friendly goods and materials, in 563 transactions in total. This represents 0.8% of the total amount of money spent on purchasing goods, or 6.3% of all the transactions conducted. 59.4% of all eco-friendly materials purchased were produced in the most clean environments (HEGS code 6); 26.5% carried energy saving marks (HEGS code 4); 8.1% carried environment certifying marks (HEGS code 1); and 6.0% carried environment-friendliness certifying marks issued overseas (HEGS code 5). HDEC will continue to increase the purchase of eco-friendly materials in the future, by continuously improving and updating its HEGS system and giving priority to eco-friendly materials in all phases of its activities, including design.

### Eco-Friendly Business Partners

In order to help make the entire process of business more eco-friendly, HDEC has enhanced its support for its business partners to develop more eco-friendly alternatives and products.

**Evaluation:** HDEC evaluates business partners' green management performances according to its Environmental Management Guideline for Purchasing Materials. The evaluation involves documentations submitted by them, as well as the media and academic information available on the subject of environmental management. Business partners are evaluated in terms of hazard (toxicity, difficulties of decomposition, and destructive effects on the ecology); compliance with applicable laws (including the Hazardous Chemical Control Act, the Waste Control Act, and the Fire Prevention Act); and how much of their products are required in HDEC activities. For products and materials assessed to be harmful, HDEC demands submission of documented proofs from the producers ensuring transparency in their ethical management systems. For companies producing goods to which complicated environmental laws are enforced or with which complaints are frequently raised, HDEC recommends and encourages self-evaluations of their own environmental impact.

### [Green Purchase Record]



**Education:** HDEC actively supports business partners to develop and implement their own environmental management plans in case of environmental accidents, while at the same time providing needed training and education on the subject matter. HDEC also regularly communicates with business partners producing products with possibly environmental harms. The company provides all the assistance and support needed to help its business partners improve their environmental management and performances.

**Eco Labels:** HDEC attaches eco-friendly labels to some of the materials it purchases in an effort to consolidate its green purchasing system. The eco labels encourage business partners to enhance the eco-friendliness of their products, while maximizing trustworthiness of the materials HDEC uses in creating safer and better living spaces for consumers.

## Developing Eco-friendly Materials

### Aim:

In an effort to ensure its continued growth in the future by seizing upon the rising demand for eco-friendliness, HDEC is also researching and developing eco-friendlier alternatives to part of the materials it uses. These future-oriented latest-technology materials are ways in which HDEC can remain in the future material market and maximize added values. HDEC is leading the way for innovation in the construction materials sector by developing eco-friendly goods itself.

### Roadmap:

HDEC R&D HQ has developed the Roadmap for Eco-friendly, High-Performance Construction Materials, leading the research and development of new materials with minimal environmental impact and ensuring higher quality and lower costs.

The main areas of focus are new materials, concrete, and asphalt. In the first area especially, HDEC is closely following the Executive Plan for the Green Growth of Construction Technology from the Ministry of Land and Maritime Affairs as well as the government's policy on carbon emission rights in developing high-performance, latest-technology materials.

### Process of Developing Eco-friendly Materials

HDEC operates the Committee for New Materials Review, comprised of members from each team responsible for the development of those materials. The company also encourages exchange of suggestions and opinions by launching and operating a new website drawing ideas on new materials. Entrants can submit their ideas about what new materials or designs that have not been tried yet but could help improve productivity and performance. Those selected by the New Materials Committee are then tested and reviewed in plants and by the R&D HQ before the final selections are made. The final winners are applied to the project sites and reviewed in the aftermath regularly in terms of their effects and performances.

### Eco-Friendly Materials Development Record

HDEC has continuously worked on, and invested in, researching and developing eco-friendlier materials that could minimize the environmental impact of construction. In 2010, the company conducted projects in developing low-CO<sub>2</sub> concrete that produces less CO<sub>2</sub> and reduces temperature disparities; and ultra-thin polymer composites that are expected to work with superior performance in bridge pavement. The company intends to complete the research and development of these projects by 2011 or 2012, and apply them to various project sites of the company after testing.

### [Roadmap for Eco-friendly, High-Performance Construction Materials]

	~ 2009	2010	2011	2012	2013	2014	2015
New Materials				Latest-technology nano material		Nano composites absorbing electronic waves	
				CO <sub>2</sub> -absorbing new material		Energy Harvester	
	Reactive Powder Concrete			Eco-friendly FRP Composite		High-tension/nano material	
Concrete	Super-strong, low-heat concrete		Highly durable concrete for offshore and nuclear facilities		Lightweight concrete for offshore facilities		
			Low-CO <sub>2</sub> concrete	Resource-recycling concrete		CO <sub>2</sub> -free composite	
Asphalt	Room temperature asphalt		Ultra-thin polymer composite			Sustainable Binder	

# 그린 힐 스테이트 홍보관

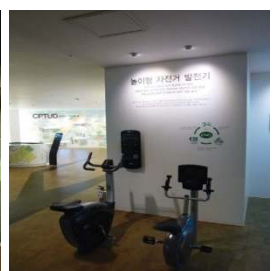
## [Green Life in Green Hill State]

“Green home” is a new buzzword in architectural trends and fashion around the developed world. A green home refers to an environment-friendly living space that is self-sufficient in terms of securing energy (by relying on such natural and recyclable sources of energy as the sunlight, wind power, ground heat, etc.) and minimizes carbon emissions. As a leader of living trends and cultures around the world, HDEC has introduced Hill State ‘green homes.’

The Green Hill State Center is organized around three themes: New and Recyclable Energy, Green Energy, and Smart Energy. The first thing you will notice when you enter the building is the massive tree occupying the center of the lobby. The lush green leaves are littered with tiny light bulbs resembling fireflies. The strong roots extend in three directions to reach the Hall of New and Recyclable Energy, Hall of Green Energy, and Hall of Smart Energy. The lobby itself embodies the vision of Green Hill State, which seeks to emulate the science in nature, in which we can find self-lighting fireflies in most clean environments.

## [Hall of New and Recyclable Energy]

Created to display the living room and the balcony run by energy obtained from such natural sources as the sun, the wind, water, and the earth, the Hall of New and Recyclable Energy shows what a green home would be like, running on the energy from the sunlight, ground heat, water, and so forth. The balcony is installed with the building integrated photovoltaic systems (BIPV). Installed on the window frames or curtain walls, these systems draw in as much sunlight as possible into the household so that it can be converted into the energy to be used. The system also secures visibility of the surroundings and the natural lighting needed for the indoor environment. Move into the cozy-looking living room, and you will see an intelligent lighting system consisting of a few blocks of lighting apparatuses installed on the wall in the back of the sofa. This lighting system saves energy, by fuelling lighting with the sunlight gathered by the BIPV systems. The TEEM (total energy and environmental management system) installed below the TV manages the remaining energy resources, purifies indoor air, and enables you to check the weather outside. The Hall also features a variety of energy-saving options, such as the geothermal system, the system that generates power utilizing the wind currents within the housing building, and the household fuel cell system that generates power and heat using urban gas.





### [Hall of Green Energy]

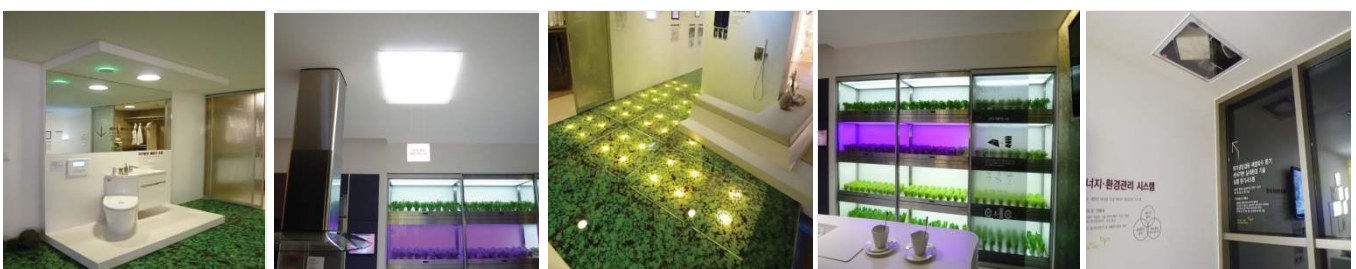
#### Green Lifestyle Incorporating Science and Nature into Daily Living

The Hall of Green Energy consists of a kitchen and a bathroom, complete with high-performance energy-saving ideas and devices. The "nano garden" inside the kitchen allows you to grow your favorite vegetables and herbs without any soil, but using only water and nutrients. The system controls the growth of those plants using LED lighting. The intelligent refrigerator displays environment-related information of the ingredients kept within through its bi-directional monitor. The air-conditioning system maintains a mixture of the most pleasant temperature and humidity levels. The high-efficiency condensed boiler system maximizes energy efficiency by collecting and using heat wasted in ventilation. The high-insulation, vacuum-glass windows also minimize the loss of energy through windows. Another green energy item is the toilet bowl in the bathroom, which recycles water from the sink and the shower. The smart urinalysis device shows you your health conditions every morning. The highly functional bathtub, complete with a small stool inside, allows you to customize your bath style according to your liking. The bathtub also helps you to save water by indicating temperatures and providing better insulation. The sink also fuels a power generator, which generates electricity by using the power of the water moving in and through the sink as it automatically detects. The water supply system also helps you to save sewage treatment costs. The place is full of highly efficient, latest-technology items that will enable you to minimize the loss of water resources.

### [Hall of Smart Energy]

#### Latest Technology Meets Sophisticated Sensibility for Family Safety!

The Hall of Smart Energy features a wide range of smart systems and devices intended to prevent various accidents, crimes and other security risks in advance, including the Crime Prevention through Ubiquitous Design (CPTUD) system unique to Hill State, which is linked to the underground parking lot. In addition to the CPTUD system, eight other items combining latest technology with sophisticated sensibilities are found, including: the HEMS, a unique energy management system of Hill State; the intelligent CCTV control and analysis system, which automatically increases the brightness of lighting to the full when it detects movements; and the HCMS, which provides remote diagnostics and assistance for family vehicles, telling drivers when it is necessary to replace parts and so forth.



# Eco-friendly Transportation

HDEC has developed devices and guidelines to minimize the emissions, noise and dust generated by the transportation of materials needed in construction. It also provides training and education for vehicle drivers on how to save energy, thereby making efforts to ensure eco-friendliness even in the transportation phase of its activities.

## Guideline for Eco-friendly Transportation

As part of the company-wide energy and environmental management system it has launched in order to participate in the worldwide efforts to reduce greenhouse gas emissions, HDEC has developed the guideline for eco-friendly transportation and driving of vehicles used in construction projects. Based on this, HDEC has also developed the Vehicle Management Guideline and distributed it to all its offices and business partners, encouraging all drivers and managers to abide by its terms.

The Vehicle Management Guideline provides information on how to economize driving; conduct self-diagnosis and take emergency measures; inspect vehicles according to national vehicle inspection and repair standard; applicable laws and policies concerning air pollution, water pollution, noise and oscillations; the standard for registering and managing vehicle information within the system; the standard for updating and managing the amounts of fuel consumed necessary to the control of energy consumption and greenhouse gas emissions; the standard for vehicle protection and security; the standard for required driver training programs; and the rules of practice for low-carbon, green growth. HDEC incorporates into its evaluation of business partners how well the terms of this guideline have been complied with. The evaluation, in turn, serves as a basis on which HDEC decides whether to continue to work with those business partners and how much support it would give them.

## Activities

### Emission-Reducing Devices

In accord with the Atmospheric Environment Preservation Act, HDEC conducts regular inspections of all the vehicles it owns in terms of emissions and discharges. In doing so the company also installs devices designed to reduce emissions of harmful substances. As of 2010, HDEC installed emission-reducing devices in all the 2,002 vehicles it either owned or rented,

as well as in the 1,579 pieces of equipment (excluding the 172 pieces of equipment that did not require such a device since they did not have any engines). HDEC also encourages its business partners to install these emission-reducing devices.

### Protecting the Surrounding Environment

In order to minimize likelihood of soil erosion, water pollution, and other such environmental harms caused by the operations of vehicles in and around project sites, HDEC has installed water reservoirs, temporary grit chambers, and wheel washers.

A water reservoir, installed underground to reserve rainwater, serves as a dam during seasons of heavy rainfalls so as to minimize risks of flooding. HDEC construction, electricity, civil engineering, and plant sites in Korea (each with a contract value of 5 billion KRW or more), as well as housing sites (each with a contract value of 100 billion KRW or more) have such water reservoirs. All the project sites overseas (47 in total) are also mandated to have water reservoirs. In installing water reservoirs, harmony with the surrounding environment, ecological spacing and planning, ease or difficulties of maintenance, and the safety of users are all considered. Temporary grit chambers are installed so as to allow wastewater from which pollutants have been removed can flow. Wheel washers are installed so as to minimize the dust kicked off by vehicles.

### Driver Training

HDEC trains vehicle drivers in terms of what to be careful of in driving; how to diagnose their vehicles and take necessary emergency measures; how to maximize the economic value of their driving by maximizing fuel efficiency, and so forth. These training programs are also used to strengthen drivers' commitment to environmental protection and safety.

[Installing a Temporary Grit Chamber]



[Installing an Automatic Tricycle]



# Eco-friendly Construction

HDEC minimizes its impact on the environment during the construction phase by ensuring efficient usage and saving of resources, actively protecting the surrounding ecological systems, and strictly controlling and reducing emissions.

## Using Resources and Materials

### Materials

**Material Management System:** HDEC has adopted the building information modeling (BIM) technology to ensure efficiency in using and managing construction materials. BIM keeps all the information concerning construction in databases, thereby enabling the constructor to calculate the precise amounts and costs of required materials. This helps reduce unnecessary waste of money and materials. BIM also simulates completed building models in 3D, allowing the constructor to predict the construction phase and outcome, thereby more effectively managing the purchase of materials and inventories.

**Recycling Materials:** In order to reduce the amount of materials it uses and the related processing costs, HDEC recycles aggregate. Recycled aggregate consists of recycled concrete, cement and other pieces of aggregate disposed of at other project sites. In 2010, 3% of the total amount of aggregate used were those that had been recycled. HDEC also recommends recycling concrete where applicable. Its Environmental Management Guideline for Purchases of Materials also emphasizes the priority on recycling where applicable.

### Industrial Water

**Usage:** HDEC gathers the water it needs on construction sites from the surface of the earth, from underground, and from ordinary water supply sources. In 2010, a total of 2.442 million tons of water had been consumed. Whereas, in 2009, 81.4t of water was used per every 100 million KRW of revenue generated, only 48t of water was used in 2010, a 41% decrease from the previous year.

2.351 million tons (96.7%) of the total water used came from water supply sources; 11,000t (0.5%), from the surface of the earth; and 70,000t (2.9%), from underground sources. There was no project or site that damaged any of these sources of water. HDEC takes all the necessary care in each project to ensure that water-drawing activities would not damage any of the available sources of water in the local area.

**Water Saving:** HDEC installs de-watering facilities for water from underground sources as well as rainwater-storage systems. These are part of the efforts to save on the cost of water. Similarly, the amount of dust is controlled by using sprinklers instead of dust-controlling water tank vehicles. In such water-deprived regions as the Middle East and Singapore, HDEC operates a separate index of water usage, trying to bring its practice to consume less and less water possible as time goes by.

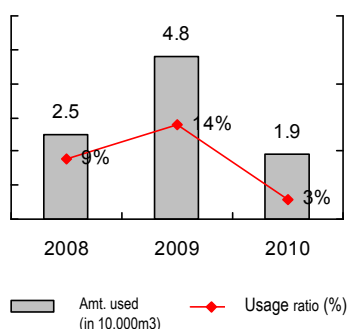
### Energy

**Energy Consumption:** In 2010, HDEC consumed a total of 1,551.67TJ of energy, a 14% increase from 2009. 546.36TJ, or 35.2%, of this energy came from oil, such as gasoline, diesel, and kerosene; 61.62TJ, or 4.0%, from gases such as LNG and LPG; and 35.67TJ, or 2.3%, from lignite. Indirect sources, such as electricity and local heating, represented 58.5% of energy consumed or 908.03TJ in total. The amount of energy consumed grew slightly from 0.027TJ in 2009 per every 100 million KRW of revenue generated, to 0.030TJ per 100 million KRW of revenue in 2010.

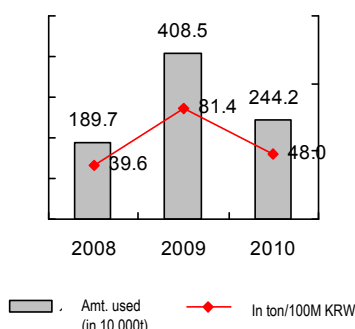
**Energy Saving:** HDEC requires the Energy Saving Plan in the five main areas of construction, machinery and facilities, electric facilities, and new or recyclable energy facilities. It also requires review and approval of the Energy Performance Index, which measures the energy efficiency of insulators, heating devices, wind and lighting devices, and energy facilities running on the sunlight, natural heat, wind, and ground heat. The sunlight power generating facilities, high-efficiency and low-noise converters, lamp skirts for fluorescent light bulbs, and LED lighting are all part of the high-performance energy infrastructure put in practice in many project sites so as to help save energy costs.

For three years from 2008 through 2010, HDEC acquired the 'Eco-Friendly Building Certificates', the 'Building Energy Efficiency Grades', and so forth on 33 project sites in Korea and 10 project sites overseas, thereby saving energy by over 20% in total. As of 2010, the total floor area of project sites with eco-friendly certificates is 904,611m<sup>2</sup>, representing 58% of the total combined project area of 1,559,861m<sup>2</sup>.

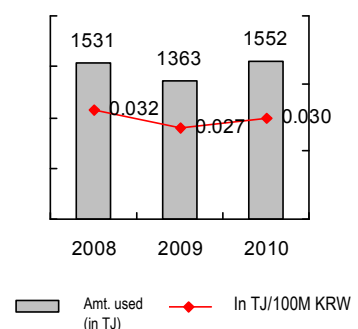
[Using Recycled Aggregate]



[Using Water]



[Using Energy]



## Protecting Project Sites and Ecological Environments

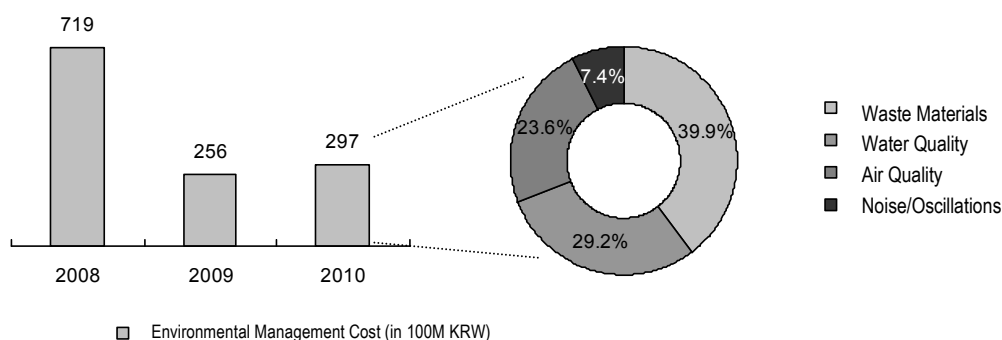
### Compliance with the Law

**Environmental Impact Evaluation:** Pursuant to the Environmental Impact Evaluation Act, HDEC conducts mandatory environmental impact evaluations in advance concerning all projects of urban development, industrial development, road construction, railway and airport construction, and so forth. Even for projects for which such evaluations are not mandatory, the company conducts impact evaluation either beforehand or in the early phase, according to the Guideline on Safety, Public Health and Environmental Management.

**Third-Party Environmental Evaluation:** In 2010, HDEC obtained a total of 507 cases of third-party environmental evaluation. While most of these evaluations focused on the area of air pollution, measuring dust affecting construction sites and local quality of life in urban areas, they showed that the HDEC-related levels of dust decreased by 14% from the previous year, even though noise/oscillations and water pollution increased by 60% and 119%, respectively, in the same period. Since the government's attention to environmental concerns is increasing, HDEC enforces more thorough environmental policies and rules of practice on sites.

**Violations of the Law:** In 2010, no serious incidents of violating these laws occurred, except some that ended up incurring fines. Twelve ended in governmental injunctions for improvement, while seventeen ended in the imposition of fines. With the strengthening of the environmental policy and the increase in the number of civil complaints, these administrative actions are likely to increase in the subsequent years. HDEC therefore must thoroughly check all the applicable laws and enforce compliance with them on sites, including those on operating facilities for controlling dust and noise levels. In addition to compliance with the law, HDEC will also seek to identify the demands and complaints of locals by holding discussion meetings, installing appropriate facilities, and using low-noise equipment and techniques. Internally, the company has already enhanced its environmental review activities and set up an environment taskforce for prevention and dealing with environmental complaints.

### [Environmental Management Cost]



### Environmental Management Cost

In 2010 HDEC spent 29.7 billion KRW on environmental management, a 16.1% increase from the previous year. 7 billion KRW (23.6%) was spent on air quality control; 2.2 billion KRW (7.4%), on controlling noise and oscillations; 8.8 billion KRW (29.2%), on water quality control; 11.9 billion KRW (39.9%), on waste processing. The increase in the cost of controlling air and water quality is especially sharp. HDEC will continue to increase environmental management so as to preserve the ecological systems and diversity in and around project sites.

### Managing Project Sites

**Air Quality:** HDEC has established standards on air pollutant emissions and inhibiting facilities so as to prevent air pollution and ensure the safety and health of all its employees. These standards, to be strictly enforced on all project sites, mandate that the wheels of all vehicles thoroughly washed and vehicles be covered, while the freights be especially covered with dust-controlling covers. They also require that dust is always controlled using dust-controlling water tank vehicles. No activity may go on when the wind speed is over 8m/sec. Dust-controlling walls and tents are to be installed on the outskirts of each project site. Outdoor incineration is strictly forbidden, in an effort to minimize air pollution, dust, and odor. The air quality and dust levels of each project site is measured and updated on the environmental database known as the TMS (Technical Monitoring System), which is also displayed on the electronic boards on site. In 2010, the average PM-10 emissions in Korea was 35.250m3, while the average No2 level was 0.019ppm, the H2S level was 0.004ppm, and no emissions of NOx, SOx, CH4 and SO2 were reported.

**Water Quality:** Water pollution is frequently caused by oil discharged from used equipment, the soil and clay used in construction, the wastewater and sewage discharged from sewage tanks and treatment facilities, and various chemical compounds. Depending on the type of project involved and its site, the specifics of water quality control activities also differ. HDEC installs waste water and sewage treatment facilities in each project site so as to ensure that the legal maximum BOD, COD, and SS levels are not exceeded. If the site is close to the sea or ocean,

the seawater temperatures, pH levels, salinity, SS, COD, T-N, T-P, Zn, and Cu levels are also controlled together. As of 2010, the average waste water pollution level across all the project sites in Korea was BOD 233.20mg/l, COD 17.11mg/l, and SS 227.75mg/l.

HDEC operates a strict standard for the quality of water discharged from sewage and waste water treatment facilities that is based on the applicable laws on sewage, water quality, and aquatic ecological preservation. Different standards of water quality control apply to different types of waste water: living sewage, site discharge, leakage into underground, and other types of waste water. In order to prevent pollution of the surrounding environment by waste water, HDEC also installs temporary water draining structures around each site, as well as grit chamber that is 1m-deep, 2m-wide, and 8m-long for every discharge area of 30,000m<sup>2</sup>. Water pollution controlling nets are also installed during the construction phase, up to half of the depth of the river. The nets are checked daily. After rain stops, whatever objects that are floating on the nets are removed and disposed of. HDEC also enforces other strict measures of controlling oil discharges that are intended to prevent pollution by oil.

**Soil** In order to prevent soil contamination HDEC ensures that the byproducts of construction are not mixed with the surrounding soil, strictly forbidding the maintenance works or oil replacement of the equipment on site. HDEC has also been researching and developing new technologies for the restoration of contaminated soil. Treating contaminated soil is important for increasing the efficiency of land usage and removing harmful risks to the environment. Therefore, it is important to minimize the harm associated with the dredged soil, expand the application of soil washing technology, and isolate pollutants from soil. HDEC obtained New Environmental Technology Certificate 92 by successfully developing a technique that washes contaminated soil by isolating and absorbing pollutants using artificially created strong vortex. Related to this, the company has multiple intellectual property rights on related techniques for soil restoration, including six patents and two utility models.

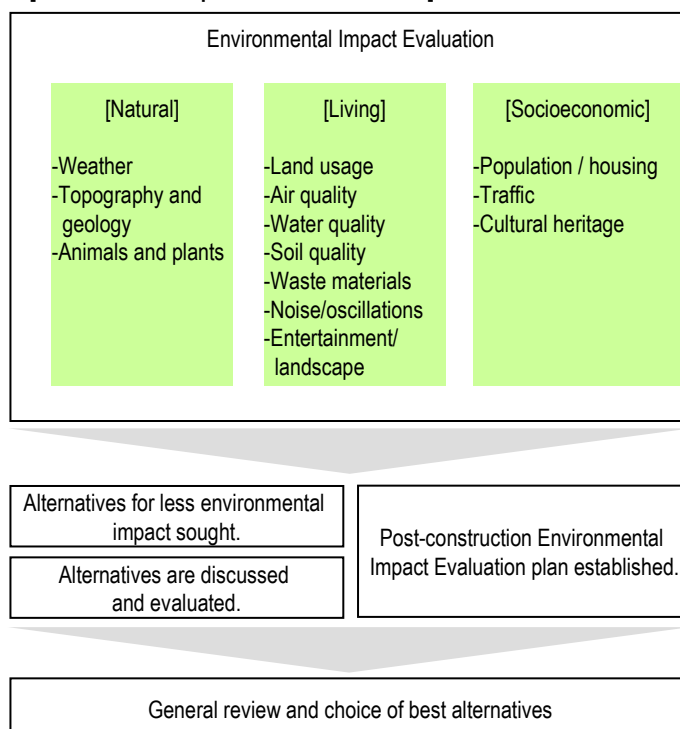
**Noise and Oscillations:** HDEC systematically controls levels of noise and oscillations in all phases of construction. Before construction takes place, the company organizes discussion meetings with the locals, asking for their understanding. The company also conducts predictive tests for possible levels of noise and oscillations in and around the project site. The findings of these investigations are used to develop noise-reducing techniques and measures. Even after construction starts, noise and oscillations are regularly gauged and monitored. Local noise- and oscillation-controlling facilities are installed, low-noise equipment is used, vehicles are driven on and around the site at low speeds. And noise-proof walls are erected around the site so as to minimize inconveniences to the locals.

## Protecting Ecological Environments

**Managing Ecological Diversity:** HDEC recognizes ecological diversity as one of the core factors for effective responses to climate change, sustainable energy, improving the quality of life, and creating green economic growth. The company accordingly enforces rigorous standards and rules so as to protect ecological diversity from damages around its project sites. From the planning phase onward, the company conducts a scientific analysis of its impact on the surrounding ecology and seeks to find designs and techniques that would minimize impact on the topography and the ecological environment. HDEC then conducts environmental impact evaluation so as to find the healthiest and most sustainable alternatives, and thoroughly monitors the surrounding ecology for any possible change even during construction.

**Environmental Impact Evaluation Process:** The evaluation consists of measuring the company's impact on the natural environment, the living environment, and the social and economic environment. The ecological investigation examines how the planned construction and related activities could affect the plants and animals found on land and in water in and around the site. Endangered species observed in these investigations are either transplanted to healthier environments (if they are plants) or given alternative habitats (if they are animals). Designs may be modified and additional protective measures may be taken in response to the need for protecting the ecological habitats of the animals and plans found in these investigations.

### [Environmental Impact Evaluation Process]



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**Protecting On-site Ecological Diversity** The special sites of protection HDEC chose and managed in 2010 due to special marine environmental concerns and the need to protect marine resources were District \_\_\_\_\_. Another site for special marine preservation was District \_\_\_\_\_. Development activities were restrained in District \_\_\_\_\_ due to the concerns with protecting the water supply and green areas. District \_\_\_\_\_ was especially close to the protected ecological area and marsh preserve designated by the Ministry of Environment. Impact on the ecological life in these areas was minimized through active efforts to preserve them against the effects of construction activities. There was no area of the sea or river damaged by the discharge of waste water.

In order to preserve local ecological diversity, HDEC engages in a variety of activities, including the relocation of trees and plants, creating alternative habitats, installing artificial botanical islands, developing nature-like rivers and green areas, and so forth. The company also installs a variety of escape and protection routes for small animals to guide their escape from the affected areas and protect them against pollution and contamination. Alternative designs are also contemplated and adopted at times depending on the nature and type of projects involved, such as relocating the project site, adopting alternative techniques with less oscillations, reducing the size of bridge bases, etc.

**Protecting Endangered Species:** In 2010, endangered species were found in Site \_\_\_\_\_, and so forth. Thorough measures were undertaken to protect their ecological systems.

In 2010, 3 of the species specially named by the Ministry of Environment as requiring legal protection were found within District 6 along the Han River while HDEC was undertaking part of the government-led Four Rivers Revival Project. Along the Namhan River in Yeosu, Gyeonggi-do, the habitats of Cheung Cheung Solomon's seals and Danyang asters, classified as Endangered Species of Class II, were found. HDEC sought to preserve them by relocating their habitats to an alternative site. A total of 89,445 units of Cheung Cheung Solomon's seals, which were growing in an area of 5,963m<sup>2</sup>, were relocated to a site with a similar environment at once. Much of the Danyang aster habitats found en masse on Gangcheon and Samhab Islets were protected by surrounding their habitats with access-limiting ropes. 38,000 units of the plant, however, had to be relocated to an alternative site. The relocated plants were monitored and managed intensively for the first two or three months. Afterward, lower-level monitoring agents were assigned to the new habitats to monitor the number of alive units, flowering and fruitbearing, insemination, and so forth so as to ensure their successful adaptation.

Samhab Islet, within the same District 6 along the Han River, was also home to a large group of *Eremiasargus*. These lizards were rounded up and released in an alternative area with a similar ecological environment. 210 snakes were caught in total using the pitfall traps. Safety nets were installed along the designated areas of preservation. Catching was especially concentrated in the months from June through September since this was the period in which these lizards were most active. Each trapped lizard was immediately released into the protected area. HDEC continues to monitor the adaptation and settlement of these lizards through quantitative measures. From June through August, HDEC will also monitor their mating, egg hatching, and the density of their adult

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## Controlling Waste and Discharged Materials

### H-PMS

**Integrated Data Management:** The Hyundai Project Management System (H-PMS) enables HDEC to collect, integrate and manage the environmental data concerning each project site. Once the quality of air and dust levels in and around a given site are measured using both fixed and mobile meters, the data are transmitted to the data collecting device. The collected data are then sent to personal computers and managed in the environmental database processing system. The system lists all the identified environmental factors of each site and the applicable laws on the environment. HDEC has also developed a system which, based on the H-PMS, enables the user to view environmental data (violations of the law, amounts of waste and discharged materials, complaints raised, environmental goals of each site, etc.).

**Setting and Achieving Targets:** HDEC sets the environmental targets that suit the characteristics of each site and encourages employees and workers to meet these targets. The set targets are updated to the H-PMS, enabling the company to check their progress on a regular basis. Every site is required to measure environmental indicators in terms of rates of recycling waste materials, levels of fine dust and noise, rates of isolating and discharging waste materials, and so forth. On-site employees are trained regularly throughout the year to maintain their commitment to environmental management.

### Controlling Waste Materials

**Guideline for Controlling:** In order to ensure safe and efficient disposal of various materials and a pleasant environment for the workers and the locals, HDEC has developed the Guideline on Controlling Waste Materials that seeks to minimize the amounts of waste generated and increase their recycling. The guideline requires that each type of waste materials separated from one another and be handled and disposed of as part of the established work process system applicable to all sites and related offices. Each site is also required to set their own targets to meet concerning the reduction of the amounts of waste generated. The Guideline for Managing Contractors and the Guideline for Evaluating Business Partners also encourage business partners to minimize and recycle amounts of waste they generate. HDEC collects data on the amount of waste generated each year at each site and reports the information annually to the Ministry of Environment.

**Waste Materials:** HDEC collects data on the amounts and types of waste construction materials each year in the form of a database. The waste is usually generated during the process of disassembling and removing existing structures. In 2010, a total of 460,022 tons of waste materials were generated, a 68% decrease from the previous year. The year 2009 saw an extraordinary increase in the amount of waste because the urban reconstruction projects that are part of the government's policy were commenced in that year.

**Disposing of Waste Materials:** In 2010, 401,343 tons or 97% of the total amount of waste materials were disposed of by contracted third-parties. Only 3%, or 10,513 tons, were processed internally. Much of the internally disposed waste materials were found in the areas of civil engineering and nuclear projects. Recycling through internal disposal of waste materials was especially noted on such sites as District 1 along the Gyeong-in Ara Boat Route; Seongdeok Multipurpose Dam; the road circling downtown Gyeongju, and so forth. While HDEC can certainly do better to increase the rate of internal disposal and recycling, there are many legal restrictions on internal treatment of waste materials at the moment. In order to facilitate disposal by third-party contractors, HDEC requires that different types of materials be disposed of differently, according to their recyclability, availability for incineration, mixed contents, etc.

Each type of waste materials is disposed of according to applicable laws, with priorities assigned to the ways in which environmental impact can be minimized. Metallic and steel materials are collected by recycling-specialized contractors. Mixed waste materials are also collected in entirety by contractors. Asbestos, in particular, is measured, removed and disposed of by specialized business partners. Living waste that cannot be recycled is disposed of in the legally mandated garbage bags. To reduce food waste, the number of food consumers on site is always accurately identified and maintained and the waste is handled by specialized contractors. Waste oil cannot be discharged or replaced on site, except in specially designated zones. This helps to keep in check the increase in the amount of waste oil generated. There are special repair service providers who can inspect and operate waste oil storage facilities. The waste oil is handled and disposed of by specialized contractors. Human waste is handled by temporary toilet booths and legally permitted sewage tanks, and its disposal is commissioned to contractors pursuant to the municipal waste disposal regime in each local community.

Employees and workers are continually trained and educated on how to separate, dispose of, and recycle waste materials generated during the construction phase. This training is necessary to prevent secondary environmental pollution.

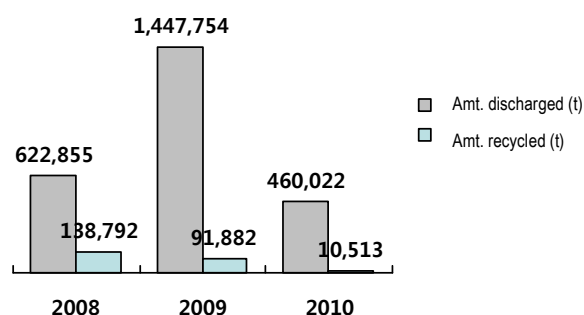
**Recycling Waste Materials:** In order to encourage increased recycling of waste materials, HDEC requires that each site set up its own recycling targets and ways to achieve those targets. Major efforts in this area include installing waste material collection facilities, separating waste materials that are to be incinerated, recycled and buried, controlling and analyzing the amount of waste material generated by each project, having contractors collect packaging materials, reporting illicit disposal of the materials to the authorities, selecting legally permitted waste collecting contractors. In 2010, 10,513 tons or 2.3% of total waste materials were recycled.

**Reducing Waste Materials:** In order to minimize the amount of waste materials generated, HDEC enforces waste material handling and recycling targets for each project site. If two or more materials are of the same quality, those that are recyclable are given preferences in purchases. Some waste materials that are recyclable are actively entrusted to specialized recycling contractors. HDEC employees and employees of business partners are regularly trained and updated on how to reduce and control the amounts of waste materials, by learning the rules of disposing of waste materials and the major guideline on waste reduction.

### Controlling Wastewater

**Guideline for Controlling Wastewater:** Water pollution and other accidents may occur on any project site due to unexpected heavy rainfalls and malfunctions in wastewater or sewage treating facilities. HDEC therefore seeks to minimize these risks by reducing the amounts of wastewater generated in the first place. Once generated, wastewater is handled and disposed of in legally permitted ways only so as to minimize damages to the surrounding environment. Results of wastewater treatment are recorded in the log. Temporary drainages, anti-pollution walls, and grit chambers are installed so as to prevent water pollution by wastewater or sewage. Oil controlling facilities are also strictly monitored in case of any unwanted leakage or discharge of waste oil.

[Amounts of Wastewater Generated and Recycled]



Special wastewater and sewage treatment facilities are always in operation in order to keep the BOD, COD and SS levels below their legal maximums. For project sites near the sea or ocean, the seawater temperatures, pH levels, salinity, COD and SS levels are also kept in check.

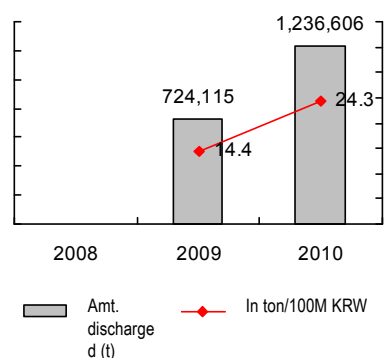
**Disposing of Wastewater:** Wastewater in construction projects are generated in the curing tanks in research labs, soil blockade works, grounding works, tunnel works, batch plants, and so forth. In most cases the wastewater generated in these areas exceeds the legally stipulated pH, COD, SS, and normal nucleic acid levels and therefore requires treatment before being discharged. Wastewater from the curing tanks in research labs is either entrusted to specialized contractors or internally neutralized and recycled as sprinkling water in quantities less than 100L per day. Wastewater from soil blockade and grounding works undergoes the slime-collecting drainage pipes and sediment tanks to be dried before being entrusted to contractors. Wastewater from tunnel and batch plant works is treated in special facilities before being recycled or discharged. In 2010, all the HDEC project sites in Korea produced a combined total of 1,236,606 tons of wastewater, a 71% increase from 2009's 724,115 tons.

Sewage, from the temporary toilet booths, cafeterias, shower rooms, etc. that are installed on construction sites, is given appropriate treatment before being discharged, pursuant to the municipal sewage handling policy of each local community. HDEC installs sewage treatment facilities that process 50m<sup>3</sup> or less per day each. These facilities are monitored daily and the quality of sewage is also monitored daily.

In order to prevent contamination by the sand, clay or oil used in construction through the accidental discharge of precipitation or underground water, HDEC also installs temporary drainage pipes, water blockades, grit chambers and designated waste material storage facilities, as well as oil absorbents, emulsifiers, oil fences, etc.

[Wastewater Discharge Record]

→2008 data updated.



## Greenhouse Gas Emissions Control

### Greenhouse Gas Inventory System

HDEC completed the construction of its Greenhouse Inventory in 2010. Since 2006 the company has been managing its greenhouse gas emissions on a computer system. The emissions are categorized into Scope 1, Scope 2, or Scope 3, and each headquarters collects and manages data on the amounts of greenhouse gas emissions. The relevant data are updated throughout the day by project site on both the H-PMS and the Greenhouse Gas Inventory System. These disparate data are then combined and integrated within the system to create information on monthly and yearly trends, which is then shared among all employees through the HDEC intranet. The completion of the inventory system enables HDEC to monitor greenhouse gas emissions from all project sites on a real-time basis, and to take proactive response to the industry-wide movement to reduce greenhouse gas emissions.

**Calculating CO<sub>2</sub> Emissions:** Amounts of CO<sub>2</sub> emissions are calculated by combining the amounts of energy used in all project sites. Energy consumed includes energy from diesel, kerosene, gasoline, LPG, and LNG, but does not include the amounts of energy consumed by business partners. The amounts of energy consumed are updated on the Enterprise Resource Planning (ERP) system and converted into monetary terms based on the average energy cost per year (2008, 2009, 2010) as determined by the Energy Corporation. The calories and carbon-emission coefficient by energy source are calculated by applying the IPCC standard.

**Direct Greenhouse Gas Emissions:** Scope 1 and Scope 2 are categories of direct greenhouse gas emissions. These have been measured in terms of the amounts of oil and gas used in each project site, pursuant to the standard and equation provided by the IPCC Guideline and GHG Protocol. Currently only the data on domestic project sites are available. In 2010, HDEC produced direct greenhouse gas emissions of 79,856tCO<sub>2</sub>-e, a 17% increase from 2009's 68,256tCO<sub>2</sub>-e. These numbers have been calculated on the basis of actually collected data on domestic project sites.

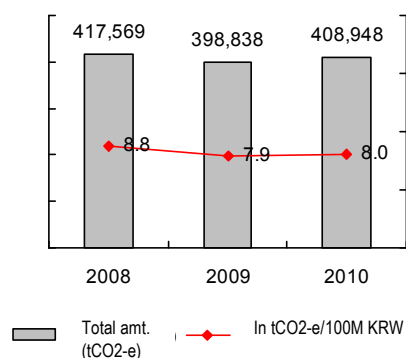
**Indirect Greenhouse Gas Emissions:** Scope 3, which includes indirect greenhouse gas emissions, is calculated on the basis of the data on electricity and heating energy purchased from outside parties by each project site. The same IPCC Guideline and GHG Protocol were followed in calculating these emissions. Again, available are only the data on domestic project sites. In 2010, HDEC produced indirect greenhouse gas emissions of 329,092tCO<sub>2</sub>e, a slight decrease from 2009's 330,582tCO<sub>2</sub>-e. These numbers have been calculated on the basis of actually collected data on domestic project sites.

**Greenhouse Gas Emissions Reduction:** HDEC seeks to reduce its greenhouse gas emissions by calculating the amounts of emissions in the construction phase based on the LCA evaluation, and reflecting the results in its designs and material purchases.

Of the buildings HDEC completed in 2010, 79 projects (70 in Korea and 9 overseas) in total acquired eco-friendly certifications, including the Eco-friendliness Certificate, Energy-saving Efficiency Certificate, LEED, etc. These results reflect HDEC's constant efforts to reduce greenhouse gas emissions through sunlight energy, wind energy, LED lighting, blocking loss of electricity in the atmosphere, and so forth. These efforts will help residents and users of the buildings reduce greenhouse gas emissions by up to 8,622tCO<sub>2</sub> per year.

HDEC has also established a company-wide telephone conference system so as to save the trip and energy costs associated with employees' business trips. These efforts also help to reduce greenhouse gas emissions by reducing the energy cost associated with business trips between the Seoul headquarters, project sites throughout Korea, and the Yongin research center.

[CO<sub>2</sub> Emissions Record]



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## Eco-friendly Building Maintenance

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HDEC ensures eco-friendly operation and maintenance of all its buildings even after their completion, by ensuring optimal usage of energy and other resources required by them.

### Resource Cycling Buildings

#### BEMS (Building Energy Management System)

BEMS represent a new phase in today's technology for realizing most efficient, optimal ways of using energy. In order to realize its vision of low-carbon cities and zero-energy buildings, HDEC has developed distinct energy management systems that set it apart from other construction companies. Following the completion of development of the energy information system for households in 2009, HDEC succeeded in developing the energy management system for households in 2010. The new system maintains optimal operation of energy-consuming facilities throughout the household, minimizing energy consumption and providing information on energy consumption and indoor and outdoor conditions, and is expected to help households save up to 10% in energy usage. In addition to the new system, HDEC is also currently researching energy management systems for the entire housing unit and the city. It will continue to invest in active research and development of vital energy management systems and other energy-saving technologies.

#### Saving Energy

HDEC seeks to optimize the amounts of energy and resources consumed in the course of maintaining and operating buildings after their completion. Hill State III by the Bukhan Mountain has been named by the City of Seoul as Green Village I, i.e., an exemplar of the low-carbon, green city that Seoul aspires to become. The fuel cell, adopted here for the first time in Korea, provides heating by utilizing the electricity and heat generated in creating water from the oxygen in the air and the hydrogen in the gas. This will help an apartment of 165m<sup>2</sup> in area save up to 1.03 million KRW in energy cost.

HDEC is also active in introducing new and recyclable energy techniques in realizing its dream of zero-carbon housing and buildings. Hill State in Banpo is installed with the sunlight modules on rooftops so as to produce eco-friendly, low-cost electricity supplied to common facilities and households. Each household produces 297kWh or more of energy per day, which provides for at least 106,920 kWh of total amounts of energy used throughout the year. The two small wind power generators generate 5.6kWh of energy per day, which is then used to light the street lamps and landscaping works within the Hill State site, helping to save up to 2000kWh in the amount of energy used each year to maintain these common facilities.

### Recycling Water Resources

Water is not an infinite resource, and the shortages of water are emerging as urgent issues in many parts of the world. HDEC supplies all its housing units with water-saving features, such as water-saving toilets and other devices. The company also installs water gauges in all households, leading residents to save water on their own. HDEC also makes maximum use of the wastewater reuse systems and rainwater systems on all project sites, and seeks to promote optimization in water consumption patterns by building new facilities that would provide eco-friendly refinement of river water, seawater, and underground water.

### Eco-friendly Building Maintenance

From the planning phase onward, HDEC aims at minimizing the cost of maintenance for its building. It develops manuals and other documents necessary for efficient maintenance, while maximizing variability and flexibility in the design and plan in case of change in the client's demand. HDEC plans healthy housing units incorporating highly functional materials and preventive technologies. Its building plans always incorporate concerns for the environment and accompanies thorough pre- and post-construction environmental monitoring.

### Post-Construction Environmental Impact Evaluation

In order to compare the findings of the pre-construction impact evaluation and the actual conditions of operating and maintaining completed buildings, and to determine whether cost-saving options adopted pre-construction are indeed appropriate, HDEC conducts post-construction environmental impact evaluations, systematically assessing anticipated changes in the topography and geology, animal and plant groups, air and water quality, soil, waste generation, noise and oscillations, etc. the company regularly investigates what environmental impact its facilities have on the surrounding environment and uses the gathered data to prepare immediate responses to unanticipated changes or accidents. While the law requires that the constructor engage in such investigations for three years post-construction, HDEC ensures that its buildings be provided with such evaluations for a long time into the future.

## ♣ Saving Operation and Maintenance Costs by Adopting Green Items

The amounts of greenhouse gas emissions and energy consumed in the course of using a building represent over 30% of the overall amounts of greenhouse gas emissions and energy consumed. It is therefore of paramount importance to reduce greenhouse gas emissions while using the building.

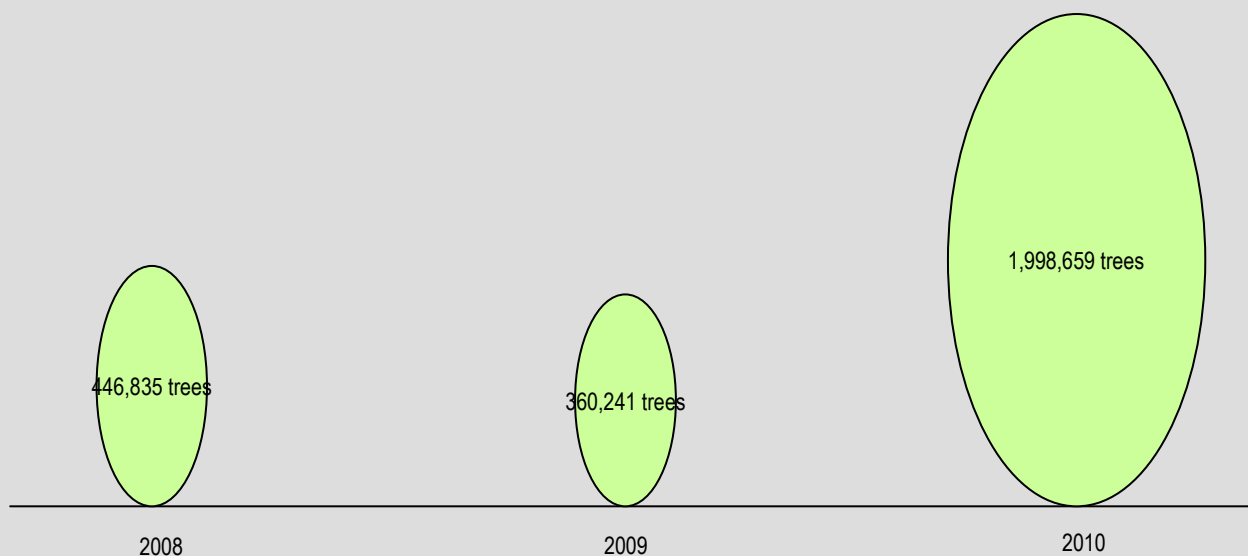
As of 2010, 79 of all buildings completed by HDEC (70 at home and 9 abroad) received certifications of their eco-friendliness, such as the Eco-friendly Certificate, Energy Efficiency Grade Certificate, LEED, and so forth. The list of green items applied to these projects include the high-reflection light-distributing panels, LED lighting for each household, street lamps run on energy from the sunlight/wind/LED, sunlight –based power generation, systems preventing losses of energy in the atmosphere, and the LED lighting systems for intelligent parking lots.

In 2010, these green items were incorporated into a total of 13,657 households so as to help them save energy and reduce greenhouse gas emissions. The effect is roughly equivalent to the generation of 13,093,937 kWh of extra energy, 20.95 million KRW saved per year in terms of energy cost, and an annual reduction of CO2 emissions by 5,551,829kg. This last number corresponds to the effect of planting anew 1,998,659 young pine trees.

### [ Energy Saved and CO2 Emissions Reduced by Green Items]

Year	# of Households	Effects of Applying Green Items		
		Yearly Energy Generation (kWh)	Yearly Energy Cost Saved (100M KRW)	Yearly CO2 Reduction (kg)
2008	7,742	2,927,378	468	1,241,208
2009	2,796	2,360,070	378	1,000,670
2010	13,657	13,093,937	2,095	5,551,829
(Total)	24,195	18,381,385	2,941	7,793,707

### [ CO2 Reduction Corresponding in Effect to Planting New Pine Trees]



※ The 'Carbon Neutralization Standard' provided by the Korea Forest Research Institute states that the repeated emission of 1 ton of carbon dioxides each year can be neutralized in effect only by planting 360 young pine trees over an area of 1,200m<sup>2</sup> or larger, which is roughly the size of three basketball courts combined.

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## Eco-friendly Removal

HDEC operates management systems and rules so as to minimize the environmental impact and amounts of waste generated in the course of removing existing buildings and facilities. It also actively encourages recycling of waste materials.

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### Rules of Eco-friendly Removal

#### Guideline on Safety Standard for Removal Works

HDEC's Guideline on Safety Standard for Removal Works require that environmental impact and risks be minimized in the course of disassembling and removing existing buildings and facilities. The guideline has been developed in accord with the industrial safety standard. Each project site of HDEC strictly adheres to the terms the guideline provides for the prevention of environmental impact and risks in operating disassembling machinery and tools and for safe operations of removal work schedules.

#### Guideline on the Disposal of Removed Facilities

Given the nature of construction industry, large quantities of waste materials are generated in the phases of construction and disassembling/removal. HDEC insists on eco-friendly handling and disposal of removed facilities and structures as an important principle, and requires that each project site adhere strictly to the company's guideline and standard for the separation and storage, construction, and handling of facilities and structures before and after their removal. The company also makes great efforts to develop a new technique to minimize the amounts of waste generated, increase its recycling, and handle and dispose of them in eco-friendly ways.

#### Guideline on Handling Hazardous Substances

Asbestos is a favored material in construction because of its resistance to fire. Large quantities of asbestos are therefore found in dismantling and removing outdated buildings incorporating slates. HDEC seeks to ensure safety in removing these asbestos-containing construction materials so as to avoid health and environmental risks associated with the substance and help protect the surrounding environment against possible harms.

The company consults an external specialist agency for measuring asbestos contents. In cases where the content is 1% or more, the company entrusts a specialist contractor for the removal and disposal of asbestos-containing materials and facilities. Pursuant to the Waste Material Control Act and Section 237 of the Industrial Safety and Health Act, HDEC has developed systematic plans for removing asbestos and for protecting the health and safety of employees and workers, while ensuring minimization of dust and noise levels and providing for other safety measures. These plans must be approved by the Ministry of Labor before each scheduled work can proceed. Each slate containing asbestos is removed from the building in whole, sealed in double layers, marked with asbestos labels, and relocated to safe places. All the machinery and tools used in the removal process are cleaned using vacuum cleaners. Since surrounding objects may still contain asbestos, the company ensures that the surrounding environment stay moist and any reported residues of asbestos be handled according to law.

### Removal Process

If an external specialist contractor is involved in removal, HDEC selects a contractor with proven records of eco-friendly performances. Each selected contractor must adopt advanced techniques and latest-technology tools and machinery so as to minimize environmental risks and engage in their tasks without causing much pollution, dust, or noise to the surrounding environment. The contractor is to engage in pre-removal investigation concerning possible complaints and risks, make its best efforts to reduce waste of resources and environmental impact, and assign utmost priority to the safety of workers and structures. Pre-removal investigations are necessary to establish strategies for correction and improvement in case of any problems or complaints that could arise in the course of removal (including the determination of whether asbestos is found). Waste materials are classified by their type so as to minimize their amounts.

### Managing Waste from Removal

HDEC requires that all the waste materials generated during construction be separated by their type and recycled where applicable. It also seeks to prevent secondary contamination by providing regular training for employees. Waste materials can be processed and disposed of in four main ways. In the first phase, contractors collect entire amounts of packaging materials, waste oil and waste lubricant found on site. In the second phase, some waste materials are stored away in the intermediary storage. In the third phase, trash or garbage cans are installed in the on-site offices and cafeterias so as to divide between combustible and incombustible waste materials. In the final phase, contractors are called in to collect and dispose of waste materials, and pulverize incombustible bulky materials where necessary. Environmental management supervisors that regularly inspect project sites to determine whether waste materials are processed according to given guidelines.

# Green Campaign

Eco-friendliness is no longer a special trait or goal of only certain companies. "Green" and "eco-friendliness" are values that any and all companies must pursue if they are to maintain consumers' trust in and respect for them. Since the COP15 Meeting held in Copenhagen, Denmark, at the end of 2009, advanced countries around the world like the United States, France and Japan are eagerly adopting new measures to reduce carbon emissions that are the major cause of global warming and climate change. South Korea is also duty-bound to reduce its greenhouse gas emissions by 5% by 2020, compared to its record from 2005. HDEC wholly agrees with the rising worldwide concern for the environment, and seeks to incorporate those concerns and ideas into planning for its Green Campaign.

## ■ Aims:

HDEC has come to plan its Green Campaign, first, in order to awaken the public to the greater environmental issues such as global warming, and second, to fulfill part of its responsibility as a corporate citizen of the world by participating more actively in green management. This is because HDEC realizes that it cannot be an exception to the worldwide trend for greater efforts for environmental preservation, for which transnational and governmental efforts are being organized and consolidated.

## ■ Blog

HDEC has launched a new blog on its group ware, on which employees can voluntarily record the amounts of carbon emissions they helped to reduce on every Monday, which is called the "Green Day" at the company. This enables the employees to check what green activities they did throughout the week and allows them to see what significant environmental benefits their individual efforts can produce when combined company-wide.

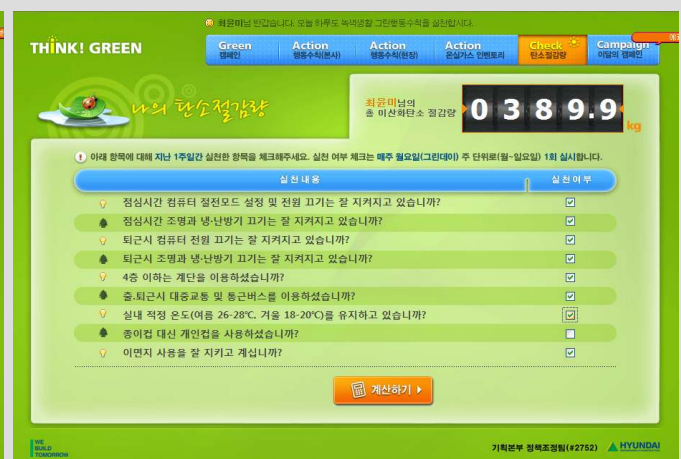
## ■ Plan:

Green management is a popular buzzword in today's international business community. HDEC recognizes as a key factor for its continued and sustainable growth in the future, and has actively encouraged all its divisions and offices to research new business items corresponding to green movements. The Green Campaign is a ground to lead these green company-wide efforts and is intended to inspire all employees and Board members about the possibilities and promise of green management.

In the first phase of the campaign, employees record their carbon-reducing activities on their own on the company's blog. In the second phase, the campaign will be extended beyond the individual level, to reach all project sites. As part of the preparations for the second phase, the company also launched its Greenhouse Gas Inventory System in 2010, which converts the amounts of electricity, heating, air-conditioning, and oil used by all the activities of the company into carbon footprint. The new system helps HDEC to discover what alternatives and measures it can adopt to reduce carbon emissions in the future. In the third phase of the campaign, HDEC will seek to establish the green activities aimed at reducing carbon emissions not only with employees and business partners, but with customers resident in its Hill State apartment complexes.

The Green Campaign, which started from such small steps as using personal mugs instead of paper cups for coffee, has now established itself as part of HDEC's eco-friendly organizational culture. It will continue to pave the ground for HDEC to lead the global green movements among its business partners and customers.

## [Green Campaign Blog]



## Our Management Approach

### Principles & Policy

In an effort to cultivate talented global leaders who will help create new values for the future and set the trends for change, HDEC operates a variety programs of communication and sharing of the common ethos of the company. The company also ensures that its construction employees and leaders maintain their top-tier reputation and capacity and contribute to the sustainable quality and thorough management of all HDEC products and services. HDEC, which ensures consumers' trust by operating quality assurance systems and complying with international standards on safety, public health and the environment, also ensures customer satisfaction by organizing company-wide efforts for customer management. By realizing mutual growth with business partners and continuous quality improvement and innovation, HDEC also fulfills its social responsibilities.

### Key Issues & Activities

### Roles & Responsibilities

Employees creating new values	Discovering and cultivating new talents Systematic support	Management Assistance HQ (Office of HR): provides personnel policy and training programs for all employees and Board members.
Culture of communication	Trustworthy labor-management relations Enlarging channels of communication	Labor Union: works to improve working conditions and expand employee participation. Office of HR: diversifies and enlarges channels of communication.
Mutual growth with business partners	Creating a model for mutual growth Support and assistance for business partners	Management Assistance HQ (Offices of Purchasing and Outsourcing): reviews, evaluates and decides on the support for business partners.
Quality Assurance	Innovation in quality assurance	Field Assistance HQ: quality assurance in design, construction, etc. Housing HQ: makes continuous efforts for quality improvement.
Safety Management	Enhancing safety	(Office of HSE Innovation): safe environmental management.
CSR Programs	Strategic CSR programs and activities	CSR: develops strategic CSR roadmaps and operates volunteer activities.
Customer Satisfaction		Management HQ (Office of Management Planning): establishes the CSRM system. Housing HQ: ensures customer satisfaction with Hill State.

### Key Performance Data

Area	Item	2008	2009	2010	Remarks
Employees and Board members	Current number of employees	7272	7429	7210	
	Avg. amount of training	131.0 hrs	195.2 hrs	264.5 hrs	
Safety	Accident rate	0.12	0.16	0.11	
Business Partners	Business partners' satisfaction survey	-	79.0 points	-	
CSR	Employees' participation	3,972 hrs	5,860 hrs		
	Cumulative # of participants	1,589	2,254	3990	
Customers	Customer satisfaction survey	71	73	80	

# Creating New Values through Employees

HDEC seeks to discover and cultivate passionate, creative, world-class talents and leaders who will help expand the company's potential for future growth.

## Human Resources

### Ideal Employees:

HDEC seeks to lead the way for knowledge-centered management that achieves globalization for the sake of humanity, society, and the future. One of our most important tasks is to discover and recruit potential talents and help them grow into major talents to help lead the company and the industry. The types of talents valued at HDEC are creative, passionate, global-minded persons who are capable of handling their jobs with strong drives and forming cooperative networks with those they work with. By discovering and helping these talents HDEC seeks to entrench its position as a leader of the worldwide construction market.

### Employees and Board Members:

HDEC currently employs a total of 6,408 employees and Board members in all the offices and project sites combined both at home and abroad. (This includes part-time, contract workers as well.) of the 6,408 employees, 228 are women. Construction industry has long been known for the dearth of women working in the field. Yet women represent 6.63% of those working at the managerial or higher levels within the company organization. The number is higher than the overall proportion of women working at the company.

**Recruiting Talents:** HDEC operates internship programs as part of its efforts to discover and recruit talents early. In the early half of 2010 the company employed 400 interns in total, including 269 fresh out of colleges and universities. Internships provide valuable sources of income and experience for young adults who are struggling with the current unemployment rate and economic recession. They are also great occasions for discovering great talents at an early stage.

Those who have scored well in the internship evaluations will be employed as new full-time employees early in 2011. The rewards system at HDEC is differentiated only by position and working conditions and does not discriminate against women.

**Diversity and Equality:** HDEC provides an equal and fair opportunity for employment to anyone regardless of race, ethnicity, and gender. HDEC also prefers engineers found in local societies overseas in conducting its overseas projects for the purpose of maintaining good ties and relations with the local business partners and clients. HDEC has enlarged opportunities for locals to be employed overseas, and ensures the protection of their rights. It now employs 1,413 locals overseas. There are also 8 employees with disabilities, 53 veterans, and 47 foreign workers working at HDEC now. These 108 persons represent the company's commitment to diversity and equality.

### Human Resources Development

**System:** HDEC seeks to cultivate and develop human resources who will lead the future and create new values worldwide. The company encourages a culture of continuous learning throughout its organization, providing constant training and chances for learning on the basis of its education infrastructure which manages information and knowledge efficiently. In 2010, the company ran a total of 1,527 training programs, with focus on the four areas of 'developing core talents,' 'developing leadership capacities,' 'common capacities,' and 'job-related capacities.' HDEC's human resources development system encompasses capacity-enhancing programs for the newly employed as well as the retirement support programs for those who are about to retire.

HR Development Programs	Common Capacities	<ul style="list-style-type: none"> <li>• Sharing corporate values and culture of HDEC.</li> <li>• Strengthening ethical commitments, dedication to customers, innovation-orientation, and sustainable management.</li> <li>• "Be a Partner" and work innovation performance enhancing programs available for various positions and ranks.</li> </ul>
	Leadership Capacities	<ul style="list-style-type: none"> <li>• Enhances capacities required of each position or rank.</li> <li>• Leadership programs for mid-level managers, supervisors and Board members.</li> </ul>
	Job-Related Capacities	<ul style="list-style-type: none"> <li>• Professional management and job-exchange capacities enhanced.</li> <li>• Different contents by position/rank: EP, process management, quality assurance, VE, CM, PM, etc.</li> </ul>
	Global Capacities	<ul style="list-style-type: none"> <li>• Intended to enhance capacities of employees working overseas or just returned from overseas.</li> <li>• Language programs, online classes, English camps, language proficiency tests.</li> </ul>
	Core Professional Capacities	<ul style="list-style-type: none"> <li>• For acquiring professional certificates/qualifications.</li> <li>• Professional training in the areas of new growth / construction management.</li> <li>• Dispatch overseas for studying and learning.</li> </ul>

**Programs:** HDEC systematically supports capacity and skills development of all employees by providing customized training programs for different positions and ranks. Employees can learn a variety of subjects in specialized self-development programs as well as professional capacity enhancement training. The higher up the employee moves within the organization (from clerk, to deputy manager, to manager, to section chief, to department chief, and finally to the Board), the greater the depth and intensity of the training programs he can undertake and the greater the support for gaining relevant professional qualifications for technical, assistant, or sales positions. HDEC encourages employees to acquire qualifications in specialized skills so as to enhance their professionalism. In addition, the company also engages its employees in a variety of programs intended to share company values, enhance leadership and construction-related techniques, global communication, online classes, and self-development.

#### Fair Evaluation

HDEC operates a rational, fair performance standard for the evaluation of its 7,500 employees and Board members. Strategic performance evaluation systems provide fair rewards and remunerations. All employees are included first in the department performance evaluation, and then in individual performance evaluation, before receiving due rewards. HDEC encourages employees to improve their performances on their own, and provides various incentives to encourage innovations, great ideas and suggestions, and acquiring professional qualifications.

**In-company College:** HDEC seeks to develop global-standard human resources by providing them with college-level courses in affiliation with universities. The in-company "graduate school" helps employees enhance their professional skills and engage in self-development by offering classes in value engineering, construction information, risk management, personnel and organizational management. The courses on expertise development enable participants to study new techniques in construction. The Techno Academy launched in 2010 produced a total of 99 graduates as of the end of 2010.

#### Welfare & Fringe Benefits

HDEC seeks to provide guarantees for improving quality of life for all its employees and offers various welfare and fringe benefits designed on the basis of thorough analysis of employees' needs and feedbacks. The company provides welfare funding for individual employees to help with their medical care or learning, and offers common facilities for cultural and other recreational activities. It also provides support for employees to take sufficient rest before returning from abroad to their posts at home. In order to encourage employees to focus on their families, the company is currently researching various forms of maternity and family support.

In 2010, 7 employees applied for leave of absence for childcare reasons. There were five employees who returned to their posts after their childcare leave of absence and have worked for more than a year.

**Foreign Workers:** HDEC actively benchmarks other global companies in adopting various multicultural elements and benefits in its treatment of workers who have relocated from overseas. In order to help them settle and adjust better to Korean society, the company provides living arrangements and other conveniences in their work environments. The company provides dormitories free of charge and other general conditions of living for foreign workers. It also makes the groupware and other means of company-wide communication available in English so that these workers know the company's principles and policies. Special events are occasionally organized for foreign employees, to help them experience Korean culture in greater depth and focus better on their work by having their needs and wants taken care of.

**Healthcare:** HDEC tracks health and safety associated risk factors in the jobs and working environments of its employees so as to ensure a safe work environment for them at all times. The company also provides emergency measures for employees. Health and hygiene training are provided and on-site facilities are inspected during the TBM, while the corporate headquarters operates a nursing room to help ensure health and safety of employees. The company also provides medical examinations for employees and their family members on a regular basis.

Type of Benefit	Description
Funding Support	Funding for personal and public events (condolences or congratulations)
	Financial aid and scholarship for learning
	Fringe benefits
	Loans from the Saemaeul Mutual Savings.
	Loans from the In-company Welfare Fund.
Travel Expenses	For return trip homeward after fulfilling service overseas.
Commute Support	30 commute buses in operation.
Childcare Support	Leave of absence (including spousal support)
Healthcare	All employees given workers' comp insurances
	Uniforms provided.
Other	Support for 11 in-company clubs and associations.
	Self-development, cellular phones for on-site workers.

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## Culture of Communication

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HDEC is innovating its corporate culture and, enhancing relations of mutual trust, and expanding the ethos of independence and harmony by strengthening its online and offline channels of communication.

### Enhancing Communication

#### Labor-Management Relations: Mutual Trust

Employees at HDEC are free to join or withdraw from labor unions. As of the end of 2010, of the 2,184 eligible employees, 533 (24%) had joined the union. In 2010, the union gathered together 87 times in total, to organize discussions, collective bargaining, helping out the poor, raising fund for charity from employees and Board members, and so forth.

**A Corporate Culture Based on Employees:** HDEC has officially endorsed the OECD Guideline for Multinational Corporations and the International Sullivan Principle. The company also seeks to fulfill its social responsibility and respect its employees by adhering to the ILO Tripartite Agreement and the UN Declaration of Human Rights. Pursuant to the Basic Labor Act, the company has strictly forbidden forced migration and labor of its employees; consults employees in question before deciding matters of their dismissal; and notifies employees in advance regarding important changes in the organization.

**Handling Complaints and Suggestions:** HDEC operates the Committee on Handling Employee Difficulties in order to receive and process complaints and suggestions from all employees and Board members. The "Hotline" enables employees to express their suggestions and opinions freely. All cases received via e-mail, fax, and telephone are reported to the Office of Ombudsmen, where they are processed accordingly.

HDEC operates an online reporting system for reporting internal corruption and unfairness. The system protects the anonymity and identity of reporters. The Office of Ombudsmen seeks to resolve various complaints and difficulties raised by employees and balance interests at stake.

#### Channels of Communication:

**Mentoring Introduced:** HDEC has introduced and now actively uses its mentoring system to provide greater support for employees' capacity enhancement and self-development. Mentors who are often senior-level employees provide help and suggestions, while mentees who are often junior-level employees use those advices to set their own work- and career-related goals.

**The Junior Board:** A rich source of innovative ideas and suggestions for the future of HDEC, the Junior Board has rapidly grown into a team that is leading greater exchange and innovation among HDEC employees. 54 members of the Board visit 26 countries in over the span of two months for the Junior Board Global Research Project, exploring new and potential markets and advising the Board of Directors and management on new sources of growth. The investigative activities of the Junior Board members around the world in new markets are published in the form of the White Paper on Global Research, shared by every employee and Board member.

**Sharing Knowledge through the Intranet:** HDEC's groupware has a Knowledge Management System which enables employees to share and exchange work-related information freely and openly. All employees also share other platforms of common knowledge and information, such as the Idea Silo and the Closed User Group on which they can freely update their comments and suggestions. Each platform offers a page for each department or division so as to allow better access to the information employees in different departments and divisions need.

### Enhancing Internal Communication



4,000 employees working both in Korea and overseas gathered together to watch a seminar on the future prospects of the world economy, broadcast live on an Internet channel. This shot is from a room on the 8<sup>th</sup> floor of the corporate headquarters.

**Cultural Opportunities:** As part of its efforts to widen and diversify channels of communication, HDEC provides various cultural opportunities and venues for employees, including invitation to various concerts, performances, and so forth. HDEC's cultural programs for employees are organized around the three themes of 'Fun,' 'Trust,' and 'Pride,' and serve as channels of communication with the Board and enhancing occasions for organizational diversity.

**In-company Clubs and Associations:** HDEC always seeks to enlarge and diversity channels of communication between employees and the Board as well as among employees themselves. The Internet and new media are actively used to communicate and share news updates on the progress of the company and enable both vertical and horizontal communications among company members. In addition, employees are free to create and participate in various clubs and associations sharing interests and hobbies. There are also study groups for employees' self-development and exchanging their information on work and other areas of life.

## Family Programs

**Family Support for Employees Overseas:** HDEC hosts banquets to console family members of employees who are working hard for the growth of the company overseas. The company also invites employees' children to the skim camp, summer camp, and parental love camp during vacation. These programs enable children of employees working overseas to create unforgettable memories with fellow children and their families.

**Support for Working Moms:** In celebration of May as the Family Month in Korea, HDEC hosted an event for working moms within the company, inviting them along with their children to a fun party at the company. The party also served as an occasion on which children learn about their mothers' work at the company and developed a new sense of appreciation and understanding of their mothers' careers.

### In-company Clubs and Associations

HDEC employees are active in communication and socializing with one another, organizing voluntary study groups and other common-interest associations through the HDEC groupware and online communities. There are various clubs within the company dedicated to improving English skills, enhancing artistic understanding, research for Hill State, energy development, swimming, and so forth. These clubs are invaluable opportunities for HDEC employees to share information and participate together in various meaningful activities.

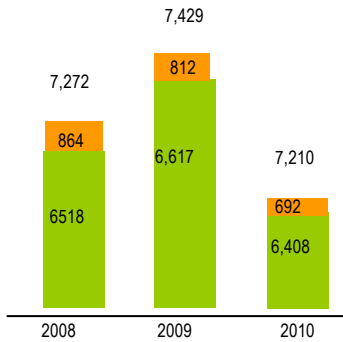
### Camps for Children of HDEC Employees

Children of HDEC employees were invited to participate during their vacation in various camps, in which they learned the English language, proper manners and etiquette, Korean history, and so forth. Over 850 children of employees participated in these special camps held across Korea, including at the Seoul English Village, the Children's History and Culture School, the Etiquette School in Cheonghak Village, and the Cyber Scientific Genius Education Center at AIST. These camps let children relax and learn interesting new subjects in exciting environments and helped strengthen employees' and their families' satisfaction with the company.

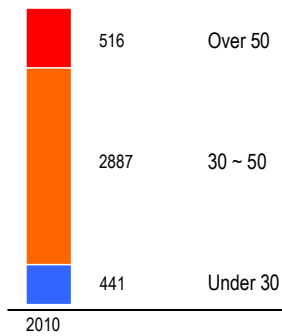


## Employees and Board Members Statistics

Number of Employees



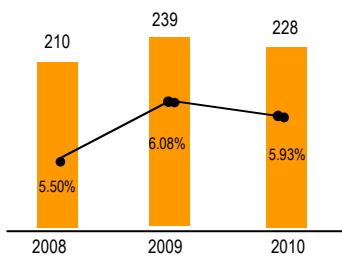
Distribution by Age



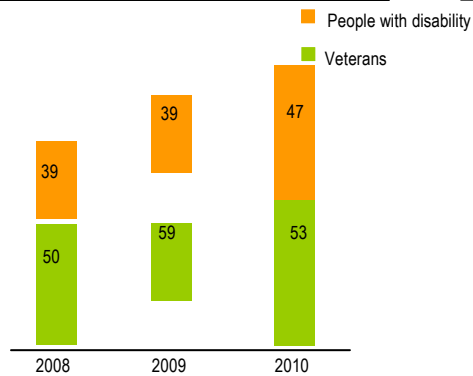
Distribution by Region of Origin (%)

2010

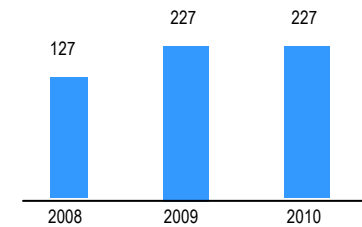
Women Employees (Non-managerial)



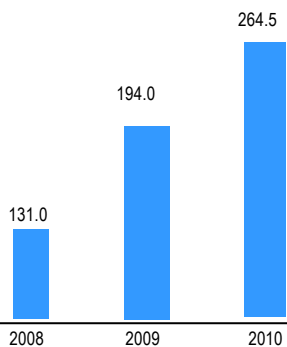
Employment of the Socially Underprivileged



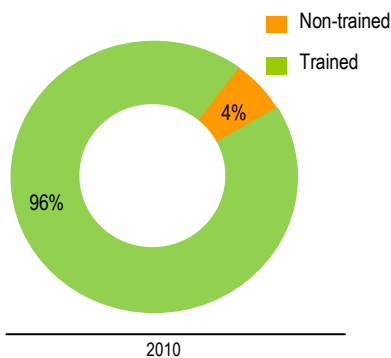
Turnover and Retirement



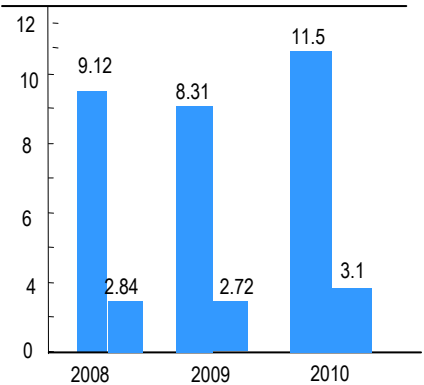
Training per Employee (No. of hrs)



Training Completion Rate (%)



Medical Cost for Full-time Employees and Their Family Members (In 100M KRW)



## Mutual Growth

HDEC seeks to ensure a sustainable network of distribution and supply by pursuing mutual growth and benefits with business partners and sharing responsibilities for products and employee safety.

### Creating a Mutual Growth Model

#### Strategy for Mutual Growth:

HDEC has been enhancing the system of its cooperation with its business partners by sharing information with them and offering support and assistance for them. In order to lighten the burden of capital shortage on business partners, HDEC has been supporting the stability of their management and organized various discussion meetings. HDEC seeks to ensure a sustainable network of mutual growth and distribution by maintaining transparent, fair business deals at all times.

**Selecting Business Partners:** HDEC ensures an equal opportunity for all candidates to participate and be considered in selecting business partners. Business partners must abide by HDEC's terms and conditions of environmental management and safety as part of their contracts. HDEC requires that business partners abide by the special terms and provisions of the Industrial Safety and Health Act and the Environmental Management Act, and comply with the relevant guidelines and standards provided by the ISO and other international agreements.

### Supporting Business Partners

#### Providing Training and Education

**Ethical, Environmental and Safety Management:** HDEC provides training and education on these areas of management so as to create and maintain a culture of transparent, fair organizational relationships with its business partners. The participants in the Training for Business Partners' Transparent and Ethical Management learn about the concept and scope of ethical management, sign pledges for ethical management, and begin the first step toward fair and transparent relationship with HDEC.

**Training for Overseas Business:** HDEC currently operates the Training Program for Business Partners' Overseas Business, targeting 1,000 or so employees across 600 or so business partners' organizations. It provides macro-level understandings of their target countries and other helpful tips and information on finding local labor and securing materials.

#### Financial Assistance

**Mutual Cooperation Fund:** HDEC has created, in agreement with other financial institutes, a fund of 60 billion won in total to help business partners cope with temporary hardships. The fund is operated by the larger company depositing a certain amount of money, which is then administered by the bank to provide low-interest loans for small and medium-sized businesses. In addition, as part of its efforts to ensure mutual growth, HDEC has also made a special contribution of 100 million KRW to the Credit Guaranty Fund, which provides loans for all small and medium-sized businesses in Korea.

#### Communication with Business Partners

**Discussion Meetings:** HDEC regularly organizes discussion meetings with representatives of business partners (contractors and suppliers), bringing together the core members of HDEC's Board and leaders of over 1,000 partner organizations for greater mutual understanding and communication. These are occasions in which partner organizations share their experiences and difficulties with HDEC and all participants can work together to find better solutions for a better future for all involved.



**Athletic Events and Workshops:** The HDEC Council for Mutual Growth, organized to promote mutual trust and benefits for HDEC and business partners alike, also hosted an athletic event in which members of both sides consolidated their trust and solidarity together. Various workshops provided for business partners also enabled them to gain greater information about the industry and communicate their difficulties and problems. HDEC counts these business partners as partners in a common venture and actively encourages them to continue on until all meet their shared goals together.

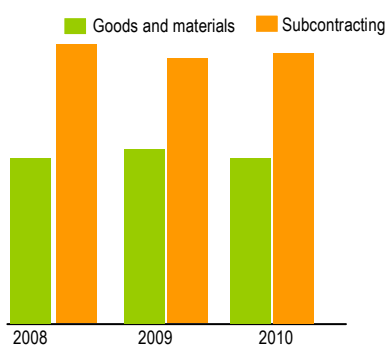
### Quality and Technological Assistance

**Hangyeong Technology Awards:** HDEC hosts each year the Hangyeong Technology Awards, in order to encourage and support technological research and development by business partners. Award-winning partner organizations are given preferential treatments in performance evaluation and are given support for patent application. There are 64 cases of patent, new design and utility model applications applied by HDEC and business partners together.

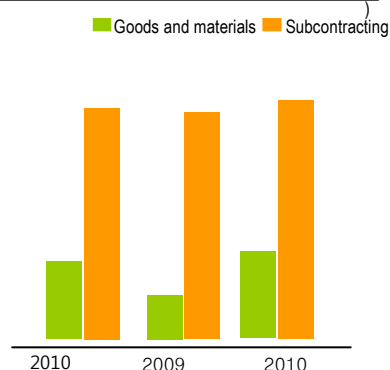


**Training for  
Business Partners**

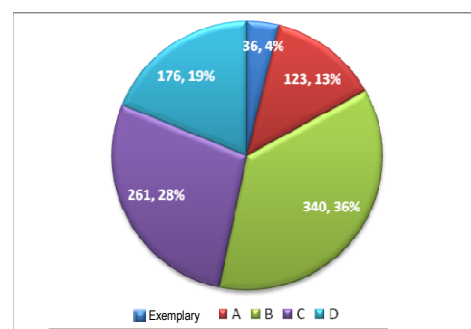
**Purchase from local contractors (in Korea) (%)**



**Purchase from local contractors (abroad) (%)**



**Performance Evaluation**



## Special Feature:

### Current State of Mutual Growth with Business Partners

Current Record			
Area	Item	Description	Achievements
Training	Training for Business Partners	<ul style="list-style-type: none"> <li>Enhancing business partner organizations' capacities and competitiveness by providing relevant local information, tips on networking, making right purchasing decisions, etc.</li> <li>Ethical management training for all business partners.</li> </ul>	3 workshops a year for overseas business; 1 ethical management training each year.
Support and Assistance	Overseas Site Exploration	To help enable exemplary business partners find ways into overseas markets along with HDEC.	Held once a year for exemplary partners.
	Mutual Growth Fund	A fund of 60 billion KRW providing financial aid and support for 680 business partner organizations.	Currently helping 30 partner organizations.
	100M KRW contributed to the Credit Guaranty Fund	Intended to help all small- and medium-sized businesses in Korea struggling with liquidity crisis.	Contribution of 100M KRW made.
	Hangyeong Technology Awards	Intended to encourage and reward research and development by partner organizations.	First held in 2010.
Communication	Discussion Meetings	Separately held for each of four categories (civil engineering, construction, mechanical, and electricity)	Held once per year for each category.
	Mutual Growth Committee	Organizes monthly discussions to promote mutual growth.	Held monthly, attended by 15 members.

#### Mutual Growth with Business Partners

##### -Supporting Overseas Site Exploration by Exemplary Partner Organizations

HDEC selects exemplary business partner organizations and supports their explorations of overseas HDEC project sites and market potential. Members of the twenty exemplary partner organizations were invited to a trip to the project sites in four countries in the Middle East—the UAE, Saudi Arabia, Qatar, and Kuwait—over a period of six days. The participants were given invaluable opportunities to see with their own eye collaboration among various areas and categories of skills and engineering technology, and get a measure of the trends and prospects of the local market. HDEC will continue to support exemplary partner organizations in paving the ground for mutual pioneering of overseas market in recognition of these partners as equal bearers of the common adventure.



#### Communication with Business Partners

##### -Workshops held by the Council on Mutual Growth

The HDEC Council on Mutual Growth with Business Partners held workshops to expand communication with partner organizations that supply goods and services to HDEC.

200 members of 161 partner organizations participated in the program, learning about safety and quality issues and engaging in free discussions and conversations with members of HDEC, airing their grievances and helpful suggestions over tea and coffee. HDEC will continue to enhance its assistance and support for partner organizations in the future to ensure opportunities for mutual growth for all, improving the lowest-bid competition system, securing raw materials early, and enlarging training opportunities for partner organizations.



# Quality Assurance

HDEC combines latest technology with information to bring about groundbreaking innovations in quality. It will maintain clients' trust by ensuring its rigorous quality assurance activities.

## Innovation in Quality Assurance

### Quality Innovation Strategy

The QA strategy at HDEC incorporates QA at all levels of company-wide activities by linking it to customer service. The company has adopted the Project Quality Index (PQI) on its own so as to provide customer satisfaction by quantifying items of on-site quality assurance and showing the results in ascertainable, objective terms.

**QA System:** Based on its extensive experience, HDEC has developed its own unique QA structure consisting of: the Hyundai Quality Rating System (HQRS); the Human Resources Management System (HRMS); the Integrated Piping Control System (IPCS), and the Cost of Poor Quality (COPQ), all of which apply to all phases of the company's QA activities, from material purchasing via construction and testing to commissioning.

**QA Policy:** HDEC regards quality as the key to maintaining trust from its clients. Its comprehensive QA scheme ensures optimal management and control of all its construction processes and activities. The effective, systematic and process-oriented activities aiming at improvement ensures sustainable quality and leads to greater customer satisfaction. HDEC's processes ensure accurate analysis of customers' needs before construction and thorough inspection and maintenance after construction for complete satisfaction. Post-construction monitoring and inspections are essential to HDEC's continued efforts to improve and innovate quality.

### QA Activities

Project Quality Index (PQI) measures on-site quality of HDEC's project and related activities. It combines the HQRS scheme with criteria of evaluation across four additional qualitative areas: the H-PMS, customer satisfaction, construction quality assessment, and rewards. The PQI represents part of HDEC's self-motivated efforts to ensure continuously improving quality and customer satisfaction by enabling early identification and correction of vulnerable issues.

**On-site Quality Assessment:** HDEC conducts its own quality assessment through its own QA scheme. On-site quality assessment involves the evaluation of the frames that form the basic skeletal structure of the project. It also involves inspection of the mock-up household by the special technical team dispatched from the corporate headquarters to determine main issues and areas of quality assurance.

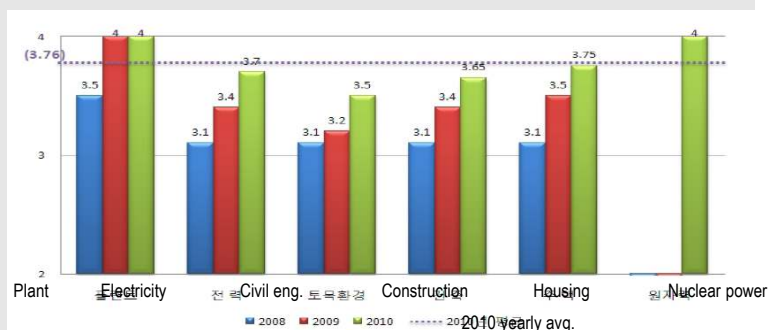
**Guaranteed by International Standards:** HDEC, whose quality assurance and environmental management systems have been certified by the ISO 9001 and the ISO 14001, respectively, apply rigorous QA standards and criteria to all phases of its activities both in domestic and overseas projects, from engineering and procurement via construction and operation to testing, commissioning and maintenance. In selecting business partners, the company also includes international standards on the environment, labor and safety and health issues in the contracts to be enforced.

### QCS Innovation Strategy



The integrated QA-CS activities will help ensure greater customer satisfaction in the quality of finished projects.

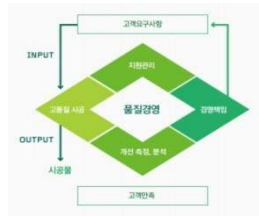
### HQRS On-site Assessment



As of 2010, the average for all 68 sites assessed was Lev. 3.65 ("Effective Execution"). The scores for electricity, civil and environmental engineering, construction and housing businesses have steadily increased over the years.

### Product Quality Improvement Process

There are roughly three phases in the product quality improvement process at HDEC. First, quality as assessed on site is reported to the headquarters. The headquarters then organizes an evaluation team according to its monthly evaluation plan to determine the progress in quality on site.



The headquarters then updates the results of the HQRS and construction quality evaluations on the system to incorporate them into the customer satisfaction surveys. The Department of Quality Assurance also oversees the establishment of annual quality evaluation plans and other QA and CS processes. The department then publishes annual quality analysis reports, thereby completing the quality review.

### Quality Innovation through New Technology

HDEC has long sought to ensure innovation in quality by adopting and applying new technology and techniques ahead of others. The state-of-the-art systems help save energy and add comfort to daily lives of our customers.

### Monitoring and Evaluation

**Business Partner Evaluation:** Business partner organizations are more prone to fluctuations in the external conditions. Economic recessions can often lead partner organizations to struggle with various types of hardships, including financial worries that could compromise the quality of their products and processes. All this might end up delaying or compromising the overall project on site. As part of its risk management and on-site safety control, HDEC ensures that the managers on site understand their roles and responsibilities fully, be provided with adequate training, implement the Safety and Health Management Systems well, and so forth.

Various criteria of evaluation allow HDEC rank partner organizations from A to E, depending on their on-site management abilities, processes, construction quality, safety management, materials, and post-construction maintenance.

### Constant Monitoring of After-Sales Services by Business Partners:

HDCE's computerized system allows for real-time monitoring and data collection on the after-sales services provided by its partner organizations. The system enables proactive services and provides criteria for evaluating business partners. 227 partner organizations across 10 categories (furniture, interior décor, plumbing, wet processes, window works, electricity, facilities, etc.) are evaluated in terms of their adequacy and fastness in providing services.

# Safety Management

HDEC ensures safety in all areas of its projects and activities by strengthening its safety management systems that protect safety, health and the environment at all times.

## Strengthening Safety Management

### Safety Management Systems

HDEC implements world-class standards in protecting safety, health and the environment in all its practices and activities. It provides for systematic assessments and inspections in advance according to its health, safety and environmental plans and seeks to implement the global HSE standard in its activities by constructing systems of health, safety and environmental protection overseas.

### Safety Management Policy

Safety is not only a matter of a series of pre- and post-construction processes and protocols, but forms part of entrenched culture at HDEC. HDEC achieves this by spreading safety information through adequate training and seeking measures to ensure health, safety and welfare of all its employees. It traces and manages various risks associated with employees' and public's health and safety on a regular basis so as to maintain a safe working environment for employees. It also has established an effective safety control system that blocks and prevents safety accidents at fundamental levels.

**Safety Management on Site:** HDEC continually assesses risk factors inherent in project sites and implements appropriate training programs and practices after review and discussions. On-site safety management systems provides for continued improvement through daily and monthly monitoring activities. This double-track safety management system ensures safety inspection and improvement on all project sites, leading the virtuous circle of safety control between daily check and continuous monitoring.

**H-PMS integrated Information:** The H-PMS enables integration and management of all data and information relating to safety control on all project sites. The system not only records and collects data on various accidents that have occurred on site, but also saves the findings of risk management processes and evaluation, enabling the company to find best alternatives and corrective measures to be taken. Cases of accidents recorded immediately are used as case study materials for educating and training on-site and office employees both online and offline.

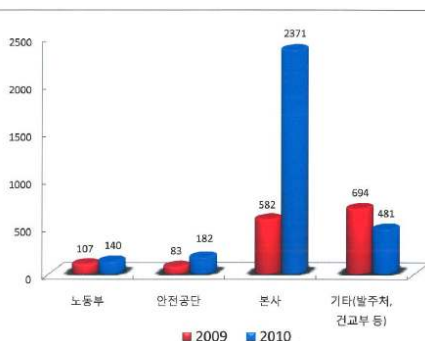
**International Standards:** The Office of Health and Safety ensures compliance with the international standards, such as the OHAS 18001, ISO 14001, KOSHA 18001, etc., in determining the appropriateness of HDEC's Safety, Health and Environmental Management Systems and their effective implementation.

Findings of such assessment then form the basis of special terms and conditions included in contracts with business partners regarding environmental, labor and safety protection and management at partner organizations. HDEC also evaluates the safety and environmental management practices of its suppliers from A to D and demands corrective measures should problems arise.

### Safety Management Activities

HDEC implements its safety management systems across all levels of its organization and activities, enabling thorough safety inspections of on-site projects and working environments. Working environments are assessed and monitored daily so as to prepare immediate responses if required. The Health, Safety and Environmental Rules (HSE) are also kept on the company's computerized management system so as to provide for diverse and systematic measures of on-site safety measures in different regions. The areas of concern identified by HSE evaluations are corrected together by HDEC and concerned partner organizations and reported to the Department of Safety and Environmental Management.

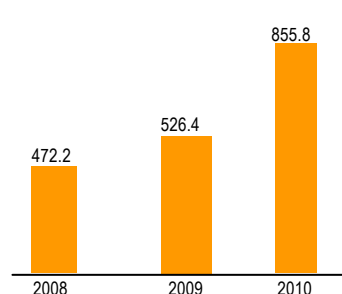
Internal and External Safety Checks



Accident Prevention Rate

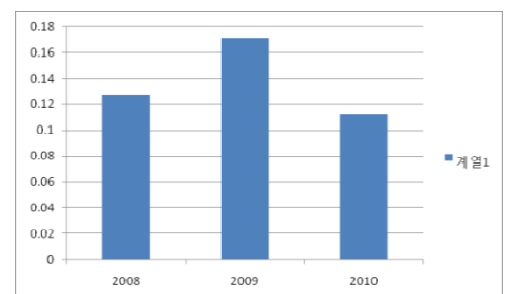
(In 10M KRW)

# of employees from business partner organizations



Disaster Frequency Rate

(%)



There are types of accidents and natural disasters of especial focus differing by season and month, categorized by their tendency to occur with especially high frequency in certain periods of the year and not in others. These include fires, collapse, falls, flooding, electric shocks, equipment destruction and falls, and so forth. Company-wide campaigns and training are conducted to provide adequate safety education in case of these events.

**Basic Rules of Safety:** HDEC has also developed the Basic Rules of Safety in order to help prevent disasters and accident at all levels. Employees are required to follow these rules in dealing with disasters and accidents of major concern. Violations of these rules may result in revocation of their authorities.

**HSE Manuals Distributed:** HDEC has also published pocket-sized HSE manuals, providing ten rules concerning the HSE evaluation criteria and safety accidents. Distributed to all employees, the manual will also be translated into multiple languages and distributed to workers on sites around the world.

**Safety Management of Business Partners:** All business partners are evaluated on a regular basis in terms of their compliance with the standards for environmental and safety management. Reported incidents of non-compliance are met with demands for correction. These are also occasions meant to encourage greater compliance with health and safety rules in partner organizations, by providing them with further training in those rules. Delegates from HDEC give lectures on ethical management, quality assurance, safety management, AS/CS, and site supervision. Workshops held allow participants to share site information.

## Promoting and Educating Safety Management

**Promoting:** Since 2008 HDEC has been distributing DVDs for safety education and training of foreign workers. These DVDs train foreign workers against seasonal accidents and disasters. Preventive banners and other materials are also displayed on and around project sites to remind the workers of the importance of safety.

**Safety Management Training:** HDEC provides safety training for new employees, site managers and safety managers to help protect them against various types of health and safety risks. Training in basic rules of safety is provided from both the corporate headquarters and on site. Disaster-prevention training is provided not only for HDEC employees, but for all members of partner organizations working on site. Safety training is repeated twice a year for HDEC employees and members of partner organizations working on the site of project development. In 2010, the company provided additional training differing in content by the subject's job and position, allowing up to six hours of training per individual. Last year's accident rate was 0.112%, down by 65.4% from the previous year. The number of death reported was 11. HDEC intends to enhance its safety training programs especially for civil engineering, environmental management and plants in which accident rates tend to be high. Death rates are regarded as one main indicator of the company's health and safety control performance. Working environments will be improved to reduce these rates.

**Safety Events:** In addition to safety inspection, HDEC sets aside every April as the Month of Safety Check, using it as an occasion to heighten employees' awareness of safety issues and concerns. The number of events held in 2010 increased by 0.3% from the previous year.

**Restricting Violations of Safety Rules:** Any employee caught violating basic rules of safety on site will have his or her authorizations revoked. He or she may even be subject to legal punishment and actions should his/her breach of safety rules result in major safety crises.

## Examples of Accidents

## Safety-Related Events



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# Customer Satisfaction

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**HDEC seeks to ensure satisfaction for all customers by providing value and quality. It continues to improve and innovative its customer satisfaction management in customer relations.**

## Customer Satisfaction Management

### Customer Satisfaction System Complete

HDEC's view of the customer has changed over time. Earlier in its history, it used to think of anyone who was intertwined with HDEC in terms of interests and who received 'service' from the company as a 'customer.' In recent years, the Department of Customer Service extended limited, one-time customer satisfaction activities to all levels of the company activities. In order to strengthen its service structure and create additional values for customers by strengthening the company's reputation and quality of services, it has published the Hill State Customer Service Record. In addition, an e-book on customer service manuals and CS promotional materials have been developed as well, drawing in greater participation from all employees in ensuring customer satisfaction.

### Toward Integrated Customer Service

As the main focus of its business shifted to plant and electricity development, HDEC has come to conduct customer surveys to manage customer relations and satisfaction. By integrating the databases on B2B and B2C customers, it is now preparing for an integrated customer relations management (CRM) system that will enable both advanced marketing and after-sales satisfaction surveys.

**Creating an Integrated CRM Center:** Integrated CRM is essential to accurately identifying customers' changing needs and enable the company to respond to changes both internal and external. The emphasis in housing industry is now rapidly shifting from "product-centeredness" to "brand- and customer-centeredness." the integrated CRM system will allow HDEC to identify market conditions better and exercise more effective marketing activities and campaigns in correspondence with the consumer patterns and characteristics stored in the integrated database.

**Integrated Online and Offline VOC Management:** HDEC actively seeks out the voice of customers (VOC) through such diverse channels as the Hill State website, mails to the CEO, telephone, post, and visits by customers to its offices. The data collected in these areas are integrated by the CRM office and incorporated into daily reports and website renewal in responding better to customers. The 'Mails to the CEO' is a channel that allows customers to send e-mails to the CEO directly. Replies are prepared by the executive staff.

### Customer Services

HDEC has changed its focus on customer service to better suit the changing needs and wants of customers. It has enhanced brand and customer-oriented management for residents of Hill State, providing them with distinct services.

**Customer Satisfaction Enhanced:** HDEC is working to enhance its status as a leading brand by providing distinct and better customer services. Every national holiday season delegates from the company visit local centers for the elderly and seniors, sharing rice cakes with them. The company donates health-enhancing equipment and libraries to these senior facilities and organizes charity bazaars and flea markets to enable residents of its housing complexes to participate in greater opportunities for meaningful activities. Customer survey revealed that cleaning of the exterior windows had the highest demand. HDEC immediately complied, thereby instantly dissolving customers' complaints away.

**Impressing Customers through Care:** Hill State Express Service Team was organized to provide immediate troubleshooting and other after-sales service and care upon receiving reports and complaints from customers. The team provides detailed care and right solutions for not only new residents in Hill State, but even those who have lived there for 1 ~ 5 years. The team will continue to provide the needed service until the customer is completely satisfied. Sometimes the team may visit the customer even without receiving complaints, checking if everything is to their liking and preventing any possible risk factors or troubles.

**Home Coming Day:** Employees of HDEC's partner organizations may visit Hill State households. These visits are conducted once a year or so has passed since the resident moved into Hill State as part of the complete Hill State service package. These agents will provide intensive repair services to solve reported problems and prevent their recurrence. These visits will be opportunities for partner organizations to learn more about the importance of after-sales service and care. Customers will enjoy the added benefit of having their households checked and possible problems solved even without filing a single complaint.

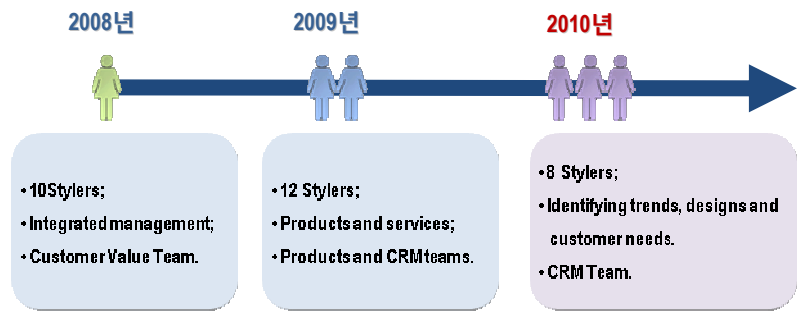
### Training for Customer Service Agents and Technicians

In order to enhance its customer services, HDEC continues to train all the related agents and technicians. The company trains CS agents and technicians twice a year. Participants learn by examples of successful case studies and by engaging in role plays intended to enhance their negotiating skills and abilities to treat customers with utmost kindness. The training also enhances participants' attitude to service, enabling them to respond to complaints effectively. The company provides training on the importance of customer service and relevant coaching for technicians dispatched by partner organizations as well.

### Customer Satisfaction Survey

HDEC conducts surveys on satisfaction of customers with the company's housing and other architectural products. In 2010, the NCSI score for the company was 80 points, raised by 7 points from the previous year. There was a noticeable decrease in complaints raised by customers, thanks to the significant improvement in general quality of products and services. By providing systematic, specialized customer care, the company succeeded in expanding and consolidating customers' loyalty to its brand and services among both the new and existing customers.

### Evolution in the Role of the Hill State Styler:



### Hill State Stylers' Activities

HDEC selects Hill State stylers every year. These stylers are customers who evaluate Hill State apartments and related services. This is part of HDEC's efforts to incorporate larger customer participation in the production and operation of Hill State apartments, viewing customers not as passive recipients of goods and services, but as smart "prosumers" capable of both producing and consuming the goods and services they want. First launched in 2008, the stylers are mainly housewives who advise the company on how Hill State products and services could be improved, from the perspective of actual residents.

There are 8 stylers this year, who will meet for 30 times in total, evaluating Hill State in terms of three main areas: that is, trends, design, and customers' needs. These members have made a total of 570 suggestions, 44 of which have already been incorporated into actual services and 119 of which are currently under review. Hill State Stylers are indispensable part of making Hill State a better place for every customer. They represent HDEC's commitment to maximizing values for customers.

### Examples of Stylers' Suggestions Put into Practice



#### One-stop Laundry:

- Providing for machine- and hand-washing at the same time as well as storage.



#### Slipper Dryer

- A small addition to the bathtub enabling the user to hang his slippers dry after use.



#### Blow Dryer Rack

- An easy storage solution for hair dryers.



#### Kitchen Pantry

- Foldable shelves providing for more convenient, spacious storage.

# CSR Programs

HDEC provides CSR programs under three main themes, making contribution to the development and growth of local communities.

## Strategic CSR Programs

In 2010 HDEC sought to continue sustainable CSR activities and programs, by pursuing genuine communication with society at large in distinct and unique manners. To this end the company pursued longer-term campaigns that express the company's identity, rather than pursuing one-time-only, short-term events. These activities have actually enhanced the company's image and reputation. HDEC will continue to lead the CSR activities in Korea as an exemplar in the field.

### Three Main Themes

HDEC adopted a new strategy regarding its CSR programs in 2010, seeking to realize three core themes or values in its activities: namely, love, hope, and culture. It sought to spread the culture of sharing through its mid- to long-term CSR strategy, encouraging employees' participation in various activities and communicating actively with the local communities to help them grow.

**Youth Scholarships:** For the theme of 'hope,' HDEC has decided to provide scholarships and financial aid for teenagers. The Scholarship for Children of Victims of Construction-related Accidents is the first scholarship project of its kind in Korea, providing significant help for family members of victims who had been killed or wounded on construction sites.

**Helping the Poor:** HDEC sought to capitalize on the advantages it has as a leading construction company even in designing and providing CSR programs. For the theme of 'love,' the company decided to help improve living conditions of the poor, providing free repair and renovation services for homes for people with disability in Seoul and Incheon.

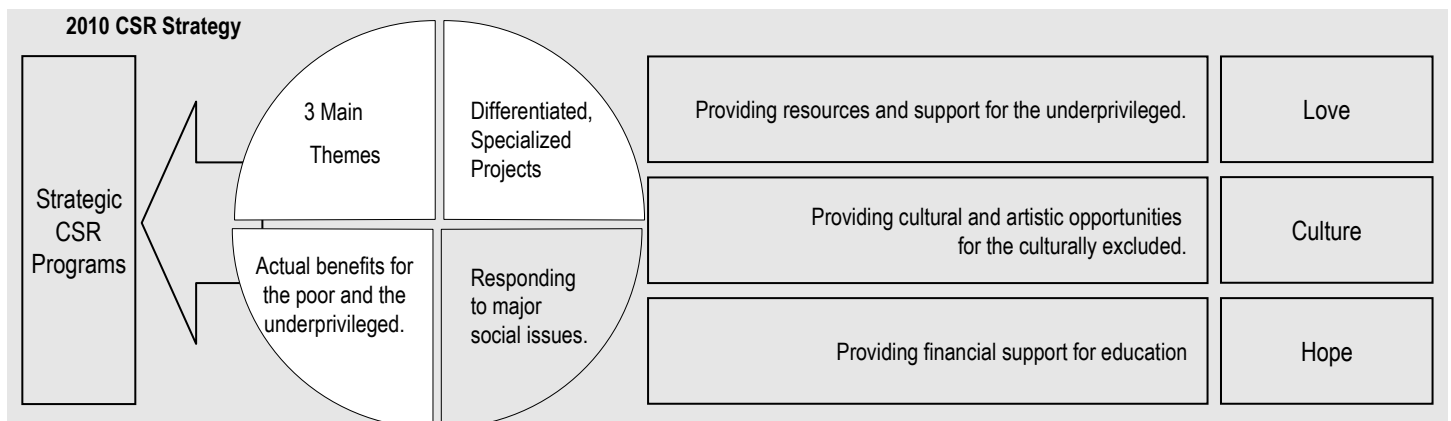
**Cultural Support:** HDEC also sought to preserve part of Korea's cultural and architectural heritage, while at the same time enlarging opportunities for the poor to experience this part of Korean culture. The One-Company One-Heritage Project is one of the most well-known CSR projects of HDEC, seeking to preserve traditional Korean architectural works. "Let's Share Culture and Arts" is another project that hosts performances for the poor and the alienated.

### Systematizing CSR

HDEC sought to systematize and consolidate its CSR programs and activities, by developing a system to manage volunteer activities of employees and another system that encourages and provides guideline for different types of volunteerism. The company also began in 2010 to encourage volunteerism by providing CSR Mileage Points, CSR Returner Points, and operating the HDEC Social Volunteers Corps.

**CSR Systems:** The CSR Mileage Points were introduced to manage employees' CSR activities systematically and reward exemplar cases, providing incentives in the forms of preferential treatments in performance evaluation. In 2010, the total mileage reached 45,374 (38,273 hours) points from all employees combined. 403 employees received bonus points in their evaluations. The CSR Returner System provides up to 50,000 KRW a year for each volunteering employee.

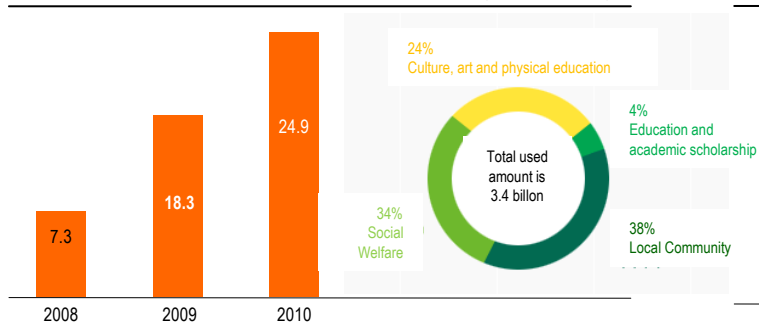
**CSR Management System:** HDEC has also developed a CSR management system that enables individual employees to manage their volunteer records and share their experiences with others. The system also keeps record of the expenses and costs caused by on-site CSR activities, thereby improving overall transparency in the execution of budgets.



## CSR Achievements

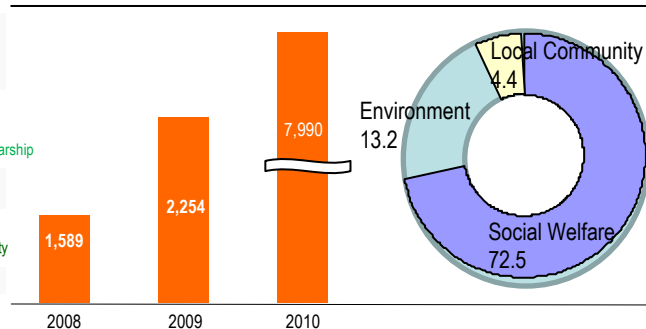
### Fundraising and Donations

(In 100M KRW, %)



### Employee Participation and CSR Mileage

(In 100M KRW, %)



Type	Period	Description	Achievements (over the last 3 years)
Housing and infrastructure		Repair services for homes for people with disability in Seoul	Providing care and support for three homes, established as part of the company-organized volunteering program.
		MOU signed with the National Central Museum for the donation of a kids' playground	120 million KRW in cost.
	Apr. ~ May, Jul. ~ Sep.	Agreement with local communities for improving household energy saving efficiency.	
		Free repair and renovation services for houses of the poor.	
Organization	June ~ Present	Green Trees of Hope	Supporting 300 children of accident victims, with participation from 50 employees
Fundraising		Employee fundraising	
	Nov. ~ Dec., 2009	Donate Your Change Campaign	517 million KRW raised from 517 participants.
Volunteerism	Year-around	Volunteerism Mileage for employees	10.7 mileage points on avg. per employee; 94.2% participation rate.
	Summer, Winter Holidays	Sharing Lunch Boxes of Hope	Supporting 49 poor children, with participation from 161 employees.
	March ~ November	Guarding the Changdeok Royal Palace.	300 employees and family members.
Arts		Messena activities providing cultural opportunities to the culturally excluded.	205 performances held in total, with 150,000 cumulative members of the audience.
Athletic	2010	Hill State Volley Ball Team	2.3 billion KRW.

Green Trees of Hope		Tutoring on visit	46 elementary students 64 middle-school students
Monthly Scholarships	87 elementary students 108 middle-school students 105 high-school students	One-on-one free tutoring service after school.	21 volunteers (tutors) 21 students
Providing financial aid for extracurricular activities and lessons	80 children given priority	Providing mentoring on-line once a week.	29 volunteers 29 students

## CSR Activities



Photos from 2010 CSR Activities

**7,970** persons =

The number of employees participating in CSR

The Banpo Hill State building site is also home to regular volunteer works providing care for seniors living by themselves in the local area of Shinnim-dong, in conjunction with a local welfare organization. Employees provide floor heating, repair the boilers and bathrooms, replace light bulbs, and bring home-cooked food to these seniors to help make their winters warmer.

**340 million KRW** =

The total amount of money spent on CSR in 2010

HDEC launched the Green Trees of Hope Volunteers Corps in 2010, providing care and material aid for children of victims of construction-related accidents in the areas of education, cultural experience, and emotional growth. Comprised of the company's employees, the volunteers of the corps will provide mentoring, raise educational and learning funds, help with career search, and opportunities for cultural and artistic activities for children of 300 families registered with the organization. HDEC published the Green Trees of Hope to report on its CSR activities in this area and systematic plans for future activities.



**94.2%** =

Employee participation rate

**10.7** Mileage Points =

Average mileage per employee.



HDEC provided free windows and toilets and painting works on the exterior walls of a school, which had been closed but reopened to hold classes for children of Korean fathers and immigrant mothers.



HDEC signed a MOU with the National Central Museum to make greater joint efforts in "inheriting the national cultural and traditional heritage." HDEC promotes traditional Korean culture, customs and history both at home and abroad, sponsoring various exhibitions, performances, events and classes. The company has also donated an eco-friendly energy playground for children to the museum.