

Survey of Selected Companies on Green Purchasing in Korea

LG ELECTRONICS INC.

Introduction

LG Electronics is a general electronics manufacturer. This report focuses on the company's Digital Network Display Division (DND), which is engaged in the manufacturing of home appliances, mobile handsets, information & communication systems, and DVDs, video players, projectors, and other devices associated with televisions, as well as LGE overall.

As one aspect of its vision and policy for a cleaner environment, LGE has selected the global environmental issue as an improvement task for management. The company is particularly focused on developing green products fitting to its stature as a global player. In 1994, LGE announced the "LG Declaration for a Cleaner Environment" and made it one of its cornerstones for business operation. The Declaration asserts that environmental and social factors are utilized as standards alongside economic factors in the decision-making process for business activities at LGE, and it is the foundation for LGE's environment-friendly business operations.

LG Declaration for a Cleaner Environment

LG has consistently worked to minimize the environmental impact of its business activities and to promote safety in order to preserve the environment and to ensure the health of all executives and employees. However, the increasing importance of environment, safety, and health issues requires us to take on greater responsibilities, while at the same time provides us with new opportunities for creating value. Thus, in close cooperation with the local communities, LG aims to be a leading business group in environment, safety, and health affairs, striving to improve environmental quality, to enhance the level of occupational safety and health, and to ensure the sound and sustainable development of the global community through the use of LG's extensive knowledge and innovative technology.

The executives and employees of LG are of one mind in making LG one of the most environmentally conscious and responsible business groups in the world.

1. LG gives top priority to environment, safety and health issues in every step of its managerial activities and takes these as opportunities to create value for customers.
2. LG establishes and complies with its own strict environmental, safety, and health standards based on rules and regulation of the region in which it conducts business.
3. LG regularly audits and publicizes its performance of environmental, safety, and health policies.
4. The executives and employees of LG actively take part in conserving the local environment as part of its social responsibility to conserve the global environment.

Green Procurement

Objectives of Green Procurement

Green Procurement has three objectives. These are, first, to procure products, components, and materials that have low environmental impact throughout their product life-cycles, second, to promote suppliers that manufacture environmentally conscious parts, and third, to comply with all laws, regulations and standards for environmental protection.

Items for Green Procurement

Areas where Green Procurement can be applied include manufacturing, office items, and components. At present, Green Procurement in the DND division is centered on components. Once some progress begins to appear in component procurement, the division intends to expand its effort to other areas. As

DND operations are mainly focused on television assembly, the division has tended to focus on components. Regarding office items, the division has no particular guidelines in place at present. The purchasing officer is free to make decisions at his or her own discretion. Some examples could be to select copy paper that is a little less white because it incorporates recycled paper, or to select personal computers, copiers, and other equipment that operate on less power.

LGE's Eco-SCM

Overview of E-SCM

The DND Division handles a larger number of different components than other units in the LGE Group, and is therefore further advanced in its Green Procurement policies. As early as 2001, for example, the division was already involved with Eco Supply Chain Management (E-SCM). In 2001, the activity was started to create E-SCM guidelines, followed by the launch of the E-SCM pilot project in 2002. A survey of hazardous substances used in the division's components was conducted, and an E-SCM standard format was drawn up. For 2003, the division plans to commence education of supplier companies. The division is also collecting detailed environmental information on components from suppliers to create a database. Other divisions in the LGE Group are expected to learn from the DND Division system to further them toward creating their own programs.

Year 2001: E-SCM Infrastructure Setup

- Establish E-SCM operation standards and guidelines
- Develop partner assessment index
- Establish company list of restricted hazardous substances

Year 2002: - Pilot assessment and expansion of product analysis

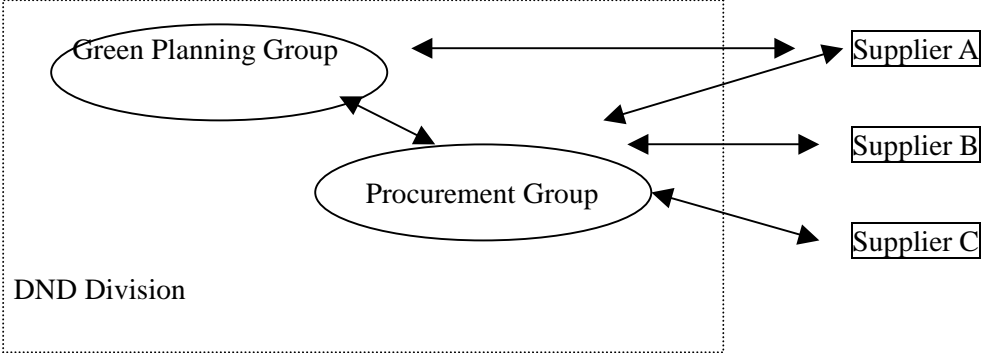
- E-SCM pilot project
- Survey of hazardous materials in components
- Determination of DND's E-SCM standard format

Year 2003: - Expansion of E-SCM to all companies, and education offered by DND

- Collect detailed environmental data from suppliers
- Develop a hazardous materials DB system
- Expand partner assessment
- Improve the assessment index

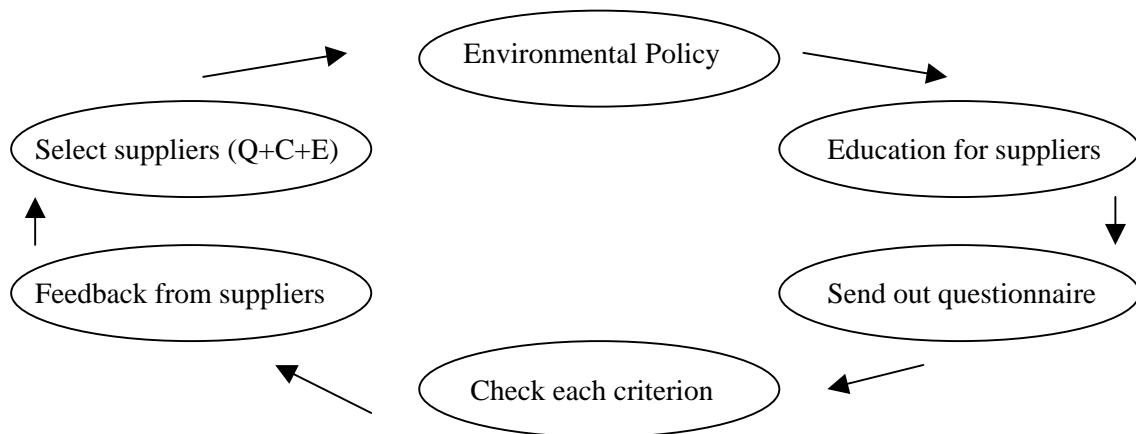
Activity Framework

In the DND division, responsibility for E-SCM lies with the Green Planning Group and the Procurement Group, while responsibility for LGE as a whole lies with LGE's Quality Reliability Center. The Green Planning Group and the Procurement Group are part of the division's research organization in charge of products. The research organization includes a design section and a research section, and the Green Planning Group is embedded into these two sections, and is separate from the Procurement Group. The Procurement Group provides education and instructions to suppliers. Waste disposal policies are handled elsewhere. Activities are oriented toward ensuring adequate communication takes place at the division level.



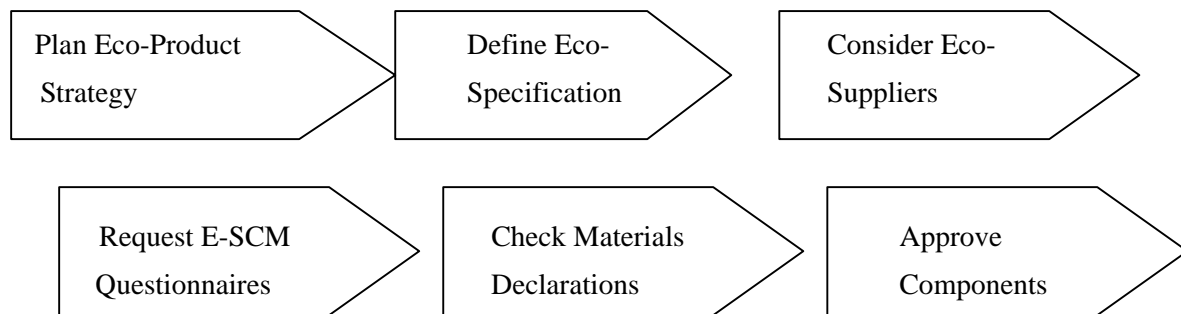
E-SCM Mechanism In LGE

In the LGE Group, E-SCM begins by establishing an environmental policy. Then the company promotes education of the system among its suppliers, sends out questionnaires, checks the criteria set out in the returned questionnaires, receives feedback from the suppliers, and then selects the suppliers or implements the environmental policy. This sequence is called E-SCM.



E-SCM Process in Product Development (Decision Making Mechanism)

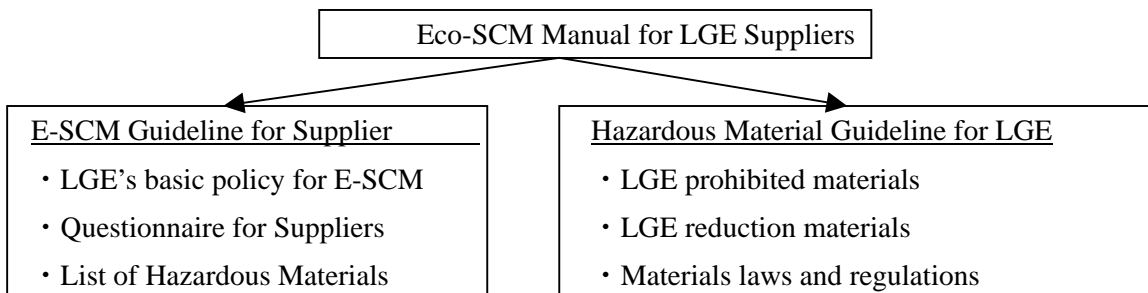
First, the company plans an environment-friendly product strategy based on the LG philosophy. Defining environment-friendly specifications involves study of a material’s toxicity or reduction capabilities. At this point, however, no detailed figures are settled. If the supplier does not have any problems on the technical side, then a request for transactions is made. In reality, however, not all suppliers can meet LG’s standards, and enforcement of such standards would cause a fall in productivity. In these cases, LG cautiously proceeds step-by-step until the standards can be met. Each material and component is tested, and if no particular problems are found, the material or component is put to use and approved as an environment-friendly product.



Contents of LGE E-SCM

The LGE E-SCM utilizes three standards. First is the E-SCM Manual, second is the Questionnaire for Suppliers, and third is the List of Hazardous Materials. The Questionnaire for Suppliers includes the Environmental Management and Eco-Design & Materials questionnaires.

The E-SCM Manual is titled the “Eco-SCM Manual for LGE Suppliers.” It is divided into two sections, an E-SCM Guideline for suppliers and a Hazardous Material Guideline for LGE. The first section explains LGE’s basic policy for E-SCM, the Questionnaire for Suppliers and the List of Hazardous Materials. The latter section presents an explanation of the LGE prohibited materials, the LGE reduction materials, and the materials laws and regulations.



In the Questionnaire for Suppliers, Evaluations 1 and 2 include places for entering “yes” or “no” and a comment. Evaluation 1 asks about environmental management, while Evaluation 2 is about eco-design. It also asks about reduction capabilities toward recycling. Evaluation 3 asks about Product (Part) Information. Responses here are in the form of general information and specifications, with separate entries for product weight, amount of hazardous materials in products, etc.

Evaluation 1: Environmental Management System

General principles	Item of evaluation	Yes/No	Comment
1)-(1)	1. Has your company obtained an EMS certificate in accordance with ISO14001?		
1)-(1)	2. Does your company have plans to obtain an EMS certificate within 3 years?		
1)-(2)	3. Has your company set up a system for complying with environment-related regulations and laws?		

Evaluation 2: Eco-Design

General principles	Item of evaluation	Yes/No	Comment
2)-(1)	1. Does your company use materials prohibited by LG?		
2)-(2)	2. Do your products of 50g or more receive an ISO 11469 mark?		

Evaluation 3-1: General Product Information

Name of product		Name of manufacturer	
Weight (g)		Hazardous material	
P/No		Amount used	

Evaluation 3-2: Product Specifications

P/N	Name of part	Weight (g)	Material	Ratio of weight	Hazardous material	Amount (%)	Remarks

The List of Hazardous Materials includes LGE’s own Criteria for Hazardous Materials. Documents available for reference include laws and regulations (EU RoHS, the Netherlands Cadmium Decree, California Proposition 65, etc.), eco-labels (Blue Angel, the EU Eco-label, etc.), and other standards of major companies and industrial organization. The Prohibited Materials section includes a list of 29 materials, while the Reduction Materials section includes 27 materials. Where Japan’s home electric

appliance and electronics manufacturers collect information on three levels, hazardous materials, reduction materials, and controlled materials, LGE does not ask its suppliers for information about controlled materials.

About the Suppliers

Supplier's Role

LGE wants suppliers to fulfill five main roles with regard to their transactions with LGE. These include: Understanding LGE's environmental policy and E-SCM, identifying the contents of components, checking hazardous materials in components, procuring non-hazardous raw materials, and completing requests for data reporting.

Selection Criteria for Supplier

There are three main criteria for selecting a supplier. These are Environmental Management (eight sub-criteria), Eco-design (seven sub-criteria), and Product Information (materials declaration). LG plans to select suppliers who have scored above a certain target level. At present, LG is focused on collecting environmental data from its suppliers. It is now collecting the data and hopes to finish by the end of this year.

Education of Suppliers

In March 2003, LGE began educating of suppliers with a meeting entitled Explanatory Meeting on E-SCM. Where DND has more than 200 first-rank supply companies, the meeting attracted 130 people from a total of 80 different companies representing only DND-related suppliers. The company plans to eventually reach all suppliers throughout the LGE Group. Reactions to E-SCM at the explanatory meeting appeared to be concerns of suppliers about how they could meet the E-SCM and EMS regulations and expenses. For LG failure to manufacture goods that take the environment into consideration will result in loss of sales. In other words, with the suppliers in the same boat, the suppliers also need to work together with LG. Moreover, it appears that the suppliers are concerned about whether they will be approved as suppliers. While LG cannot force anyone to comply, the company plans to promote awareness through seminars and study meetings for the suppliers to help them improve their operations. In reality, LG is aware that we cannot force anyone to obtain EMS. Nevertheless, LG has taken initiative to develop an environmental philosophy and policy, thus creating an atmosphere where the suppliers themselves feel the urge to comply. This is where LG, as a major corporation, must take the lead with its environmental initiative.

While the actual number of suppliers that have obtained an ISO14000 is not known because no detailed survey of suppliers has been made, it appears that even some medium-class supplier companies have secured the ISO. LG wants to avoid compulsion regarding ISO14001. In South Korea, it's a normal practice to acquire ISO9000 first. From now on, acquiring ISO14000 by a company is likely to be a mainstay. LG itself acquired ISO9000 initially, and has later secured ISO14001. It is anticipated that even South Korea's small and medium-size enterprises will be able to obtain ISO14000 in future.

Among the 200 companies that attended the above educational meeting, some suppliers are from foreign counties including Vietnam, China, and elsewhere. The suppliers from China are increasing in number. Currently, the surveys include suppliers that have their own overseas sites.

LGE has an OEM network with companies in Japan and Europe. Since 2001, the company has started to receive inquiries from foreign corporations regarding the presence of toxic substances. LGE is preparing information at the in-house level in order to better respond to such questions in the future. But LGE needs detailed information from its suppliers before the company can provide detailed information of its own. For this reason, surveys of the LG suppliers are sure to continue.

Future Plans

LG has created supplier guidelines and has been actively providing education to suppliers, but these efforts have not yet resulted in the achievement of specific figures and data. In October 2001, the company adopted the E-SCM Manual, the Questionnaire for Suppliers, and the List of Hazardous Materials. The database system backing up these three projects is called the Hazardous Substance Management System, which is being developed as of 2003. The LG-PRC center is in charge of development, including construction of a web-based access point. While the Hazardous Substance Management System is a unified system, it consists of three sections, the Hazardous Substance Database, the Improvement Guideline Database, and the Component Information Database. The Improvement Guideline Database will show, for example, that Supplier A has 100ppm of a certain substance while Supplier B has 200ppm, which is information that would be internalized and shared by both LG and other suppliers. And if, for example, the figure for certain substance is set at 50ppm, LG can inform suppliers in advance so that they can prepare beforehand. The above database is prepared for each component. The sections for Prohibited Materials and Reduction Materials were additionally created, and data is now being entered into the system which will be utilized later. The Eco-Design system has been in operation since 2001, and consists of three sections, the Eco-Design Checklist, the Design Guideline, and the Environmental Law & Regulation Information. This system deals with life cycle assessments.

The company has five plans for the future: Enhance the material database for components, continue education of suppliers, replace hazardous materials with non-hazardous materials, set up a strong E-SCM process, and join in and cooperate with industrial organizations.

KOREA WATER RESOURCES CORPORATION (KOWACO)

Introduction

The corporation was established in 1967 as the Korea Water Resources Development Corporation, changed its name in 1974 to the Industrial Sites and Water Resources Development Corporation, and then assumed its present identity, the Korea Water Resources Corporation (KOWACO), in 1988. Business operations include the management and construction of multi-purpose dams, multi-regional water supply systems, national industrial complexes and new towns, overseas projects and international cooperation, and research and development.

To ensure the efficient supply of high-quality water all across South Korea, the corporation is engaged in the development of water resources through the construction and management of multipurpose dams and water systems. The 13 multipurpose dams now in existence hold about 11 billion cubic meters of water and generate 1 million KW of hydroelectric power. The Korea Water Resources Corporation is a partially government-funded institution engaged in the development of infrastructure. For this reason, it has as its mission the social and corporate responsibility to “improve the quality of life” for all people. In March 2002, the corporation acted on the opportunity afforded by the “Environmental Management Declaration” to establish an environmental management system, and commenced a Green Procurement system in January 2003 as part of its environmental management campaign.

Management Systems

The Korea Water Resources Corporation adopted the ISO14001 management system, and received certification. The corporation is continuously engaged in environmental issues, and believes that such a stance will boost its corporate value and contribute to its corporate philosophy, which is to “join water, nature, and people to build and realize a sustainable growth corporation that looks to the future.”

Greening Paradigm		
Entry of management systems	Environmental management system (ISO14001) certification	
Operation and management	Inspection and assessments	New environmental management
	Environmental performance evaluation (EPE)	Environmental accounting
	Environmental management assessment (EA)	Green procurement
	Life cycle assessment (LCA)	Green marketing

Efforts at Green Procurement

The corporation has been engaged in green procurement of printing paper, toilet paper, tissue paper, toner cartridges, and other similar items since 2002 and even earlier. In FY2001, the corporation won an award among public institutions for its green procurement policies, being recognized as a superior institution in the government-investment institution category for its performance in the procurement of environmentally sound products. Below is a summary of Environment Ministry Declaration No.2002-82.

Summary of Environment Ministry Declaration No.2002-82

Name of institution	KOWACO	Public Corporation A	Public Corporation B	Public Corporation C	Public Corporation D	Public Corporation E
Total procurement (A)	150.83	40.66	57	2.03	7,046.79	234.46
Green procurement (B)	135.23	40.66	5	1	688.7	42.46
Ratio (B/A)	89.66%	100%	8.77%	49.26%	9.77%	18.11%

Name of institution	Public Corporation F	Public Corporation G	Public Corporation H	Public Corporation I	Public Corporation J	Public Corporation K
Total procurement (A)	15.68	511.84	1,364.83	938.22	55.89	259.1
Green procurement (B)	15.68	53.39	609.03	599.05	55.89	24.7
Ratio (B/A)	100%	10.43%	44.62%	63.85%	100%	9.53%

About Green Procurement

- December 2002: Plan for Implementation of Green Procurement System presented to all ministries and agencies
- January 2003: Project specification manuals for construction materials revised
- February 2003: Guidelines for Administration of Procurement Contracts revised and implemented
- March 2003: Details of Green Procurement System determined and implemented
- Beginning in 2003: Expansion of green procurement infrastructure

Alongside quality and price, KOWACO has now added environmental effects to its list of considerations for procurement of products. The corporation now also conducts comprehensive studies into a product's energy consumption and resource economization before deciding on product procurement. The standard for evaluation is a Type I Environment Mark affixed to products that are deemed to be environmentally friendly. The Environment Mark is currently available only on office supplies and on office equipment such as copiers, printers, and personal computers. In 2003, the corporation began acquisition of personal computers affixed with the Energy Star Mark. At present, about 90% of the corporation's office supplies are obtained through Green Procurement. Environmentally-friendly products include the Environment Mark products, which include Environment Display products (441 items in 45 categories) and Environment Performance Display products (six items), recycled products, which are represented by GR Mark products (225 items in 16 categories), and efficient products, which include power-saving office equipment and electric appliances (15 items) and efficiency-certified equipment and materials (23 items).

KOWACO first confirmed the existence of a market for environmentally-friendly products, and then set up an arrangement for prioritizing their procurement, calling it the Green Procurement Program Detailed Implementation Plan. The corporation's green procurement goal for FY2003 is 3.55 million won.

Revised Guidelines for Administration of Procurement Contracts

Category	Before revision	After revision
Procurement standards	<p>Quality studies (KS or higher standard)</p> <p>Price studies (Lowest (optimum) price)</p>	<p>Priority procurement of green products →</p> <p>Reason for selection of ordinary product even though green product was available must be disclosed</p>
Contract method	Contract obtained after study of procurement standards	Confirm existence of green product Then sign priority contract

The corporation has also divided environmentally-friendly products into lists of compulsory procurement and non-compulsory procurement items. Items on the list of compulsory procurement items must be procured unless extraordinary reasons for not doing so can be provided. Environmentally-friendly items on the list of non-compulsory procurement items are recommended for procurement as long as there are no extraordinary impediments to performance or quality, and the price is reasonable. The corporation plans to gradually promote Green Procurement in stages, to steadily and systematically expand the list of compulsory procurement items.

Proposal for staged compulsory procurement of green products

Stage	Period	Objective	Designation of compulsory procurement items
Introduction	2003	Use designation of compulsory procurement item to establish introductory foundation	<ul style="list-style-type: none"> ● Supplies Toilet paper, soap, fluorescent lights, dishwashing detergent Water-saving faucets, TVs, office paper Toner cartridges, PC monitors ● Internal assets High-efficiency pumps
Expansion	2004	Expand compulsory procurement target	<ul style="list-style-type: none"> ● Supplies Add copiers, gas boilers, vehicle tires (both passenger car and bus) ● Internal assets Add uninterruptible power source, magnetic stabilizers for electric lamps
Fixture	2005 and later	Establish green procurement system	<ul style="list-style-type: none"> ● Supplies and internal assets Expand targets that take construction conditions into consideration and establish a system

Procurement of environmentally-friendly products in 2001 and 2002

Unit: 1,000 won

Period	Total procurement (A)	Environmentally-friendly products (B)	Ratio (B/A)	Remarks
2001	150,829	135,231	89.66%	Printing paper, etc.
2002	248,862	230,262	92.53%	Printing paper, etc.

The procurement ratio for environmentally-friendly products is the amount of environmentally-friendly products procured divided by the total procurement value.

The public institutions' environment display (Environment Mark) product procurement performance (2001) and procurement planning (2002) included the use of energy-saving and more efficient equipment to reduce the burden on the environment. The corporation is also promoting the GEF (Green Energy Family) campaign. One aspect of the GEF campaign is building lighting. By 2005, the

corporation will replace all building lighting with Green Lighting. In addition, power equipment is to be gradually switched over to high-efficiency devices as equipment reaches the end of its working life.

Building lighting situation

Category	Total	Through 2002	Through 2005
Building lighting	30,100	14,247 (47.3%)	15,853 (52.7%)

In the area of construction materials for multipurpose dams, the corporation has turned its attention to eco-materials, with this year marking the first systematic management and development of specific numbers. The corporation has also revised its specialist regional document related to construction materials. In the past, the construction materials standard focused on products featuring the KS mark, whose performance met or exceeded quality testing results set in the Korean Industrial Standards. Now, however, the corporation has announced its intention to use products bearing the Environment Mark, and is proceeding to implement the policy.

Going forward, the corporation plans to systematize the use of environmentally-friendly products from the design stage onward, utilizing design and cost calculations that presume the use of environmentally-friendly products. This policy is to be reflected in the corporation’s “construction engineering control standards” and included in the operating instructions to be sent alongside orders placed with subcontractors.

Relations with Other Enterprises

Regarding relations with other enterprises, the corporation plans to select corporate partners with environmental management systems in place. While South Korea already has laid the legal foundations for transactions with corporations holding ISO certification, very few corporations have in fact secured the 14001. In the future, the corporation wants to increase its relationships with enterprises having both environmental management systems and ISO14001 certification. While few corporations can meet these conditions at present, the corporation intends to give such companies priority during bidding processes.

Organization Promotion System

Dam construction projects involve large numbers of people, with an ecology group and construction group organized under a general supervisory group. In dam construction, an engineering management group controls the project, determining whether the environment has been taken into due consideration from the design process all the way through execution of construction.

Elsewhere, general corporation-wide supervision includes Engineering Management, which supervises engineering issues, the Management Control Office, which supervises business management, and the Administrative Affairs Office. The Administrative Affairs Office reviews the availability of the KS mark, product quality, and lowest prices, and now it requests that procurement officers give clear, specific reasons on why they selected non-environmentally-friendly products when environmentally-friendly products were available. The office will ask for confirmation of whether environmentally-friendly products are available for a given procurement item, and promote their priority procurement.

Future Plans

Regarding the balance between costs and the environment, the corporation in its position as a partially government-funded institution recognizes that costs will rise, and views them as indirect social costs. The corporation plans to have a sustained, continuing assessment management system in place by the end of 2003. This system incorporates such activities as Green Procurement performance management, environmental performance evaluations for each fiscal year, and environmental reports. In addition, the corporation plans to introduce an Eco-Partner system, and to establish an assessment system for small

and medium-size enterprises and procurement products.

The corporation is studying where problems or impediments arise in the practical promotion of Green Procurement, and is proposing solutions to these problems. While procurement costs are generally higher for environmentally-friendly products than for ordinary products, the corporation recognizes the need for awareness of such expenditures as being environmentally sound and for preservation of the environment. Of course, quality and reliability are the highest priority for public facilities such as dams and water works, and should even come ahead of environmental concerns. In many cases, no environmentally-friendly materials are available for construction materials, piping, etc. Moreover, in the area of materials supply, the corporation recognizes the need for development of sustainable technologies and for plant and equipment investment toward improvement of environmentally-friendly products in terms of quality and price. Also, as a partially government-funded institution, the corporation must place priority on procurement of products manufactured by small and medium-size enterprises, or enterprises that are headed by women or people with disabilities. The corporation's activities are somewhat constrained by prioritizing these concerns with environmental concerns.

While specific solutions to such problems are still to be found, the corporation plans to proceed with system reforms in terms of audits and policies, to reform corporate awareness through training and education programs, and to review product reliability in terms of both technology and costs.