

C. INDUSTRIAL DEVELOPMENT

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C. Industrial Development

Decision Making

Major Factors and Goals in Industrial Strategy

Korea is preparing a foundation for sustainable growth by shifting to an innovation-driven strategy with the focus on technological innovation and productivity increase, departing from its previous strategy.

Details of the strategy involves raising to the world-class level the competitiveness of major manufacturing industries, such as semiconductors, shipbuilding and automobiles, as well as

building conditions conducive for the growth of service industries relevant to manufacturing, such as e-business, knowledge-based services, distribution and logistics. The strategy also includes bringing up to the world-class level the basis for industrialization and future strategic technologies such as information, bio- and nano- technologies, which will be the foundation for a knowledge economy. In this process, technological innovation and productivity increase will be considered core factors, with innovation elicited of education, business, finance, taxation, government support and system, as well as forming a close partnership between business and government.

Sustainable Industrial Strategy and Relevant Law

An Environment-friendly Industrial Structure

The Korean industry is being reorganized into a high-value structure such as information, bio- and nano-technologies for sustainable development, wherein the environment and market are integrated, with existing industries being transformed into environment-friendly structures.

The Ministry of Commerce, Industry and Energy (MOCIE) has legislated the Act for the Promotion of an Environment-friendly Industrial Structure in December 1995 as an institutional tool to proactively develop and foster the environmental industry and clean production technologies, which were not well-developed, as well as to facilitate the shift to an environment-friendly industrial structure. Moreover, based on the above law, comprehensive policy measures established every five years to accelerate the restructuring of industries to an environment-

friendly structure is formulated every five years to systematically support the building of a sustainable production structure, including development and dissemination of cleaner production technologies, facilitation of environmental management, and the devising of a basis for material-cycling production society.

The Win-Win Synergy between Environment and Economy Based on Economic Principles

Through the adequate implementation of environmental regulations, Korea is helping generate a market to enable environment-friendly technologies and industries to be competitive in the world market as well introducing economic tools to elicit the voluntary participation of the private sector. It is also expanding voluntary agreements (VAs) based on the voluntary participation of the industry in the fields of energy saving and environmental management, as well as eliciting high-efficiency capex through VAs with workplaces that consume a large amount of energy. Through the latter, about 7.8 million TOE (about 2 trillion Korean Won) have been saved in four years (1999-2003).

Raising Energy Efficiency in the Industrial Sector

To facilitate the shift to a low-energy-consuming social structure, the Basic Plan of National Energy is formulated every ten years. In 2002, the 2nd Basic Plan of National Energy (2002-2011) was devised and is in implementation. To build a sustainable energy system following the plan, rationalization of energy use and the wider dissemination of new and renewable energies as well as the enhancement of the technological innovation system are taking place.

Also, comprehensive measures for greater energy efficiency (to improve energy production costs for each Korean Won spent in production every three years) was established in December 2004, with measures for each sector being pursued with the saving of 17.634 million TOE in energy (8.2% of use in 2003) between 2005 and 2007 as a target. Incentives are reinforced for energy-saving capex and energy audits for energy-intensive workplaces will be made mandatory in the industrial sector.

Capacity Building, Research & Technologies

The Development and Dissemination of Cleaner Production Technologies

First, in all the steps in the design, manufacture, transportation, use and recycling, Korea is supporting the development of cleaner production technologies wherein pollutant generation is minimized. The development of cleaner production technologies has been promoted in accordance with the 1995 Act for the Promotion of an Environmentally Friendly Industrial Structure. In 1999, a Korea National Cleaner Production Center (KNCPC) that covers and supports the introduction of cleaner production to Korean businesses was established, and joined the UNIDO/UNEP NCPC network in 2001 to provide a basis for the establishment of a cleaner production system in Korea. Through the establishment of cleaner technology roadmaps for each industry as well as the formulation of mid to long term development strategies for cleaner production technologies, Korea is developing directions for systematic technology development.

Moreover, problematic issues in production processes are diagnosed to come up with improvement plans and Best Available Technology (BAT), thereby pursuing technology dissemination projects, wherein diagnostic guidance projects and practical cleaner production technologies are provided.

Spread of Environmental Management

Efforts to increase eco-efficiency through the spread of environmental management in industries are also under way. In particular, for the facilitation of environmental management and cleaner production by small and medium sized enterprises (SMEs), Supply Chain Environment Management (SCEM) is being pursued, wherein production process is diagnosed and guidance provided as well as technology and environmental management are introduced by large companies to SMEs. Through a wide variety of cooperative relations between large and small enterprises, large companies are able to be provided with quality environment-friendly parts through the improvement of environmental management capacity in SMEs, while the SME suppliers are able to proactively respond to the large company's green purchasing strategy.

The web-based Environmental Performance Evaluation (EPE) and guidelines for writing environmental reports are being developed and provided to build an environmental management system in SMEs. Moreover, Life Cycle Assessment (LCA) programs for the design of environment-friendly products are developed domestically and provided free of charge, with LCI DBs compiled and provided for each material and product. In addition, a CP-net (cleaner production information network) is built, with domestic and international news related to the

sustainable development of industries, environmental regulations, trends in cleaner production technologies, success stories and industrial environment information provided.

As the result of such efforts, the number of Korean companies with ISO14001 certification has steadily increased, with 2,719 certified companies as of January 2005 from 54 in 1996. Businesses voluntarily set environmental management targets and establish/implement plans and publish environment reports, thereby increasing an environment-friendly image. Awareness of environmental and cleaner technology in industries overall is thus being raised.

Building a Material-cycling Production System

Korea is pursuing the creation of an Eco-Industrial Parks (EIP) to overcome the limitations of the application of cleaner production technology by individual businesses and to resolve social disputes due to environmental issues of existing industrial complexes. The EIPs will re-use by-products or used heat as raw materials for other companies, thereby minimizing the generation of waste and maximizing resource-efficiency. To that end, a pilot project will be designated as Step 1, with processes and material flow of companies in the EIP analyzed and technologies to link by-products and recycle them developed, thereby building a network for businesses to re-use substances and energy. Later on, such resource-recycling system will be expanded to other complexes. In the mid to long term, the building of a Korean-style EIP, in which the creation of a resource recycling network is considered from the design upwards is being reviewed.

In addition, technological development to activate the remanufacturing industry, which saves resources and energy through the remanufacture of products after use, is being supported, with the necessary infrastructure planned. Remanufactured products are almost similar to new

products in performance, while saving about 86-91% in energy and resources compared to new products. Therefore, it is expected that they will greatly contribute to the shift to a resource-saving industrial structure.

Korea is also implementing the Good Recycled Mark (GR Mark) program, wherein the national government guarantees the quality of high-quality recycled products to bring about the quality improvement of recycled products and enhance consumer awareness, thereby increasing demand for recycled products. As of December 2004, GR items have been expanded to 207, and GR specifications to 185, as the result of which conditions for the quality enhancement of recycled products have been created. Cases of GR certification have been increased to 238, thereby increasing the quality of superior recycled products and their demand increased.

Education and Training in Cleaner Production

MOCIE is training cleaner production human resources in a wide variety of ways. HR training is overseen by the Korea Institute of Industrial Technology and KNCPC, with a cleaner production implementation manager program for mid-level officers in companies and a cleaner production technology training program for junior officers, with over five such sessions implemented. Furthermore, foreign experts are invited for the fostering of professionals in eco-design, EIP creation and re-manufacturing.

Facilitation of Voluntary Sustainable Management by Businesses

With increased interest in corporate responsibility for sustainable management, voluntary sustainable management activities by the private sector are being actively implemented in a wide variety of ways, including the declaration to produce environmentally friendly products (electronics industry in February 2004) and a transparent society pact (March 2005), in which various sectors of society, including industry, political and public institutions and civic groups take part.

Establishment of Corporate Social Responsibility (CSR) in society greatly contributes to the sustainable development and social value creation of a country, therefore cooperation between the private sector and government is very important. To urge the Korean corporate sector to take interest in and strengthen overall response capacity towards the international debate on CSR, a "Public-private CSR Forum" has been formed, with the goal of spreading CSR throughout Korea, joining the UN Global Compact and participating in ISO standardization activities. Also, through the forum, every effort will be made to disseminate CSR throughout Korean society, through the finding of business leaders and businesses that are exemplary cases of CSR and continue with the fact-finding survey on business ethics in Korea, which has been implemented since 2003. Moreover, a wide variety of incentives to support the voluntary participation of the private sector in CSR will be actively developed.

Financing

To develop clean production technologies and facilitate its dissemination, about 244.2 billion Korean Won has been invested from 1995 to 2004.

Moreover, to enable the formation of an environment-friendly industry, loans are being provided for capex and operational funds to businesses that install or produce environmental/cleaner production/and resource recycling facilities.

Furthermore, it is estimated that the benefit to the national economy of 13.2 trillion Korean Won (88 times government investment amount) has been generated through the investment of about 518.1 billion Korean Won (government share 372.1 billion Korean Won) from 1992 to 2004 for the development of mid to long term energy saving technologies, including clean energy/industrial raw material production technologies to cut down on NOx and CO2 emissions as well as the development of energy saving technologies.

Cooperation

To import overseas clean development methodologies and to introduce them to Korean companies, Korea joined the UNIDO/UNEP NCPC network in May 2001. UNIDO and KNCPC later jointly implemented the pilot project for the dissemination of clean production methodologies with the Dutch IVAM University in 2002. In 2003, a pilot project for the introduction into Korea of environmental management methodologies and in 2004 a pilot project for the dissemination of environment-friendly design methodology was implemented. Through such international cooperative efforts, interest in and understanding are rising in Korean

businesses of the necessity of clean technology and methodology application, as well as their efficacy.

In addition, Korea is implementing technological exchange as well as introduction to clean production technologies developed in Korea through the participation of Korean experts in the sustainable consumption and production round tables in Asia and the Pacific. Korea is also introducing exceptional Korean clean development technologies to NCPC personnel and experts from other developing countries and arranging for their visit to Korean companies, thereby providing the technological information and application content that the developing countries need.