

# Mining

## 1. Policy and Regulations

### 1.1 General Information

Korea's domestic natural mineral resources amount to 13.2 billion tons (100 million tons of 13 kinds of metallic minerals, 11.7 billion tons of 19 kinds of nonmetallic mineral, and 1.4 billion tons of coal minerals), 88.7% of which are non-metallic minerals. The 5 major non-metallic minerals (limestone, kaolin, silica stone, feldspar, agalmatolite) amount to 11.5 billion tons, taking up 87.7% of the entire natural mineral resources. These 5 major non-metallic mineral types make up 94.4% of the entire mineable ore natural resources, at 8.7 billion tons, which means that these minerals practically represent the entirety of Korea's natural mineral resources. Among these five, limestone takes up 86% with 10 billion tons, while kaolin exceeds 100 million tons in ore reserves, making these two mineral types the majority of domestic natural mineral resources.

With the growth and advancement of industry, the demand for domestic minerals has continuously increased, from 350 million won in 1990 to 470 million won in 1995, and again to 1.96 billion in 2008 (16.0% average annual growth). With the lack of natural resources, the dependency on imports continues to rise, weakening the country's ability to cope with changes in the environment, such as rising prices and lack of supply.

### 1.2 Legal Structure and Features of Domestic Mining Industry

Currently, the legislation governing the mining industry is Mining Industry Act, which has the subordinate laws of the Enforcement Decree of the Mining Industry Act, the Mining Industry Registration Decree, and the Enforcement Rule of the Mining Industry Registration. Other relevant laws are the Submarine Mineral Resources Development Act, the Mining Safety Act, and the Act on the Prevention and Recovery of Mine Damage.

The objective of the Mining Industry Act is to develop mineral resources rationally in order to promote the growth of national industry and to provide a basic system for the mining industry, and this was legislated in December 1951. The objective of the Mine Safety Act is to prevent damages to mine laborers and to mines, in order to promote the rational development of underground resources. For sustainable development under this mining-related legislation system, the Act on the Prevention and Recovery of Mine Damage was introduced and enacted in

May 2005, to appropriately manage mine damage and in turn to protect the natural environment and to allow citizens to enjoy a pleasant environment. As such, the government is planning amendments to the Mining Industry Act, such as the exclusion of asbestos from legal minerals, to actively react to a range of serious environmental pollution issues and to advance mining legislation.

### **1.3 Major Policies for the Growth of the Mining Industry**

To promote the rational development and the stable supply of domestic natural resources, diverse policies have been put in place that encourage self-sufficiency and contribute to industrial growth by improving mine development conditions while stimulating active mine development.

In 2007, the government established its “Framework Plan for the Growth of the Domestic Mining Industry (2007-2016)” to suggest various political tasks for the stability of mineral resources and the prevention of mine damage, through an analysis of the changes in the domestic and foreign mining industrial environment and the current problems of the domestic mining industry.

Under the plan, numerous initiatives are to be promoted for the efficient development of domestic natural resources, including the investigation and revaluation of ore reserves, direct investment in metal mine development to expand the basis of the domestic mining industry, the modernization of equipment to improve the productivity of active mines, the development and distribution of advanced mining technology, the encouragement of high-level industry through the reconsideration of the added value of minerals, the expansion of technical education for the training of expert human resources, the installation of mine safety facilities to prevent mine disasters, and the strengthening of mine damage management for sustainable resource development.

The revitalization of the domestic mining industry, the accumulation of experiences necessary for foreign resources development, and the utilization of domestic natural resources can be expected through the revaluation and redevelopment of domestic mines that were in a state of disuse, which has been made possible by the modernization of redevelopment technology and advancements in retrieval technology. To make this happen, private participation is encouraged in mostly competitive metal mines under government supervision for inspection and redevelopment projects, and in 2008 five mines were promoted for redevelopment. In the future, the 1,884 mines with an active history will be set as targets, and through consideration of development conditions such as metal prices, grades, and ore reserves, revaluation projects will be promoted.

With the recent strengthening of environmental regulations such as the Act on the Protection of Baekdudaegan, pit development turnover within nonmetallic mines, processing improvement, and the extension of pollution-prevention equipment are contributing to cost increases. Accordingly, along with the expansion of financing support, the introduction of advanced financial systems, such as project financing, M&A support and credit financing systems are to be actively promoted.

Due to the dwindling size of companies in the domestic mining industry, it is hard to expect processing technology or commercial capabilities to produce mineral products with high added-value. For this reason, to produce high added-value mineral products with features such as high-purity, small-particle, and high-performance, and for the reconsideration of domestic R&D capability, the expansion of funding support in the area of mineral product material development shall be promoted, and through the “Innovative Material Technology Development Project Group” that is part of the ETI (Energy Technology Innovation) project, the development and support of commercial technology will be promoted.

As the “Mine Safety Act” was legislated and made public in March of 1963 to prevent mine damage, the platform was technically and systematically established and 4 mine security offices located at the north, south, west, and east of areas with numerous mines were operated to manage and supervise mine security tasks. Recently, mine damage has been remarkably decreasing, and as a safety management system was built to include mine safety equipment, cave-in prevention, work environment improvement, and increased safety awareness, the damage rate per million workers dropped from 49 in 2000 to 15.7 in 2008. Also, along with the execution of the governmental supervision of safety management and the enforcement of safety education, the project for establishing a system that utilizes the sharing of large/expensive equipment with nearby mines will be continuously improved.

Mine development is naturally accompanied by a range of mine-related damages, such as refuse, tailing, acid mine drainage, and disused mine sinkage, causing damage to the natural environment and risks to human health. Since the enforcement of the “Act on Prevention and Recovery of Mine Damage,” the systematic infrastructure for mine damage prevention has been greatly improved, but the encouragement of environmentally-friendly mine development and the insurance of the sustainability of the mine industry through the persistent promotion of strict aftercare are still an important societal burden. Therefore, in accordance with the “Framework Plan for Mine Damage Prevention” of 2006, support for environmental improvement projects for mine areas, projects for mine damage prevention and damaged area recovery, and investigation/research/technical development for mine damage must be implemented, and furthermore, the realization and resolution of potential problems

of mine damage-related laws and systematic issues arising from the execution of new mine damage prevention systems are to be promoted on an ongoing basis.

The extensive promotion of information organization and the automation of the domestic mine management system, the establishment of a system for mineral product circulation, the formation of agreements between private sector and government parties for the expansion of investment in mine industry, and the maintenance of mine industry legislations for advanced mine industry management are planned.

The government has prepared a plan for the advancement of domestic resource industries for the mid-to-large scale development of domestic mines and the stable supply of raw materials. The basic items on the agenda are the revitalization of competitiveness through the advancement of the mineral resource industry and the development of mid-to-large sized mines, the maximization of the effect of governmental support through appropriate role distribution between the private sector and government, the security of raw mineral materials, and the early achievement of modernization goals.

The major initiatives promoted are the division of tasks between the private sector and the government; investigation, development, safety, systematic/integral linked investment in processing business; mining, crushing/milling, transportation, and the construction of a basis for green growth through pit conversion of mineral processing/smelting facilities; linkage with industrial clusters for the joint revitalization of mining and the relevant industries; GIS DB construction and provision of investigation data to private businesses; and the development of mining expertise.

Every 3 years, the government devises a 10-year framework plan for foreign resource development, to promote the rational development of foreign resources. In order to raise Korea's self-sufficiency rate for strategic minerals<sup>1</sup>, various investment tactics are being established, such as constructing a Korean-specific resource development model with the joint entry of resource development and the infrastructure business.

As the competition for the security of resources becomes increasingly fierce, resource nationalism and environmental regulations are being strengthened, and the government manages and supervises the businesses overseas to promote responsible resource development in line with international standards, by

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<sup>1</sup> Strategic Minerals: minerals that have a great impact on national industry – soft coal, uranium, iron, copper, zinc, and nickel - for which either the import amount as outlined in the “fundamental plan for foreign resources development” exceeds \$100M, or the import dependency rate exceeds 90%.

conducting environmental influence assessment at all stages of investigation, development, production, and completion. It also actively recommends activities for the development of the local community, through the preferential hiring of locals, technical education, and global social contribution activities so as to improve the image of domestic enterprises.

As overseas sites are continuously increasing, preemptive prevention activities for local diseases such as malaria and yellow fever are actively recommended for the health and safety management of site laborers and local residents.

## **1.4 System for Sustainable Development of Resources**

### **a. Environment-Related Compulsory System**

For visible issues such as forest damage and changes in land characteristics, as most environmental issues can be technologically resolved if appropriate recovery measures are taken following the closure of mines, enterprises take responsibility for environmental management and forest recovery costs, and the government, in order to resolve the mine damage problems, utilizes the collected taxes and shares to split the environmental recovery cost with enterprises. On the other hand, for the local community and its residents, with the introduction of the mine industry, they may benefit from new employment opportunities, new business opportunities through relevant business activities, and the security of indirect social facilities that are required by mining activities, such as road and city infrastructure.

The environmental impact assessment system exists as a system that requires the consent of residents for mining activities. According to the “Environmental Impact Assessment Act,” if the area of forest damage due to rock/mineral collection business is greater than 100,000 square meters, an environmental impact assessment is mandatory, and if the area is less, a prior environmental review is required. Assessment items include factors of the natural environment such as weather, soil quality, and animals/plants, factors of the life environment such as use of land, air quality, water quality, waste, noise/vibration, and the view, and factors of the social/economic environment such as transportation and historic assets.

### **b. Agreement and Participation of Public/Interest Groups in Decision-Making Related to the Mining Industry**

*< Participation of Mining Industry Stakeholders >*



Stakeholders in the mining industry include the government, the local community, investment partners for resources development, cooperating enterprises, committees and research organizations, NGOs, and the mining proprietor. In order to discuss the investment expansion and issues of the domestic mining industry, the government formed the Council for the Advancement of the Domestic Mining Industry, which is a private/public council that includes CEOs from the resource development industry, mining society, and the head of mining industry-related research organizations. At its regular sessions, issues in domestic resource development may be discussed, and efforts to reach resolution are made.

To combat the negative image of the mining industry, regular information sessions, seminars, and joint workshops are conducted for media, NGOs, local governments and local communities that emphasizes subjects such as the importance of the resource development industry, the use of environmentally-friendly technology, and the minimization of environmental damage through mine damage management. In addition, the regular publication of columns and articles to promote an environmentally-friendly image for the mining industry is promoted.

### **c. Status of National Mining Industry**

The industrial production index of the domestic mining industry has been dropping rapidly since the 1990s, and this contraction of business activities, as can be observed from the high mine abandonment rate (70% metal and 60% non-metal), leads to a contraction of mining activities, which only aggravates the circumstances of the domestic mining industry.

While domestic mineral resources maintain an annual mineral production of 2 trillion won, the share of the domestic mining industry with respect to GDP is only 0.23%. However, the economic influence of domestic non-metallic resources, such as limestone and kaolin, on 124 relevant industries was found to be 646 trillion won. Furthermore, an investigation by the Bank of Korea proved a relatively high ripple effect when grouped with industries with direct relation to non-metallic minerals, and compared to other groups among 78 industrial categories. The index of the sensitivity of dispersion<sup>2</sup>, which is the forward linkage effect that becomes higher as more non-metallic minerals are used as intermediate materials in other industries, was 2.7754, ranking 3<sup>rd</sup> after primary metal and finance/insurance/real estate. The impact factor<sup>3</sup>, which reflects the backward linkage effect, was 4.4194, appearing at the very top. This shows that the domestic mining industry has a great influence on the related industries.

While Korea's natural resources are relatively poor compared to those of resource-rich countries, with its resource types limited primarily to non-metallic rock such as limestone, many limiting elements such as the small scale of mine development, high labor costs, operation difficulties, and environmental regulations are hindering the growth of the domestic mining industry. In the meantime, 97% of domestic energy is dependent on foreign resources, and while foreign resource development policies are being promoted due to the uncertainty of mineral cost and increase in resource demand, diverse mining industry policies and self-preservation efforts are underway for the active development and utilization of domestic mineral resources. By placing the concept of sustainable development at the center to harmonize resource development with the environment and become an advanced resource-managing country, the domestic mining industry is changing.

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<sup>2</sup> The dispersion sensitivity index is the ratio of the sum of production inducement coefficients of a certain industry to the average of that of all industries. The more products of the industry are used as intermediate material for another industry, the higher the index.

<sup>3</sup> The impact factor can be calculated from the matrix of the production inducement coefficients; it is the ratio of the sum of columns of the production inducement coefficients of a certain industry to the average of the production inducement coefficients of all industries. The more domestic materials are used in the industry, the higher the index.

## **2. Best Mining Practices**

### **2.1 Environmental Impact Assessment (EIA) and monitoring of all phases of mining operation (exploration, project development, mine operation, and mine closure)**

In order to promote direct investigation and potential mine search for the revitalization of domestic metal mine development, and to develop domestic high-value rare metals in order to promote resource security as a defense against potential international resource disputes, the Geumeum molybdenum mine was developed in April 2006. Prior to the approval and authorization of this project, the “prior environmental review of the development of Geumeum molybdenum mine” was performed to control environmental damage and reduce environmental pollution.

Also, for the prevention of pollution from the operation of the Geumeum molybdenum mine, strict inspections and other measures were put in place by the preemptive suspension of potential pollution-inducing elements from mine operation, while to encourage environment-friendly mine development, soil (5 sites) and water (3 sites) samples were collected from mines and their surrounding areas, which were analyzed by KORES technology research institute for preemptive pollution suspension through continuous monitoring of measurements.

Domestically, the feasibility of environmentally-friendly development is examined for F/S of development feasibility investigation. This is to consider the prevention and minimization of mine-related damage with respect to the environmental issues expected as a result of mine development, and after development, to consider the environmentally-friendly utilization of existing facilities for the prevention of secondary environmental pollution. The examination of environmental issues arising from mine development includes the restraining of development plans from open area development and concentrating on tunnel development, the pit installation of basic facilities such as disintegrating facilities, the environmental issues of ore concentration processing such as research on the utilization of disused materials (aggregate, non-metallic resources), the grouting of disused materials, the utilization of underground tunnels as low-temperature preservation facilities or ground heat research facilities, and a recovery and utilization plan of the site after mine closing, such as for a metal mining museum or entertainment facilities through environmentally-friendly recovery.

## **2.2 Private Public Partnership (PPP) for sustainable mining**

Mining activities are inevitably accompanied by environmental issues, the minimization of which is necessary for environmentally-friendly mine development. Also, in order to return the commercial benefit to the local community, mining businesses need to form win-win partnerships with their local communities by building an organic relationship with the local community and even the local government, through the provision of convenient facilities for local residents and the boosting of employment.

Mines are usually located in the backcountry, whose local governments, to improve the under-development of the local community, are recommended to provide administrative support for approval and authorization to attract mine development businesses, and also to participate in the investment as beneficial businesses for the governments themselves.

The case of GMC, which was promoted through the establishment of a joint enterprise of KORES and private businesses in July 2008, is a good example of a private/public partnership for sustainable mining. Four private businesses participated in this project with a 70% share, and are actively participating in the investigation project. These businesses are the ones operating limestone mines in Samcheok; synergy is created by combining the expertise of private businesses in handling customer appeals and the technological power of public organizations in such an investigation.

To contribute to the stabilization of the domestic economy, the mining industry needs to establish a supply base for the domestic demand for industrial raw materials, for which partnerships with the private sector that are led by the public sector are necessary.

## **2.3 Emergency Response Plans and Preparedness at the local level**

Regional offices (Taebaek and Iksan) are operating education/training programs to train rescue task forces in damage prevention methods, emergency response guidelines, first aid guidelines, and damage management tasks for laborers in charge of mine rescue and security duties at mines.

To prepare for potentially massive damage in mines and the surrounding areas, an emergency rescue crew is formed in the government organization, which supports preemptive measures and rescue activities for damages. Through a close, cooperative relationship with local offices and nearby mines, support for swift rescue resources, equipment, and task forces is provided. An emergency reporting

network is established among the correspondents of the major mines to support emergency rescue activities, a local rescue crew, and required equipment, along with emergency relief commodities such as food and clothing.

In addition, the government has devised a crisis management manual (CMM), which outlines crisis management objectives and directions, the decision-making system, and the crisis alarm system, and designates the roles and responsibilities to prepare the necessary steps to respond to large-scale accidents and damages.

#### **2.4 Risk assessment of mines and mining activities**

Domestically, the safety evaluation of rock structures in the open area and underground was performed, and to encourage the systematic development of mines, a detailed gang safety assessment project is in progress.

The mine safety assessment project is executed in parts, and includes the safety evaluation of mining for pit development mines, the slope stability evaluation of open pit mining, the suggestion of post-recovery resolutions, and a detailed pit safety examination for the utilization of disused tunnels.

In 2005, when attempting to mine horizontal pillars from domestic limestone mines, the safety of the horizontal pillars and the dynamic stability of the rock structure were analyzed for scattered mining pits. Through such safety assessment projects, the safety of mining sites and the improvement of productivity through the operation of appropriately sized mining sites, the regulation of pit sizes that were maintainable without ground support, and the guidelines for domestic pit mining were prepared, and these are expected to be utilized for the prevention of damage to surrounding forestry and the achievement of environmentally-friendly mine development.

#### **2.5 Restoration of affected communities and life-supporting ecosystems, including mine site decommissioning**

Mine damage<sup>4</sup>, which accompanies mine development, has the characteristics of “pollution, persistence, accumulation, and spreading,” which means that the damage occurs extensively over a long period of time and across a large area, and causes serious safety concerns and mass appeals, both during operation and after closing.

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<sup>4</sup> Mine damage refers to all collateral damage to the mine and the surrounding environment due to loss of debris/mineral waste, discharge of waste water, emission of mineral gas, flying dust, and generation of noise/vibration occurring from the excavation of land, mining, ore concentration, and smelting process.

Thus far, the government has invested 156.6 billion won in damage prevention of general mines from 1980~2004, and 183.1 billion won for disused coal mines from 1990~2005 through the Coal Industry Rationalization Corporation (currently Mine Reclamation Corporation). Accordingly, in order to encourage efficient mine damage prevention projects, secure consistent product quality, and completely prevent mine damage, the government established the Mine Reclamation Corporation (MIRECO) under the legislation of the “Act on the Prevention and Recovery of Mine Damage” in 2005, and with the goal of completing the mine damage prevention project for disused mines in 20 years, the first phase of the Framework Plan for Mine Damage Prevention (2007~2011) was established and will be put in place for 1,344 seriously damaged sites with funding of 540.1 billion won. The funding for mine damage prevention is composed of shares collected from the obligators for mine damage prevention based on the special accounting and the principle of the burden of the originator, according to the “Act on Special Accounts for Energy and Resource-related Projects.” According to the Framework Plan, MIRECO removes mine damage factors arising from the mine development process (ground subsidence prevention, water pollution resolution, soil pollution recovery, damaged forestry recovery, mineral waste/debris loss prevention, and noise/vibration/dust prevention) so as to recover the damaged natural environment and construct a pleasant living environment, which in turn protects the health of residents and improves their living environment. In addition, through the practical application of the technology and research results acquired from the project execution process, the technological advancement and preparation of a basis for international cooperation in the area of mine damage prevention technology is promoted. In addition, sustainable mine development is made possible through the establishment of an environmentally friendly mining environment by pursuing mine damage prevention from the early stages of mine development.

## **2.6 Technological, institutional and social initiatives for protecting the health of mining workers**

### **a. Investigation and Aftercare of Resident Health for Closed Metal Mines**

#### **Background and Motivation**

Provoked by the Goseong closed mine incident, the “Investigation on the Impact of Heavy Metal on Agricultural Products, etc.” in open fields and closed mine areas was enacted (2005.7 ~ 2006.6) as a joint project of the relevant departments to establish a standard for heavy metal in agricultural products. The subsequent research showed that closed mine areas had a higher degree of heavy metal in agricultural products compared to open fields.

Accordingly, the government announced these investigation results and resolutions (2006.9.5, Ministry for Food, Agriculture, Forestry and Fisheries, Ministry of Knowledge and Economy, and Korean Food & Drug Administration) and prepared and promoted follow-up measures for each department. The major agenda was to investigate the heavy metal contents of soil/water/crops in areas neighboring closed mines, and through the examination of the health of residents, those with a heavy metal density over a certain level were to be cared for with the cooperation of the related departments.

### **Major Investigation Results**

The major investigation from 2005 to 2007 includes the completion of a preemptive investigation on 401 mine sites with potential damage risk, and by selecting target mines through joint efforts with related departments, mine investigation was performed on 17 sites from mines with potential damage risk, such as mines exceeding the soil pollution standards for disused mine areas, by the execution of the “Investigation on the Impact of Heavy Metal on Agricultural Products and etc.” in open fields and closed mine areas.

As a result of the initial investigation, examinations on the influences on the health of local residents were prepared, and in 2008, urine cadmium levels, blood mercury levels, and urine arsenic levels were examined for 1,814 people from 10 sites out of 39 health examination targets. The body density of heavy metal was found to exceed recommended standards in 51 out of 1,814 people. From 2008 to 2011, a detailed annual investigation is planned by the National Institute of Environmental Research for these 39 mines. (10 in 2008, 10 in 2009, 10 in 2010, 9 in 2011)

### **Future Plans**

In the future, annual examinations shall continue with respect to disused mines with potential damage risks, and preemptive measures and resolutions for environmental pollution sources and pollution processes will be prepared.

## **b. Promotion of Safety Investigation of Heavy Metal in Agricultural Products**

### **Background**

As announced by the Ministry of Environment and the Korean Rural Community Corporation, heavy metal (cadmium, Cd) in rice was examined in farmlands with polluted soil, and the Korean Food & Drug Administration set the standard for rice cadmium level as 0.2mg/kg (2000).

As the heavy metal pollution of 44 disused mines had gained social attention, related departments (Ministry for Food, Agriculture, Forestry and Fisheries,

Ministry of Environment, Ministry of Knowledge and Economy, and Korea Food & Drug Administration) cooperated to devise a response plan (2006.9.5).

- Ministry for Food, Agriculture, Forestry and Fisheries: Safety assessment with respect to heavy metals (lead, cadmium) was performed on 10 agricultural products, such as rice, Chinese cabbage and so forth, that had been grown on heavy metal-polluted farmlands of disused mines and open field areas, and products that did not meet the safety standards were purchased and destroyed by the corresponding local government.
- Ministry of Environment: Soil inspection and resident health influence inspection
- Ministry of Knowledge and Economy: Promotion of mine damage prevention projects, such as deposit/loan of land for disused mine areas not meeting agricultural standards.
- Korea Food & Drug Administration: Establishment of safety standards for agricultural products

In about 418 sites with high heavy metal risks among the 936 disused mines in Korea, over the period of 4 years from 2006, the Ministry for Food, Agriculture, Forestry and Fisheries and Ministry of Environment made joint efforts for the examination of crops and soil/water, respectively.

Year	'06	'07	'08	'09	Total
Disused Mines	44	125	125	124+13	418+13

※ The 2009 plan was 124, but 13 sites were added by the Ministry of Environment

### **Status of Investigation on Heavy Metal in Agricultural Products**

From 2001 to 2005, led by the National Agricultural Products Quality Management Service, the cadmium content of rice (brown rice) was examined for farmlands unfit for soil/crops in heavy metal pollution areas, such as disused mines.

Also, from 2006 to 2008, the examination was extended to include lead and 10 items of rice, Chinese cabbage and so forth, and the results are shown in the following table. Crops that failed to meet safety standards were bought out and destroyed by the corresponding local government, and were banned from circulation (including both disused mines and open fields).

Year	'01	'02	'03	'04	'05	'06	'07	'08
# of cases	158	57	93	64	244	898	6,959	2,660
Deemed unacceptable	38	33	6	3	31	107	139	46
Unacceptable in amount (tons)	41.7	30.1	7.0	2.8	19.4	143.8	142.5	45.5
Ratio of unacceptable crops (%)	24.1	57.9	6.5	4.7	12.7	11.9	2.0	1.7

## 2.7 Mine Closure Planning

Since the development of small-scale mines near Pyeongyang in 1896, Korea's domestic coal industry has been more than a simple fuel or energy resource; it was at one time regarded as "the only domestic natural resource," and had a major influence on the domestic economy. But since the late 1980s, with the preference for more advanced sources of energy due to the international expansion of environmental awareness and improvements in the standards of living, the demand for anthracite has rapidly declined, and the production conditions of mines has deteriorated due to the narrowing of gangs and the need to go deeper for coal mining, hindering production and economic efficiency, eventually leading to a serious loss of competitiveness. Coal demand, which peaked at 24,295 tons in 1988, has continued to decline by a significant amount each year, and since 1989, a coal industry rationalization plan has been promoted through the closing of under-performing mines and the rational development of economical mines. As of late 2008, there were 7 operating mines, 1 dormant mine, and 341 disused mines. Through the promotion of the coal-industry rationalization plan, the local economies of mining areas, once greatly dependent on the mining industry, are now in a state of stagnation. As such, the conversion of the local economic base through focused development of alternative industry according to local characteristics is necessary.

Most mine areas are located in mountainous backcountry areas, and as such transportation conditions are very poor, resulting in extra transportation costs. Furthermore, it is difficult to find a trained work force, and in turn, is difficult to attract alternative industries such as manufacturing. Accordingly, the government prepared a legal basis for offering support for the development of disused mine areas when an alternative business is initiated, and thus encouraged the development of disused mine areas through the legislation of the "Special Act on Assistance to the Development of Abandoned Mine Areas" in December 1995.

Accordingly, the establishment of tourism/leisure businesses such as Kangwon Land, The Dong River Cistar, Mun Gyeong Leisure Town, Black Valley Country Club, and Daecheon Resort Hotel is supported while contributing to the economic growth of mine areas, through the harmonized growth of the local economy by the active development of alternative and new businesses.