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The Use and Management of Groundwater in Korea

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Annual precipitation in Korea is about 1,283mm, and over the half of precipitation falls in summer. Although total water produced in one year is 127,600mm^3, 54,500 mm^3/yr, 43% of total water is disappeared through evapotranspiration. 73,100 mm^3/yr, 57% of total water is the surface run-off. The surface run-off contributes to sea, river, dam and groundwater. 3,700 mm^3/yr, 3% of total water is used for groundwater. The main aquifer of groundwater is alluvium and fractured rocks. The groundwater level has very close correlation with topography, and is about 10m below the ground surface. 340 national groundwater monitoring wells are developed for the understanding of groundwater quantity and quality all over the country. The quantity of groundwater recharge is estimated to 16,400 mm^3/yr, and that of sustainable development is 11,670 mm^3/yr.

The number of groundwater wells is about 1,078,000 in 2002, and the quantity of 3,100 mm^3/yr is used on the land excluding saline groundwater of the Jeju Island. The domestic use is 1,540 mm^3/yr and 50% of total use. The agricultural use is 1,310 mm^3/yr and 42% of total use. The industrial use is 180 mm^3/yr and 6% of total use. The other use is 60 mm^3/yr and 2% of total use. The use of hot springs is 520 wells and 35.2 mm^3/yr. The use of bottled water is 315 wells and 4.9 mm^3/yr.

The groundwater quality was examined from 1996 to 2000 at about 1,520 wells in the possible contamination area including farms, rivers, waste landfills, industrials, abandoned mines, sewage excrement disposal area, recreation area and parks, golf areas, gas stations, and municipal living area. 100~150 wells, 7 to 10% of examined wells are contaminated by some heavy metals and toxic organic and inorganic materials. The main contaminants are TCE and NO_3-N. The contamination rate is redued every year because of the strong management of contamination source and the construction of environmental facilities.

Korean government puts their heart into the management and conservation of groundwater with several laws of groundwater, hot spring and bottled water. Only $40 million/yr is invested for the investigation of groundwater distribution and characteristics, and the plannings of groundwater management. However, much more investment is necessary for the protection against groundwater contamination and remediation of contaminated groundwater as well as the present projects.