

Geotechnical Engineering for Sustainable Development

*Gye-Chun Cho¹⁾

¹⁾ *Department of Civil Engineering and Environmental Engineering
Korea Advanced Institute of Science and Technology (KAIST), Daejeon 34141, Korea*
¹⁾ gyechun@kaist.ac.kr

ABSTRACT

All forms of development impose an inevitable burden on the natural environment. For sustainable development, this burden must be within the self-resilient limit of the natural environment. However, the practical implementation of sustainable development is accompanied only with great hardship, as is evident from the lukewarm international efforts to reduce carbon emissions and thus prevent global warming, because nature conservation and environmental protection, forming the basis of the concept of sustainable development, need to compete with powerful opponents such as technological convenience and economic validity in the real world. Thus, sustainable development is to engineers in numerous fields a difficult goal when attempting simultaneously to achieve all facets of it. Because geotechnical engineering deals with the earth, it can make a great contribution to sustainable development in an efficient manner. The best examples are the development of underground spaces for new generations and cultures and the development of energy with a minimum impact on the natural environment. The boundaries of human life are limited to the physical space on earth and are inevitably based on the ground. Hence, the utilization of underground spaces has the potential to double the available space for human use. In addition, the uses of conventional fossil fuels are limited by various technological and economic restrictions, whereas the ground is an area of opportunity that can both supply conventional and non-conventional fossil fuels and reduce the damage caused by the use of fossil fuels, mainly CO₂.

¹⁾ Professor