7-2008

Recent Trends in Water Quality Management in Korea: An Introduction to Korea's Total Maximum Daily Load (TMDL) Program

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Abstracts of presentations given in Session 5 of the UCOWR conference.

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In 1999, the Korean Ministry of Environment adopted the Total Maximum Daily Load (TMDL) management system to resolve the problems of traditional water quality management policies represented by concentration regulations, land-use regulations, and environmental treatment facilities. A special act established in 1999 recommends the autonomous implementation of the program in the Han River watershed. Also, a series of special acts established in 2002 require the compulsory implementation for three other major river watersheds. Accordingly, as of 2007, four major river watersheds are implementing the first phase of the TMDLs as well as preparing for a second phase set to begin in 2011. Although the introduction of the TMDL program can be evaluated as a paradigm shift in water quality management, the current system addresses issues that originated specifically in Korea's political and economic context.

Above all, the Korean TMDL program was implemented during a transitional period for the local government system that placed primary emphasis on community development. As a result, the central government announced that the objectives of its TMDL program were not only to conserve water quality, but also to support the economic development of communities. However, the latter objective, which was to be realized by providing incentives for pollutant reduction, has the potential to bring about more conflict between the central and local governments. In addition, since local governments often lack appropriate technology and expertise and possess a low degree of financial independence, the active cooperation and participation of local governments, which is indispensable to the successful execution of the TMDL program as it currently stands, cannot be assumed. For now, the central government has uniformly set the target pollutants at BOD_5, standard flow at Q_{275}, and Margin of Safety (MOS) at ten percent. However, these simplifications should be improved so that the target pollutants reflect the designated use of each water body and so that the standard flow includes its worst condition. Also, the MOS should be specified to each TMDL to incorporate the properties of each individual watershed.