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Ick Hwan Ko

Byoung-Seub Choi

Dal-Sik Woo

Basuki Hadimuljono

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BUILDING FRAMEWORK FOR SMART AND INTEGRATED WATER MANAGEMENT SYSTEM OPERATION FOR THE BANDUNG METROPOLITAN, INDONESIA

ICK HWAN KO(1), BYOUNG-SEUB CHOI(2), DAL-SIK WOO(3), BASUKI HADIMULJONO(4)

(1): Vice President, Yooshin Engineering Corporation, Seoul, Korea / ihko@yooshin.co.kr

(2): Vice President of Water Resources Division, K-water, Daejeon, Korea

(3): President, Korea Interfacial Science & Engineering institute, Seoul, Korea

(4): Director General of Spatial Planning and Development, Ministry of Public Works, Indonesia

The Citarum River Basin (CRB) is located in the West Java Province of Indonesia and covers 13,000 km² lying immediately to the east of Jabodetabek conurbation. The CRB, as an important national strategic river basin, is the heart of the rapid and sustainable economic growth of the nation toward 'Green Everlasting Indonesia'. However, rapid increase in population and industrialization in the Bandung Metropolitan and surrounding upstream area of the CRB has been accelerating serious water scarcity, river pollution, and flood damage. In order to solve these complex and complicated water management issues in the rapidly developing mega city, intensive and integrated efforts for reshaping urban and basin water management model are urgently required. As part of these efforts, a cooperative project between Indonesia and Korea has recently initiated to develop integrated water infrastructure management system in the upper CRB. Further research is under planning to build smart and integrated water management system for adapting and mitigating the increasing risk from climate change in the region.

Keywords: Integration, Smart Water Management, Operation System

PROJECT OUTLINE

The Project is to provide planning for the practical solution on the serious water shortage problem of Bandung metropolitan through inter-basin water transfer development with integrated dams operating system. Figure 1 shows the map of the CRB and the Cisangquy sub-basin which covers the project area in the south of the Bandung metropolitan. In this project area, two existing hydropower dams and reservoirs (Cipanunjang, Cileunca), three micro hydropower plants (Plengan, Lamajan, Cialong), two tunnels (Plengan, Lamajan, Cialong) and one water intake (Cikalong) are operated. In addition, a new dam construction is under planning as part of the project to increase water supply capacity to Bandung region.

FRAMEWORK FOR DEVELOPING SMART AND INTEGRATED WATER MANAGEMENT OPERATION SYSTEM

Development Concept and Direction

Figure 2 shows basic the concept and direction for smart and integrated operation system development. 'Smart Operation' means advanced ICT based intelligent water management. 'Inter-connected Facility' emphasizes the need for integrated and coordinated operation of water infrastructures in the basin. 'Seamless Data' is to improve the accuracy of the integrated operation system through continuous and consistent hydrologic data with high reliability.



Figure 1. Map of CRB and Cisangquv Project Area in the Upper CRB

System Configuration Scheme

Direction of integrated dams operating system development is toward an intelligent decision support system (DSS) which integrates the whole process of data acquisition and analysis, watershed runoff analysis, optimal reservoirs system operation, water budget analysis, water quality analysis, and the assessment of operation effect.



Figure 2. Basic Direction for Integrated Operation System Development

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