Pemanfaatan Teknologi Cerdas Dalam Pengelolaan Air Bersih Dan Air Limbah Untuk Ibu Kota Nusantara (IKN) = Implementation of Smart Technology in the Management of Clean Water and Wastewater for the Capital City of Nusantara (IKN)

Sucipta Laksono, author

Abstrak

Perencanaan pembangunan Sistem Smart Water dan Smart Wastewater Management di Ibukota Nusantara (IKN) bertujuan mendukung pembangunan kota berkelanjutan serta mencapai target Sustainable Development Goals (SDG), khususnya SDG 6 dan SDG 11. Dengan pertumbuhan penduduk yang pesat, kebutuhan air bersih menjadi tantangan utama di Indonesia. Teknologi cerdas, seperti sensor, otomatisasi, dan analitik data diperlukan untuk meningkatkan efisiensi distribusi air, memantau kualitas air secara real-time, serta mengoptimalkan pengelolaan air minum dan air limbah. Sistem ini terintegrasi dalam konsep Smart City guna memastikan pasokan air yang berkelanjutan dan mengurangi dampak negatif terhadap lingkungan. Pengelolaan berbasis teknologi cerdas di IKN dirancang berdasarkan Rencana Induk Terintegrasi (RIT) dari Kementerian PUPR, yang mencakup aspek smart economy, smart mobility, smart people, smart environment, smart living, dan smart government. Teknologi Internet of Things (IoT) akan dimanfaatkan untuk memantau kualitas dan kuantitas air dengan sensor serta sistem pemantauan yang terhubung ke perangkat pengolahan air. Selain itu, teknologi SCADA (Supervisory Control and Data Acquisition) akan digunakan untuk pemantauan dan intervensi real-time. Kajian ini mempertimbangkan prinsip etika insinyur, profesionalisme, serta keselamatan kerja (K3LL) dalam merekomendasikan solusi teknologi yang tepat bagi Ibukota Nusantara.
.....Development of the Smart Water and Smart Wastewater Management System in the Nusantara Capital City (IKN) has a linier target for the development of a sustainable city and the Sustainable Development Goals (SDGs), particularly SDG 6 and SDG 11. With rapid population growth, increase of the demand for clean water has become a major challenge in Indonesia. Smart technologies, such as sensors, automation, and data analytics, are necessarily required to improve water distribution efficiency, monitoring water quality in real-time, and optimization the management of drinking water and wastewater process. The integrated system into the Smart City concept was developed to ensure a sustainable water supply and reduce negative environmental impacts. The technology-based management in IKN is designed according to the Integrated Master Plan (RIT) from the Ministry of Public Works and Housing (PUPR), including aspects of smart economy, smart mobility, smart people, smart environment, smart living, and smart government. In water and wastewater treatment process, Internet of Things (IoT) technology will be utilized to monitor water quality and quantity through sensors and monitoring systems connected to treatment plants. Additionally, SCADA (Supervisory Control and Data Acquisition) technology will be used for real-time monitoring and intervention. This study considers engineering ethics principles, professionalism, as well as occupational health and safety (K3LL) in recommending appropriate technological solutions for Nusantara Capital City.