

**PERENCANAAN OPERASI DAN PEMELIHARAAN DALAM
MODERNISASI IRIGASI UNTUK OPTIMALISASI ANGGARAN DAN
SUMBER DAYA MANUSIA DI DAERAH IRIGASI KEDUNG PUTRI
KABUPATEN PURWOREJO**

INTISARI

Oleh:

**Cahyo Putro Dwi Nugroho
22/492565/TP/13361**

Sektor irigasi memegang peran krusial dalam mendukung ketahanan pangan nasional. Daerah Irigasi (DI) Kedung Putri di Kabupaten Purworejo, yang memiliki luas layanan fungsional 4.341 hektar, telah ditetapkan sebagai percontohan transformasi digital melalui penerapan sistem *Supervisory Control and Data Acquisition* (SCADA). Implementasi teknologi ini menuntut penyesuaian dalam perhitungan Angka Kebutuhan Nyata Operasi dan Pemeliharaan (AKNOP) serta optimalisasi jumlah dan komposisi Sumber Daya Manusia (SDM) pengelola. Penelitian ini bertujuan untuk mengevaluasi kembali kebutuhan AKNOP secara terpadu serta menentukan kebutuhan ideal tenaga operasi dan pemeliharaan (O&P) sebagai dasar penyusunan anggaran tahun 2026. Metode yang digunakan adalah analisis deskriptif kuantitatif mengacu pada Peraturan Menteri PUPR Nomor 12/PRT/M/2015.

Hasil analisis menunjukkan perlunya penambahan SDM guna mencapai kinerja optimal, yaitu 4 staf UPTD, 3 Petugas Pintu Air (PPA), dan 7 pekaya saluran. Sementara itu, posisi Kepala UPT dan Juru Pengairan dinilai sudah memadai. Tim Unit Pengelola Irigasi Modern juga telah optimal, terdiri dari 4 Asisten Tenaga Ahli (IT, SDA, Irigasi, dan Perangkat Keras), 1 tenaga administrasi, serta 2 petugas keamanan. Berdasarkan perhitungan AKNOP tahun 2026, total kebutuhan anggaran mencapai Rp4.144.449.233,51. Anggaran tersebut mencakup biaya manajemen O&P sebesar 62,7%, biaya operasi 2,3%, dan biaya pemeliharaan 35%. Dengan luas layanan 4.341 hektar, kebutuhan biaya optimal tercatat sebesar Rp954.722 per hektar. Perencanaan ini diharapkan mampu meningkatkan keandalan sistem modern dan infrastruktur irigasi serta mendukung keberlanjutan ketahanan pangan.

Kata Kunci: Modernisasi Irigasi, AKNOP, SCADA, Sumber Daya Manusia, Daerah Irigasi Kedung Putri.

Planning of Operation and Maintenance Irrigation Modernization for Budget and Human Resource Optimization in the Kedung Putri Irrigation System, Purworejo Regency

ABSTRAK

By

**Cahyo Putro Dwi Nugroho
22/492565/TP/13361**

The irrigation sector plays a crucial role in supporting national food security. The Kedung Putri Irrigation System in Purworejo Regency, with a functional service area of 4,341 hectares, has been designated as a pilot project for digital transformation through the implementation of the Supervisory Control and Data Acquisition (SCADA) system. The adoption of this technology requires adjustments in the calculation of the Actual Operation and Maintenance Budget (AKNOP) as well as the optimization of the number and composition of human resources managing the system. This study aims to reassess AKNOP requirements in an integrated manner and determine the ideal number of operation and maintenance (O&M) personnel as a basis for the 2026 budget planning. The method used is a quantitative descriptive analysis referring to the Regulation of the Minister of Public Works and Housing (PUPR) Number 12/PRT/M/2015.

The analysis results indicate the need for additional human resources to achieve optimal performance, consisting of 4 UPTD staff, 3 gate operators (PPA), and 7 canal workers. Meanwhile, the positions of Head of UPT and irrigation supervisors are considered sufficient. The Modern Irrigation Management Unit team is also deemed optimal, consisting of 4 Assistant Experts (IT, natural resources, irrigation, and hardware), 1 administrative staff, and 2 security personnel. Based on the 2026 AKNOP calculation, the total budget requirement reaches IDR 4,144,449,233.51. The allocation includes 62.7% for O&M management costs, 2.3% for operational costs, and 35% for maintenance costs. With a service area of 4,341 hectares, the optimal cost requirement is recorded at IDR 954,722 per hectare. This planning is expected to enhance the reliability of modern systems and irrigation infrastructure while supporting sustainable food security.

Keywords: *Irrigation Modernization, AKNOP, SCADA, Human Resources, Kedung Putri Irrigation System.*