

ABSTRACT

The sustainability of an infrastructure, whether water resources or other infrastructure, is strongly influenced by planning, implementation as well as operation and maintenance with appropriate standards and compatible with the regulation. In general, the main problem in water resources infrastructure, especially the raw water transmission system, is actual discharge is incompatible with design discharge due to water losses along the raw water transmission system. The main problem is lack of a comprehensive management strategy of a system. This research will analyze the comprehensive strategy with system component approach for water transmission system which will use Klambu Kudu Water Transmission System in Semarang, Central Java as a case study.

Strategy analysis of Klambu Kudu water transmission system utilize SWOT (Strength, Weakness, Opportunity, dan Threat) modification with Likert Scale and QSPM (Quantitative Strategic Planning Matrix). SWOT Analysis is carried out to obtain a comprehensive strategy on each component of the water transmission system while the QSPM method is required to analyze the priority of strategy of component water transmission system. The key factors used in the SWOT and QSPM analysis were obtained from the discussion of experts, managers of raw water transmission infrastructure of Klambu Kudu and the community. The criterias of the PROMETHEE II analysis are social, economic, and environmental while the alternative are the infrastructure components of the raw water system : intake, embankment channel, excavation channel, drainage culverts, channel culverts, channel and drainage chute, suplesion intake, sand pocket, syphon, intake regulator, and bridge.

The determination of the strategy and the priority of strategy of raw water transmission infrastructure components in this research using DSS (Decision Support System) method with SWOT (Strength, Weakness, Opportunity, dan Threat) technique with Likert Scale and Quantitative Strategic Planning Matrix. Priority ranking infrastructure component of raw water transmission system using MCDM Multi Criteria Decision Making) method with PROMETHEE II technique (Preference Ranking Organization for Enrichment Evaluation).

The result of this study concludes that the priority of strategy is dominated by the opportunity (funding, community support) factor to overcome the weakness factors (sedimentation, damage building) and maximize the strength (function, accessibility) to minimize the threat factors (water theft, destruction of building, flood), while the rank of priority for execution of Klambu Kudu transmission system are excavation channel, embankment channel type, sand pocket, syphon, intake suplesion, intake regulator, drainage chute, intake, bridge, channel culvert, drainage culvert, and the last is channel chute.

Keywords : Infrastructure, Raw Water Transmission, SWOT, Likert Scale, QSPM, PROMETHEE II