

Ecohealth System Dynamic Model as a Planning Tool for the Reduction of Breeding Sites

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Abstract. Dengue is still one of major health problem in Indonesia. Dengue transmission is influenced by dengue prevention and eradication program, community participation, housing environment and climate. The complexity of the disease coupled with limited resources necessitates different approach for prevention methods that include factors contribute to the transmission. One way to prevent the dengue transmission is by reducing the mosquito's breeding sites. Four factors suspected to influence breeding sites are dengue prevention and eradication program, community participation, housing environment, and weather condition. In order to have an effective program in reducing the breeding site it is needed to have a model which can predict existence of the breeding sites while the four factors under study are controlled. The objective of this study is to develop an Ecohealth model using system dynamic as a planning tool for the reduction of breeding sites to prevent dengue transmission with regard to dengue prevention and eradication program, community participation, housing environment, and weather condition. The methodology is a mixed method study using sequential exploratory design. The study comprised of 3 stages: first a qualitative study to 14 respondents using in-depth interview and 6 respondents for focus group discussion. The results from the first stage was used to develop entomology and household survey questionnaires for second stage conducted in 2036 households across 12 sub districts in Bandung City. Ecohealth system dynamic model was developed using data from first and second stages. Analyses used are thematic analysis for qualitative data; spatial, generalized estimating equation (GEE) and structural equation modeling for quantitative data; also average mean error (AME) and average variance error (AVE) for dynamic system model validation. System dynamic model showed that the most effective approach to eliminate breeding places was by ensuring the availability of basic sanitation for all houses. Weather factors such as precipitation can be compensated with the eradication of breeding sites activities which is conducted as scheduled and at the same time for the whole areas. Conclusion of this study is that dengue prevention and eradication program, community participation, and housing environment contributed to breeding places elimination influenced the existence of the breeding sites. The availability of

