CHAPTER 6
CONCLUSION AND RECCOMENDATON

6.1 Conclusion

Based on the analysis that has been done, it can be concluded that:

1. A concept of water, energy, and food (WEF) nexus was introduced to study the interconnection among these three elements. A simultaneous simulation model is required to simulate and analyze the interconnection and feedback, and a system dynamic model such as Vensim is a suitable model to do the simulation. The nation-wide WEF model requires lots of modification before could be implemented in the river-basin scale model. Therefore, a new model has been developed to accommodate the system in Selorejo Reservoir.
2. The existing condition of Selorejo Reservoir could not serve water, food, and energy for the whole Malang District population throughout the year, except the rice production. The available treated water only served 12.5% of Malang District, and the available energy only could serve 16.27% of Malang District. It is caused by either limited resources availability or limited production capacity.
3. The first scenario is developed to increase productivity and reduce trade-offs on Selorejo Reservoir by reuse the excess energy, without modifying the existing infrastructure and system. After applying the first scenario, the number of populations that could be served is increase to 19.9%.
4. The second scenario's objective is to increase the productivity of the resources and to use excess as a resource in a multi-use system. In this alternative, a few of the infrastructures and systems are modified or enhanced. The available water could potentially serve 100% of Malang District. The available energy could potentially serve 27.45% of Malang District.
5. After analyzing the results of the WEF Nexus model runs, the existing power plant and irrigation scheme on Selorejo Reservoir system is could be increased. The first scenario is shown how the resources allocation could be improve to increase the serviceability without modifying the existing infrastructure and without any costs. Meanwhile, the second alternative could increase water and

electricity supply even more but needs more costs to enhance and modify the current piping system, hydropower plant capacity, and water treatment plant capacity.

6. By knowing the feedback behavior among WEF Nexus elements, the suitable plan and management could be conducted to increase resources reliability index and maintain its sustainability.

6.2 Recommendation

As mentioned earlier, this study still has limitations. Therefore, several recommendations could be addressed to enhance the study, as follows:

1. The current available data is only for 3 years (2006-2008), which does not enough to represent all situations that have occurred in Selorejo Reservoir system. Therefore, collecting more data and information should be done to enhance the accuracy of the model.
2. Collect more information related to the daily retention pond of Mendalan and Siman Power Plant, so that the second scenario could be fully calculated.
3. Net future value could be calculated in term to evaluate the feasibility of second scenario.
4. It is recommended to carry out future condition analysis to provide more information for stakeholders when developing the policy.

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