Saksri Rakthai 2011: Water Reallocation Model of Kaeng Krachan Reservoir to Create Economic Worthiness and Social Acceptance for Sustainable Development. Doctor of Philosophy (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Chucheep Piputsitee, Ph.D. 237 pages.

The study aims to develop the new pattern of water allocation in order to gain social acceptance and enhance economic efficiency by balancing the needs for agriculture, industries, domestic consumption and ecology. The Kaeng Krachan Reservoir in Phetchaburi Province was selected as the study case. The study firstly employed the cost-benefit technique by investigating net present values, benefit cost ratio and internal rate of returns of four allocation alternatives. Public consultation was then conducted to develop the appropriate recommendations for all stakeholders

The new allocation model suggested that water should be kept in the reservoir for approximately 400-500 cubic metres, for domestic consumption, for industries, for agriculture and for ecosystem stabilisation at the amount of 8-10, 1-2, 200 and 130 cubic metres, respectively. The proposed alternative provided the net present value of 21,940.91 million baht, benefit-cost ratio of 14.64 and internal rate of returns of 67.28. However, in order to minimise the possible impacts of this water reallocation model, it is recommended that water should be managed in the shift manner. Agricultural extension on cultivating pattern to respond to the new water paradigm, such as the use of appropriate soil conditioners, should be provided to existing farmers. Such recommendations would be able to help farmers to reduce the cost of production, enhance revenue earnings which therefore compensate for less water allocated. The study findings point out to the fact that water can be allocated in a sustainable manner, balancing economic, environment with acceptance from the surrounding communities.

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