

Teerawat Thumnyom 2012: Water Footprint of Rice in the Khok Katiam Operation and Maintenance Project Area. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor : Associate Professor Adichai Pornprommin, D.Eng. 119 pages.

Rice is the major economic field crop and staple food of Thailand. The cultivated area of rice is more than 50 percent of the total cultivated area in the country (Rice Department, 2012). The crop season of rice can be divided into wet season crop and dry season crop with respect to the cultivation in the rainy season and dry season, respectively. Chapagain and Hoekstra (2011) found that the water footprints of paddy rice are globally-averaged 1,325 m³/ton and Thailand-averaged 1,617 m³/ton. Therefore, the water footprint of rice in Thailand should be studied in details. In this study, the water footprint of rice is calculated based on data from field surveys in the Khok Katiam Operation and Maintenance Project. The typical agricultural practice for rice cultivation in this area is the paddy-sown field method. The crop coefficient (Kc) used in this study from the royal irrigation department of Thailand is larger than the value by FAO, and the allowable Nitrogen concentration in this study is only half of that used by Chapagain and Hoekstra (2011). Thus, using the local data may result in higher water footprints than the previous study. The results show that in the project area paddy rice yields about 467 ton/km² (747 kg/rai). The total averaged water footprint in both wet and dry seasons is 1,627 m³/ton less than the previous study, and it can be divided into blue water footprint of 771 m³/ton, green water footprint of 438 m³/ton and grey water footprint of 418 m³/ton. The results can be applied for water consumption impacts analysis and provide a guideline for the appropriate water management in rice cultivation at the Khok Katiam Operation and Maintenance Project Area.

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