5th International Conference on **Pollution Control and Sustainable Environment**

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10th Edition of International Conference on **Water: Pollution, Treatment & Research**

March 14-16, 2019 London, UK

How night irrigation can contribute to sustainability? – The assessment through the case study in GAP Region in Turkey

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Southeast Anatolia Project (GAP in Turkish Acronym) Region in Turkey is an arid area, where they have only 500 mm annual precipitation. Traditionally, they used to do rain-fed cultivation, but after the irrigation scheme was installed in the Harran Plain, along with the construction of the Ataturk Dam on the Euphrates in 1992, the farmers in the upstream of the water channel got able to use as much water as they wish. However, the farmers in the downstream use less water and sometimes they face water shortage. Thus, some conflicts between the farmers in upstream and downstream occurred. In addition, because farmers there used a lot of chemical fertilizer, severe salinization also took place in their fields.

In order to improve their environmental situation, the authors conducted the project named "night irrigation", that is, we just encouraged farmers to irrigate their agricultural lands at night, aiming at reducing evapotranspiration in the hot weather during daytime and also decreasing the amount of chemical fertilizer. This study assesses not only environmental effect but also economic and social effect from night irrigation by taking advantage of sustainability assessment.

As a result of night irrigation, farmers succeeded in saving 1,000,000 litter of water (in estimation) and some amount of chemical fertilizer, and also in mitigating salinization. In addition, their agricultural crop yield increased about 15%. Furthermore, we noticed farmers' satisfaction with night irrigation was high because they could find some free time to do something they like and also didn't need to work under the hot weather during daytime.

Finally, as a result of our sustainability assessment, we conclude night irrigation can highly contribute to sustainability in this region because environmental, economic, and social effects were all positive.

Recent Publications

1. Hamasaki, H. (2016) "Seeking for the new irrigation governance by co-creation between stakeholders and scientists – through trials of stakeholder meetings and night irrigation in the GAP Region in Southeast Turkey" in Dividing Water - Co-creating local futurability, edited by Kubota, J., Bensei Publishing, pp. 205 – 224.
2. Nakagami, K. and H. Hamasaki (2014) "Mekong River Basin Development and Environmental Conservation in Vietnam" in Overcoming ASEAN Divide and Mekong River Regional Development edited by Nishiguchi, K., et al., Koyo-shobo, pp.196 – 214.
3. Hamasaki, H. (2015) "Climate change impacts on water resources and adaptation - from a perspective of Mekong Delta Region" Journal of Water and Environmental Issues, 28(1): 67-73.
4. Hamasaki, H. and K. Nakagami (2012) "A New Paradigm of Water Management – Water Security, Governance and Integrated Management" Journal of Environmental Conservation Engineering, Society of Environmental Conservation Engineering, 41(10): 600 – 605.

5. Hamasaki, H. (2011) "A Study on Integrated Water Resources Management in the Mekong River Basin – A Case Study on Ratanakiri Province, Cambodia" Journal of Policy Informatics, Association for Policy Informatics, Vol.5, No.1, pp.19 – 36.

Biography

Hironori Hamasaki has completed his PhD (policy science) at the age of 32 from Ritsumeikan University. He is an associate professor of the Faculty of Environmental Science, Nagasaki University since 2014, with his research experience in the fields of water resources management & governance, water policy & institution for stakeholder coordination, integrated management of water quality and quantity. Recent years, focusing on the case studies on irrigation governance in Cambodia and Turkey, he conducts his research through transdisciplinary approach, that is, holding workshops, group interviews, and action research with stakeholders in order to find the solution for water problems, for example, how much fertilizer and pesticide is appropriate for enough yield, good water quality, and ecological environment.

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