

## **Historically-Valuable Irrigation Structures in Kumamoto and its Potential as Regional Resource for Revitalization of Local Society**

Takehide Hama, Asami Ninomiya, Naoto Tanaka,  
Tsugihiko Watanabe, Yasunori Kawagoshi, and Hiroaki Ito  
*Kumamoto University*

E-mail: hama@kumamoto-u.ac.jp

*Keywords: irrigation canal, heritage irrigation structures, land improvement district, rice farming*

### **Abstract**

Kumamoto is one of major agricultural area in Japan. However, socio-economical pressure such as urbanization and global climate change threaten agriculture. Because agriculture, especially rice farming, has multifunctional roles in the region, the declination of agriculture means not only the decrease of food production but also the decline of local society. Therefore, revitalization of agriculture in local society is an important issue in Japan. On the other hand, there are many historically-valuable infrastructures in Kumamoto. The main objective of our study is to investigate the historically-valuable irrigation structures in Kumamoto and evaluate the potential for revitalization of the local society. For example, four irrigation systems were constructed in Shirakawa River Watershed about 400 years ago: 1) “Uwa-ide” Irrigation System, of which the main irrigation canal is 14-km long, was constructed to develop about 330 ha of new rice fields in 1618–1637; 2) “Shita-ide” Irrigation System with 12 km of the main irrigation canal was constructed for 270 ha of rice fields in 1589–1618; 3) “Babagusu-ide” Irrigation System with 14 km of the main irrigation canal was constructed for 95 ha of rice fields in 1588–1608; and 4) “Toroku” Irrigation System with 2.6 km of the main irrigation canal and three lateral irrigation canals was constructed in 1596–1606. 1,083 ha of new rice fields was developed with the irrigation systems. All these systems were constructed on the basis of hydrological and geographical characteristics of the watershed. Therefore, these irrigation systems still have been maintained and used by the local organizations and communities although the facilities were destroyed many times by disasters such as flood, volcanic eruption and earthquake. In addition, because about 15% (90 million m<sup>3</sup>) is recharged from the paddy fields, it can be said that the irrigation systems have maintained the regional water cycle and water resource for 400 years. However, the questionnaire survey and workshops reveal that the residents including farmers are not always interest in the historical value and the multi-functionality. It can be concluded that “knowing their own circumstance” is the key for the revitalization of the local society and the irrigation structures be used as educational resources.