

Editorial: Water as resources and for livelihood: impact and assessment in Asia's changing climate

We require water for a wide range of activities essential to our livelihoods. The growing demand for different water needs for agriculture, recreation, hydropower, domestic and industrial use requires integrated management in order to sustain our livelihood and also the environment. Issues such as water scarcity, adverse water quality, flooding and environmental problems have crossed the threshold of irreversibility in certain countries. The 2030 Sustainable Development Agenda centers around health since it is both a major contributor and beneficiary of sustainable development policies. As health, economic, social and environmental progress are inter-related, water is indispensable and plays an important role to provide sustainable developments in all fields.

This Special Issue is a selection of articles presented at the International Conference on Water Resources (ICWR 2018), Langkawi, Malaysia. ICWR 2018 was jointly organized by the Department of Water and Environmental Engineering, Faculty of Engineering, Universiti Teknologi Malaysia (UTM) and Department of Irrigation and Drainage (DID) of the Ministry of Water, Land and Natural Resources, Malaysia. The conference highlights specifically water related themes; watershed management, flood management, water supply and economics, coastal management, environmental science, natural disaster, mathematics and computing. ICWR 2018 was able to gather academicians, professionals, researchers, stakeholders and NGOs from multiple countries across the globe in a common platform to exchange ideas and experiences, keeping abreast with current innovative techniques and developments in the field of water resources, climate change, and water management.

The title of this Special Issue, 'Water as resources and for livelihood: impact and assessment in Asia's changing climate', coincides with ICWR 2018 conference theme. Water is not only an essential component of life supporting systems, but also an important element for food security, economic development and global sustainability. However,

water can lead to disaster if it is not sustainably managed. With the on-going issue of global warming, its impact within Asia and developing countries needed to be captured, documented and understood. Contribution of research, discussions and implementation advice particularly among developing countries around Asia is very much required. Parallel to the aspiration of the Intergovernmental Panel on Climate Change (IPCC), and the 2030 Sustainable Development Goals, more research outputs from these countries are needed as few research publications from this part of the world exist. This Special Issue consists of selected papers relevant to the theme in discussing and providing information and methodology towards water related issues and climate change within Asia and other developing countries. Papers from Malaysia, Thailand, Bangladesh, Saudi Arabia, Japan and China are included in the issue involving challenges, impacts and solutions related to water and climate change. Management of dams, land-use, droughts, extreme rainfall predictions, groundwater supply, and economic evaluation of water related disaster are also presented.

Guest Editors

Dr **Nor Eliza Alias**

Senior Lecturer, School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia UTM Fellow, Centre for Environmental Sustainability and Water Security (IPASA), Universiti Teknologi Malaysia

Dr **Mohd Ridza Mohd Haniffah**

Senior Lecturer, School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia UTM Fellow, Centre for Industrial and Applied Mathematics (UTM CIAM), Universiti Teknologi Malaysia

Prof. **Sobri Harun**

Professor, School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia UTM

ACKNOWLEDGEMENTS

We would like to express our gratitude to the participants, Humid Tropics Centre Kuala Lumpur (HTC KL), Langkawi

Development Authority (LADA), Kedah State Government, The Malaysian National Commission for UNESCO (MNCU) and various universities, both local and international agencies for their initiative and efforts in supporting the conference.