

## **Challenges and Chances for Sustainable Water Management in China. International Workshop, Confucius-Institute at the Freie Universität Berlin, June 9, 2017**

The international workshop hosted by the Confucius-Institute and the Institute of Sinology at Freie Universität Berlin brought together scholars from China, Japan, South Korea, the Netherlands and Germany for an interdisciplinary exchange on issues related to sustainable water management in China.

In her opening remarks Professor Brigitta Schütt, vice president of Freie Universität Berlin, stressed the importance of integrating traditional knowledge into modern concepts of sustainability.

In her introduction Eva Sternfeld (Berlin), coordinator of the workshop, outlined the major issues to be discussed: How are inherent water risks (such as extreme water scarcity in many parts of the country including important economic regions, disastrous floods, water pollution, impacts of climate change) addressed in China and mitigated by human interventions? What kind of strategies are developed to approach the water-food-energy security nexus and to regulate increasing competition between rural and urban water users?

Miriam Seeger (State Library Berlin) looked at the historical and cultural connotations of river control and dam building. In her presentation: "Productive Landscapes" she showed that "shui li 水利", the use of water in order to transform landscapes to productive ones, is a social and political concept that can be traced back to early water conservation projects such as the Dujiangyan 都江堰 irrigation system in Sichuan, built in 246 BC. These concepts according to Seeger have been re-introduced and re-strengthened during the Republican time in early 20th century when the first plans for the Three Gorges Dam were developed.

Jia Shaofeng 贾绍风 (Vice Director of the Center for Water Resources Research of the Chinese Academy of Sciences) identified in his presentation "An Assessment of Sustainability of Water Use in China" water use quantity, water quality, water utilization and ecosystem impacts as the four relevant aspects to be addressed when assessing sustainability in water management. While demand for agricultural water since the early 2000s stabilised, there was a considerable increase of demand for industrial and urban uses. According to data presented by Jia, while China's total water resources since 1958 remained stable, for some rivers however, a significant decrease of run-off was observed. Of particular concern are the Hai River 海河 (the river basin where the capital Beijing is located) and the Yellow River 黄河. Another serious issue is the deterioration of water quality. About a quarter of rivers and three quarters of lakes have been rated as seriously polluted in recent years.

However, there are also signs of improvement: Recent data suggest that the peak for water use might have been reached. Jia takes it as a Kuznets curve of water use: Along with economic growth and rising per capita GDP water use intensive industries and agriculture are transforming to a more resource efficient mode of production. More efficient water use is also the achievement of political intervention. As an example, Jia mentioned the remarkable rehabilitation of rivers in the semi-arid Gansu corridor in recent years, which have been achieved by paying local farmers compensation for giving up water intensive farming.

Recently there have been ambitious efforts to install a functioning governance system for sustainable water management. The so-called Document No. 1 from 2011, issued by the State Council, calls for accelerated reforms in water governance and sets "Three Red Lines" for water consumption, water use efficiency and water quality. To implement these targets a whole tool kit of instruments has been introduced ranging from improving information flow (including access to environmental information and improvement monitoring), political cooperation (for example to implement ecological function zones) marketization (water pricing, water rights trading, waste water fees) to top-down approaches (inclusion of water targets into cadre evaluation system, introduction of a "river leader system"). In her presentation Sabrina Habich-Sobiegalla (Freie Universität Berlin, Institute of Sinology) showed

that under “Crisis Mode in China’s Water Politics” this complex tool set is given up in favour of a campaign-style authoritarian environmental governance approach. Taking the case Lake Erhai 洱海 in Yunnan as an example she explained how media reports about the serious pollution of the popular tourist destination and an inspection visit by president Xi Jinping’s to Dali and Lake Erhai resulted in a “crisis mode” actionist campaign. According to the leader river management approach Yunnan’s second largest lake Erhai is under the direct responsibility of the provincial governor. Following inspections of the provincial environmental supervision group, the local government of Dali prefecture ordered the immediate closure of guesthouses near the lake. This action received a lot media attention and has serious impacts for the local tourist industry. The effectiveness however is questionable, because important sources for water pollution in the region such as agriculture and local industries have not been targeted at all.

James Nickum (Tokyo, International Water Resources Association) shared his thoughts on “Water Economies of China’s Global Cities”. Throughout the world mega-cities with open economies and international networks have become the important drivers of global development and national economies. According to the Kearney Ranking 2017<sup>1</sup> three of the world’s most important 20 global cities are located in China (Hong Kong, Beijing and Shanghai). Global cities are important as hubs for information exchange, business activities, innovation and political engagement while at the same time they are extremely vulnerable to economic crisis and impacts of climate change. Water economies of the China’s global cities have special characteristics as they all depend for water supply on their hinterlands (Beijing on Hebei and recently on the South-to-North-Water Transfer, Hong Kong on the Pearl River Delta and Shanghai on the Yangzi Delta). In particular, long distance water transfers from the hinterland and beyond make urban water supply more expensive. In the case of Hong Kong almost half of public expenditures for urban water supply is spent on purchasing water from neighbouring Guangdong Province. The good news is probably, that population growth and rising living standards have not resulted in a rise of total water consumption, because additional water demand has been dampened by the departure of manufacturing operations and shifts to less water using agriculture in the urban suburbs. Based on the experience of global cities, including Chinese ones Nickum identified three sustainability dilemmas, which he explained for the cases of Beijing, Shanghai and Hong Kong: 1. Resource stability versus financial stability: Decreasing demand for water is accompanied by rising public expenditures for water infrastructure, environmental protection and imports of water. 2. Financial sustainability versus political sustainability: Municipal governments face resistance in raising water tariffs; privatising operations does not adequately address problems of social or often political acceptability. 3. Greater self-reliance or working out arrangements with their source areas, often upstream from the city.

In her presentation “China’s agricultural water management in transition-smart technology- smart governance?” Bettina Bluemling (Utrecht university) showed how in China increasingly smart-technology is used to adapt to climate change and water risks. In recent years huge amounts have been invested into research of related technologies. Artificial weather modification such as cloud seeding to induce rainfall or preventing hail have become a quite common institutionalised practice under control of the China Meteorological Administration (CMA). The weather modification office of CMA is in charge of artificial rainfall plans and the establishment of regional weather control systems. Particularly agriculture is benefiting from its intervention. Among the strategies that the government employs to approach the farmland-food-water nexus, this strategy in particular shows the government’s embracement of the Anthropocene.

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<sup>1</sup> [https://www.atkearney.com/research-studies/global-cities-index/full-report/-/asset\\_publisher/YqKN8xIwv205/content/global-cities-2017-leaders-in-a-world-of-disruptive-innovation/10192](https://www.atkearney.com/research-studies/global-cities-index/full-report/-/asset_publisher/YqKN8xIwv205/content/global-cities-2017-leaders-in-a-world-of-disruptive-innovation/10192) (accessed July 2, 2017)

Yang Yonghui 杨永辉 (Center for Agricultural Resources Research, Chinese Academy of Sciences) took in his presentation the water management strategies for the Haihe River (the river basin where the new capital region Jing-Jin-Ji 京津冀 is located) as an example to illustrate the challenges for the farmland-food-water nexus based river basin management. He showed that China's recent increases in food production were mainly reached through increases in North China (which at present contributes 55 per cent to food production, compared to 40 per cent in the 1980s). This production increase however was achieved at the cost of serious overuse of surface and groundwater resources, especially in the North-China Plain. The run-off of the Hai-River amounts only to 1.5 per cent of China's water resources, but 10 per cent of China's population live in the catchment area and it produces 11 per cent of China's food. Although long distance water transfer projects in recent years brought some relief, the North China Plain suffers from severe ground water depletion and decline of surface water run off. The Hai River Renaturation Plan includes the recovery of six tributary waters and wetlands in the Hai River basin with an additional injection of 5 billion m<sup>3</sup> water per year. Yang mentioned the challenges to implement such an ambitious program without impacts on the agricultural productivity and recent efforts to reduce agriculture water demand by adjusting crop patterns and offering ecological compensation to farmers for giving up cultivation of water intensive wheat.

In the final presentation Seungho Lee (Korea University, Seoul) discussed his findings on possible shared benefits in the collaboration of China and other Mekong River countries in the field of hydropower development. In some academic papers China has been accused to use upstream waters of Mekong without consultation of its neighbours and by this bringing about negative environmental impacts for the downstream areas. It is also a common belief that the Mekong River Commission, which has been installed 1995, was not very effective in solving water related trans-boundary conflicts. Lee showed that there are a number potential fields, where collaboration could bring a benefit sharing such as improving water quality and biodiversity, improving water management for hydropower and agriculture uses, flood and drought management and beyond water the integration regional markets for all parties involved. This is especially worth to note as China's economic influence in the region is growing. In recent years China is heavily investing into infrastructure projects, including hydropower in neighbouring countries and it participates in the Mekong Power Grid, which connects the lower Mekong region with China. The Lancang-Mekong Cooperation Mechanism, an initiative between China and ASEAN, agreed on in 2014, is clearly focussing on issues such as interconnectivity, cross border cooperation and cooperation on water resources management, poverty alleviation, agriculture and public health. Critics argue that this is initiative is China's brainchild and is dominated by Chinese interests as it is probably used as a testing ground for AIIB and the Belt-Road Initiative. However, as Lee argued, on the long run neighbouring countries may share the aspired benefits.

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