

1 Discussion

The discourse on water quality should have a more holistic focus which values local knowledge, subjective perspectives and increased awareness to complement the current primary focus on direct water quality.

1.1 Issues and Implications

China has made a range of commitments, and notable action, on improving the country's water quality. The government invested 717.6b RMB (US\$110.3b) to address water quality, quantity and flooding issues in 2017 alone. (The World Bank 2019, p.. vii). The priority improvement method is infrastructure development – Since the founding of the P.R.C., over 800 billion cubic meters of water storage has been constructed though over 400 thousand kilometers of river dikes and over 98000 reservoirs. (The World Bank 2019, 2) Additionally, nearly 6000 water supply projects provide rural services to more than 800 million people.

Progress is being made towards Sustainable Development Goals 6 – Clean Water and Sanitation. However, China still has substantial improvements to make: for example, water stress is high and expected to increase (SDG 6.4.2), and household wastewater treatment is low (SDG 6.3.1 - 38%). (“Country (or Area) | SDG 6 Data” n.d.)

SDG 6.3 focuses on water quality:

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
(Martin n.d.) #check-source

Another key component to China's water policy is its efficiency. SDG 6.4 focuses on this:

By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. (Martin n.d.) #check-source

China is currently far from achieving this target. A recent study found that not only does China have a significant lack of resource efficiency, there are also significant discrepancies between provinces. (Song, Wang, and Zeng 2018) This indicates the situation is local, and a homogeneous national-level solution may not be appropriate. Currently, China spends two to three times more than the average upper-middle-income country for the same economic output.¹ (The World Bank 2019, 2) Furthermore, while agricultural and industrial water use has remained relatively constant in recent years, domestic use has and continues to increase.

The two main driving forces for economic growth with relation to water resources are quantity and utilization. (Chen and Tang 2017) Since current technology all but prohibits increasing the overall quantity, the main method of achieving economic growth is to increase the quantity of usable water (by increasing quality) and decreasing inefficiency.

The issues highlighted above lead to increased pressure and deterioration of ecosystem services. Natural ecological systems are decreasing in size, quality, and utility to provide benefits for the society – wetlands and riverbanks are decreasing in their ability to provide flood protection, and wetlands are less able to retain water. (The World Bank 2019, 3) Furthermore, biodiversity has declined significantly. This is at direct odds with China’s plan to become an ‘ecological civilization,’ as highlighted in their 13th Five-Year Plan (2016-2020).

Another notable policy implication is China’s energy profile. Coal us-

¹This is a measurement to compare how much water is used to achieve a set amount of added value in the industrial sector. “China’s water consumption per RMB 10,000 (roughly US\$1,450) industrial added value is two to three times greater than the average upper-middle-income country (UMIC).”

age is more prevalent in the north, where water resources are less abundant. Since large quantities of water are required for fossil fuel production and use (roughly six cubic meters per ton of coal and roughly ten cubic meters per ton of oil), diminishing water resources have the potential to strain energy production. (The World Bank 2019, 3)

Many of these issues are exacerbated by policy coordination problems. While national standards have been discussed in this thesis, water resource management often is in the purview of local and provincial officials. (The World Bank 2019, 4) Water Resource Bureaus exist at all levels of administrative regions, from townships to provincial levels).

1.2 A Multi-Stakeholder, Multi-Scale Approach

This all leads to the conclusion that top-down, Beijing-lead infrastructure programs are not enough to meet many of the SDG 6 targets and indicators #cite. Inclusion of local knowledge and expertise can aid in this effort. The less-discussed SDG 6.B mentions this:

Support and strengthen the participation of local communities in improving water and sanitation management. (Martin n.d.)
#check-source

While data is limited, China had low participation from users and communities for drinking water, sanitation and hygiene promotion in both rural and urban areas, and only had moderate participation for national water resources planning and management in 2017. (“Country (or Area) | SDG 6 Data” n.d.) This seems to have improved with urban and rural drinking water, with high and moderate levels of participation in 2019, respectively.

Other sectors are also not very involved, due to poor economic policy instruments which do not properly incentivize innovative and sustainable water use. (The World Bank 2019, 7) Improvements in the pricing and

accountability of water usage in both abject quantities and inter-agency knowledge sharing would improve the situation from a policy perspective.

1.3 Education

In addition to policy changes, education-focused policies should be implemented to directly and indirectly improve China’ s water situation through knowledge and perception acquisition pathways.

- Increased classroom and school-based education
 - Water quality index, components
 - Water quantity issues, trends
 - Local water sources (field trips), water treatment techniques
 - Local action
- Increased communication and accessibility of water quality scores

One tool should be a water information sharing platform which is accessible to both the general public and water stakeholders. (The World Bank 2019, 10) For water stakeholders, open data on water quantity, quality, pricing, and utilization can improve the overall water resources management sector. For individuals, access to information about their local, regional and national information on water quantity, quality, pricing, and utilization can improve water awareness, perception and knowledge. It also has the potential to align water quality with perceptions, which can improve political support if positive.

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