



Water Transfers from Agriculture

Water resource exploitation has silently supported the blossoming Chinese economy for decades. Unfortunately, that rapid development has ended with depleted rivers and aquifers and degraded water and soil. China is responding with new thinking, policies and technologies to manage water.

From 1950-1980, water resources were governed under the slogan of “human power over nature”. Nowadays, the ethos has been replaced with “human-nature harmony”, a concept that originates from Taoist teachings and sees the value of ecosystem restoration.

Engineering-based water management is slowly giving way to more holistic management. Water is increasingly viewed more as a distinct natural, human and ecological resource. While large, centralised engineering projects remain under construction, small-scale, distributed watershed management projects are on the rise. The institutional landscape, formerly dominated by governmental administration, is now moving towards combined government-market approaches. On top of these changes, water itself still needs to be moved. The re-allocation of water from agriculture, the largest consumer of water, to the fast-growing municipal and industrial sectors is a necessary but challenging proposition for China’s present and future.

Getting more from less

China is home to 25 percent of the world’s people but only 7 percent of its available freshwater. Those water sources are also disproportionately spread between north and south – in the south there is about four times more water available per capita than in the north. Still, the north is a major food grower that produces half of China’s wheat and almost one third of its corn. The Huang, Hai and Huai basins support 40 percent of the country’s agricultural land with eight percent of the water resources. And the farmers dependant on that scarce water are expected to share more of it with growing cities and industries.

The north-south disparity poses a major problem in planning water solutions for the future of the country. The huge water transfer project from the Yangtze River in southern China to northern China may help mitigate the problem. In the long term, however, water demand management will have to be applied to counter unmanageable pressure placed on water resources by population growth, increased food demand, and municipal and industrial (M&I) development. In the water short north, water transfers from agriculture will

be an inevitable measure. But they pose large risks and challenges that require careful consideration.

Water stress in northern China has intensified water use conflicts between agricultural, M&I and ecosystem demands. There is now a great challenge to transfer sufficient water from agriculture to M&I and ecosystem uses without diminishing agriculture output and disrupting the livelihoods of farmers. Between 1980 and 1999, water consumption from

agriculture in northern China decreased from 84 to 73 percent, M&I water use increased from 22 to 28 percent, and the trend has continued in recent years. Essentially, farmers must use less water to produce the same amount of food. Since water is cheap and farmer’s incomes are low, most lack incentive and the necessary capital to invest in methods that save water.

Difficulties exist with the governance of water transfers in China. The national policy of food self-sufficiency also requires farmers to maintain high crop yields that are dependent on irrigation, even when the water required is not always available. Current water transfers follow the priorities of local governments, which often have short-sighted economic motives. There is

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re: China's Challenge

no formal institution for mediation, so the government often resolves large water disputes between agriculture, other sectors and regions in an ad hoc fashion.

Consequences and risks

Water transfers that ignore appropriate compensation and water pollution can deplete the supply of clean water for the farmers basic needs. Farmers in northern China have employed dangerous strategies to reduce their income losses from water shortages. Land irrigated with wastewater increased from 42,000 hectares in 1963 to 3.6 million hectares in 1998, most of which are in the water short north. Others seek help from private entrepreneurs to use deep wells in order to restore irrigation. In the rural areas of northern China irrigation systems are connected to drinking water supply, which means the pollution and heavy reduction of irrigation water impacts people's drinking water.

For local governments, economic development always overrides environmental protection. So far, the environment has borne the largest sacrifice from this water stress. Water transfer failures have caused excessive water withdrawals and pollution from

surface and groundwater sources which aggravate growing water quality problems.

Implications for policy reforms

Farmers need support so they can and will save water. Traditional inefficient irrigation must be replaced with advanced irrigation systems. Formal water markets are still in the experimental stage in China, but are increasingly important in water conflict resolution. Policy must address the socio-economic roots of the problem. Incentive to save water should be created by higher water prices so that they at least partially reflect the costs of irrigation system upkeep and the economic value of water. However, under their current income level, farmers are unable to cope with the price hikes used to rationalise water supply. We must learn what level of income will make farmers' willingness-to-pay for water match the economic value of water that is assessed by China's gross economy.

The delineation of secure and consistent water rights for various water users will be the basis for equitable water transfers among farmers and other groups. This will require new institutions that allow farmers and other groups to fairly exchange water. These institutions must also provide negotiation and

mediation mechanisms for representatives from competing sectors to resolve conflicts and protect the benefits of all stakeholders, especially groups with less political clout.

Helping farmers save water

Water transfer failures lead to economic and environmental losses which hurt farmers and slow the flow of water needed by industry and cities. A "smooth" water transfer may take a long time, but certain actions are needed immediately to firmly protect the basic water needs for both rural and urban residents and to prevent irreversible environmental disasters. While there is much being done, most initiatives are administrative orders with large transaction costs designed to alleviate short-term emergency situations. The key challenge will be converting these short-term emergency measures into long-term sustainable policies. For successful water transfers to occur, the real value of the very limited water resources in northern China must be acknowledged. This will require that the entire society pay more for water and the goods that it produces so that farmers are able and willing to save water.

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