



CASE STUDY

# China: Progress in agricultural water management and reallocation - growing more with less



## Summary

China's industrialised economic development began to accelerate in the 1990s, but so too did environmental degradation, including water pollution and overuse. Since 2000, the government's desire to build an 'ecological civilization' has meant greater integration of economic development, environmental protection and poverty reduction in the country's most important national planning documents and policy agendas. Promoting more efficient agricultural water use can encourage economic growth and is a good investment.

## Background

China is at the heart of debates around the perceived trade-off between economic growth and environmental protection. Since the early 1990s, the country has experienced remarkable economic growth, lifting nearly 600 million people out of poverty and averaging a per capita GDP growth rate of 8.9%. With just 10% of the world's farmland and 6% of the world's freshwater resources, China's agriculture is able to feed over 20% of the world's population with crops mostly grown in the water-scarce north. Growth has been driven, in large part, by China's investments in agricultural production since 1978, but growth has also put a huge strain on the country's water resources through pollution and overuse.

China's industrialized economic development began to accelerate in the 1990s, but so too did environmental degradation, including water pollution and overuse. For poverty reduction and food production, however, a healthy rural economy remains vital. The question of how to release water to growing urban areas and industries while continuing to increase farm production and rural incomes is therefore something of a political headache.

China has been able to get 'more crop per drop' by improving the efficiency of water use in agriculture, a sector that still accounts for 65% of total water withdrawals. This case study conducted by Overseas Development Institute (ODI), documents this progress, particularly in the water-scarce region of northern China, where agricultural water withdrawals per hectare of irrigated land have been reduced by around 20% since 1990. The case study also examines the synergies and trade-offs between agricultural output, poverty reduction and agricultural water management.

## **Actions taken**

Since 2000, the government's desire to build an 'ecological civilization' has meant greater integration of economic development, environmental protection and poverty reduction in the country's most important national planning documents and policy agendas. This represents a new development ethos and an ideological framework for sustainable development and green growth. The current 12th Five-Year Plan (2011-2015) is by far the 'greenest' development plan to date, with nine environmental

targets, including one to decrease water consumption per unit of industrial value added by 30%.

Increasingly ambitious laws and regulations have followed at national and local levels. A key moment for China's water policy was the revision of its Water Law in 2002 when, for the first time the need to address inefficient water use and poor water management was prioritized. Further, the 'three red lines' policy developed by the State Council in 2010 established clear and binding limits ('red lines') on total water use, water use efficiency and ambient water quality for a number of benchmark years to 2030. The Government's institutional and policy reforms have incentivized local efforts to grow 'more crop per drop'. The reforms began with ambitious revisions to the Water Law in 2002 to shift the country towards more sustainable water resources management, supporting a variety of institutional reforms at both national and sub-national scales.

Notably, the law reformed the Ministry of Water Resources. This paved the way for three relatively independent institutional reforms: the strengthening of river basin commissions, the consolidation of some local water-related bureaus into water affairs bureaus, and the rapid growth of water user associations for agricultural water management. These three sets of reforms have helped to drive progress toward more sustainable agricultural water management at different levels.

## **Outcomes**

China's prevalence of undernourishment has halved, and its food supply has increased by 22% since 1990 - the result of the intensification of crop production within existing production areas, rather than turning more land over to agriculture. Savings in agriculture have not been matched in other sectors, however. The country's total water withdrawals across all sectors of the economy increased by about 27% from 1990 to 2012 (NBS, 2014), driven mostly by China's urbanisation and growing industrial and service sectors. The three sets of legal reforms have helped to drive progress toward more sustainable agricultural water management at different levels. They did so by reducing water-use conflicts between regions and users and by promoting irrigation system improvements at the village level.

## **Lessons Learned**

Promoting more efficient agricultural water use can encourage economic growth and is a good investment. China's success in releasing water from its agricultural sector has allowed its industry and services to use the water saved to grow.

Reforms become effective when they focus on contextual problems and experiment with a variety of models . A 'learning by doing' approach to reform create space for local innovation and piloting to see what works best in different contexts.

Transformative change at scale requires sustained ambition and investment across all levels of society. In the past , China has begun to apply this same cohesive energy and high-level political commitment to the principles of sustainable development and green growth.

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**Supporting Materials**

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**Related IWRM Tools**

Preparation of a National Water Resources Policy, Ecosystem Assessment, Demand Efficiency

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