

# Water resource conservation promotes sustainable development in China's northern drylands

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Water resource conservation promotes synergy between economy and environment through industrial transformation in inner mongolia. Credit: Higher Education Press

Water resource availability is the major limiting factor for sustainable development in drylands. The drylands of northern China contain only

19% of the country's total water resources but house one-third of the national population, and are therefore under considerable water stress. In particular, Inner Mongolia, which is a typical dryland province, plays an important role in maintaining ecological security in northern China. For the past few years, its anthropogenic water consumption has increased 4-fold, from 6.68 billion m<sup>3</sup> in 1987 to 27.11 billion m<sup>3</sup> in 2015; this increase has seriously threatened regional grasslands, which also rely on water resources to sustain ecological integrity. The conflict between ecological and social-economic systems and the actions that might relieve it has been long overlooked, thus, might lead to unexpected problems when adopting one-sided policies.

Climate change intensifies the conflicting water demands between people and the environment and highlights the importance of effective water resource management for achieving a balance between economic development and environmental protection. In 2008, Inner Mongolia proposed strict regulations on water exploitation and utilization aimed at achieving [sustainable development](#). By adopting these regulations, Inner Mongolia's government aims to limit high water consumption and the expansion of polluting industries; by doing so, they aim to achieve industrial restructuring toward sustainable development. However, no systematic evaluation has been conducted to determine if and how such strict regulations on [water conservation](#) might alleviate the tension between environmental protection and economic development. Without this information, policy adjustment and the ability to achieve sustainable development are limited.

Now, a research group from University of Chinese Academy of Sciences studied the effectiveness and performance of these long-standing water conservation regulations. The results were published in *Frontiers of Environmental Science & Engineering*.

They found that the regulations drove industrial transformation,

evidenced by the decreasing proportion of environmentally harmful industries such as coal and steel, and the increasing proportion of tertiary industries (especially tourism). Following industrial transformation, economic development decoupled from industrial water consumption and subsequently led to reduced negative environmental impacts.

Based on these results, adaptive strategies were developed for 12 cities by revealing and integrating their development pathways and relative status in achieving sustainable development. Integration and cooperation between cities were proposed, e.g., a water trade agreement between eastern Inner Mongolia (an economically underdeveloped region with relatively abundant [water resources](#)) and central Inner Mongolia (an economically developed region with high water stress). Such an agreement may enable the holistic achievement of sustainable development across regions. By integrating the findings of the research, a reproducible framework is established for water-management-based sustainable development strategies in drylands.

Stimulating the internal motivation of industrial transformation through the regulations of water resources could help achieve synergy between [economic development](#) and [environmental protection](#), therefore, promoting sustainable development in drylands. Taken together, three suggestions are proposed for sustainable development in drylands: (1) restrict the water exploitation and regulate the water cost to reconcile the conflict between economy and environment; (2) promote novel technologies to increase the water use efficiency; (3) enhance regional cooperation achieve holistic development in a mutually beneficial way.

**More information:** Yali Liu et al, Water resource conservation promotes synergy between economy and environment in China's northern drylands, *Frontiers of Environmental Science & Engineering* (2021). [DOI: 10.1007/s11783-021-1462-y](https://doi.org/10.1007/s11783-021-1462-y)

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