

A Study on Full-Diameter Water Price Reform Based on Water Resource Allocation and Water-saving Orientation

Shaomei Chen, Wei Liu, Dongyan Liu, Yongkang Sun, Shixiang Gu, Xin Chen
(Yunnan Institute of Water & Hydropower Engineering Investigation, Design and Research, Kunming 650021, China)

Objectives

Water price is the core economic lever for regulating water supply and demand, promoting water conservation, and protecting water security. Promoting comprehensive reform of water prices is an important measure to promote green development by using the price leverage and incorporate ecological and environmental costs into economic operation costs. This paper can help relevant parties grasp the "bull's nose" of water price reform, reasonably determine the classification goals of water price reform, scientifically formulate and steadily implement water pricing reform. This paper provides systematic and structural guiding significance for the implementation of water price reform.

Methods

This paper adopts a research method that combines qualitative and quantitative analysis. Qualitative analysis is based on the entire process of water resource development, utilization, and protection, with the main line of water resource acquisition, supply, use, and discharge. Through literature research and policy and regulatory analysis, a comprehensive, segmented, and classified water price cost model is established for the entire process. Quantitative analysis is a typical case study of Chengjiang City. Guided by water conservation, this paper allocates water consumption for each link and various types. Based on full-diameter water price, paper analyzes and calculates the water price costs of each link and various types.

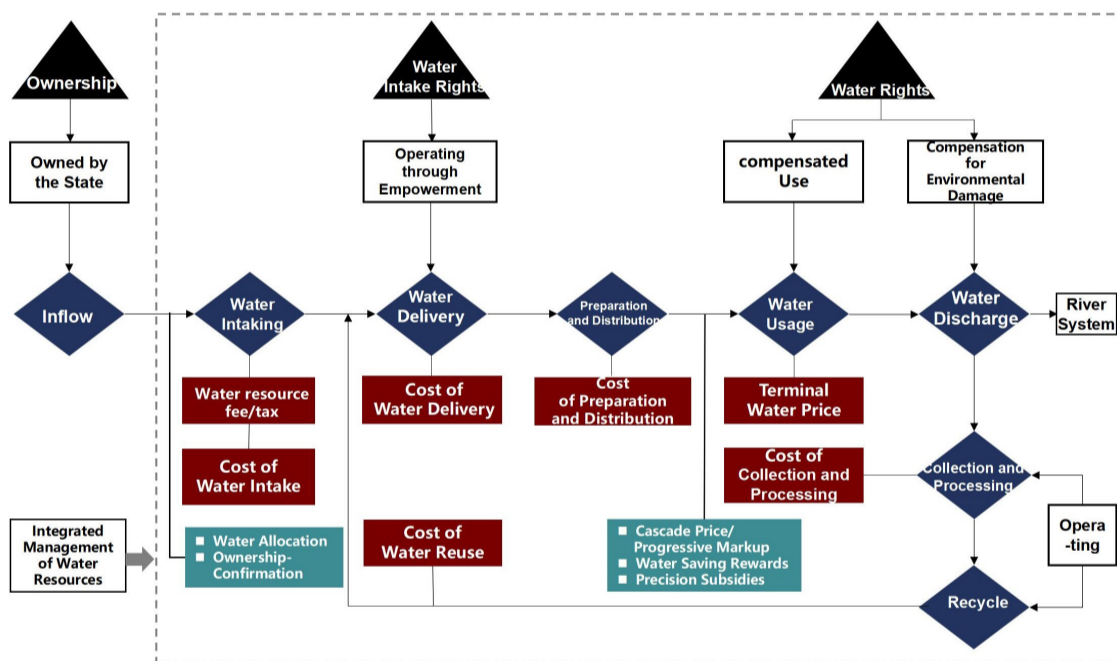


Figure 1 Research Methods for Full-Diameter Water Price Reform

Results

(1) The full water price includes resource water price (water resource fee/tax), engineering water price (water intake cost, water delivery cost, water preparation and distribution cost) and environmental water price (sewage treatment fee).

(2) Under the condition of saving water, all water users in Chengjiang City allocated 32.32 million cubic meters of water, including 12.91 million cubic meters for urban life, 2.31 million cubic meters for rural life and 17.09 million cubic meters for agriculture.

(3) The operating cost water price of Chengjiang (excluding the cost of water conservancy projects) is 0.88-9.97 yuan, and the full cost water price is 1.07-13.55 yuan. From the perspective of water users, the water price of urban and rural water supply is the highest in rural life, and the water price of conventional irrigation in agriculture is the lowest.

(4) The current water price of water users in Chengjiang is low, which is far from covering the operating cost.

Water users	Surface water	Regenerated water	Total
Town life			
Urban residents' life	7290	530	7820
Special trades	3400	0	3400
Urban non-residents	1690	0	1690
Urban and rural water supply	1820	0	1820
Rural life			
Decentralized water supply	490	0	490
Subtotal	2310	0	2310
Efficient water saving	3380	4170	7560
Agriculture			
Conventional irrigation	7150	2380	9530
Subtotal	10540	6560	17090
Total	25230	7090	32320

Water users	Cost caliber	water price
Town life		
Urban residents' life	Operating cost	7.73
	Full cost	10.03
Special trades	Operating cost	9.88
	Full cost	11.76
Urban non-residents	Operating cost	8.78
	Full cost	11.08
Urban and rural water supply	Operating cost	9.97
	Full cost	13.55
Rural life		
Decentralized water supply	Operating cost	5.03
	Full cost	8.04
Efficient water saving	Operating cost	1.22
	Full cost	2.1
Agriculture		
Conventional irrigation	Operating cost	0.88
	Full cost	1.07

Conclusions

(1) The current water price implemented in Chengjiang City has not reached the full cost level. There is a greater gap between the current implemented water prices and the full-diameter water price.

(2) The full water price includes many factors. Such as policy and regulatory requirements, local water resource situation, local socio-economic, the affordability of water users etc. We should follow the principle of overall planning and balance, and formulate water pricing reform goals by grading and classification.

(3) We should implement water price reform in a planned and step-by-step manner, by following the principle of adapting to local conditions and combining with the current situation of regional reform.