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Economic benefits of water resources based on input–output model

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ABSTRACT

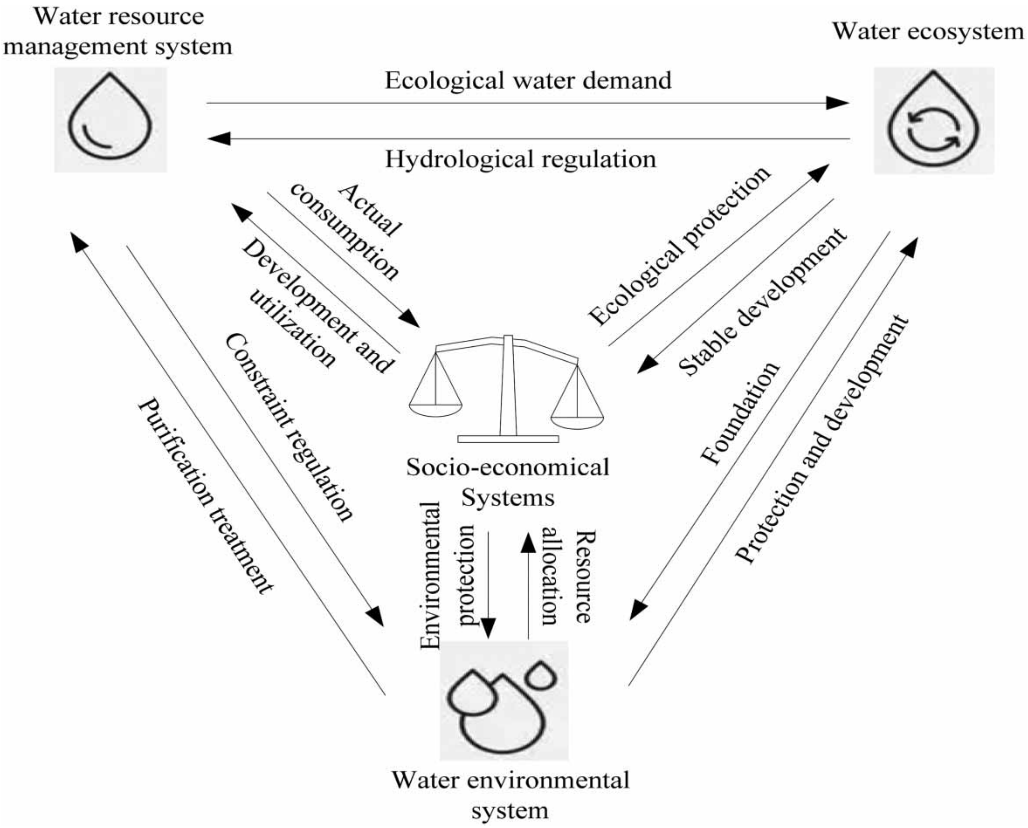
To relieve environmental stress on water resources and promote stable socio-economic development, this article combined input–output models to analyze water resource utilization and development and to classify economic benefits. Based on this, an in-depth study was conducted on the economic benefits of water resources. Taking Hubei Province as an example, from the perspective of industrial structure, an empirical analysis was conducted on the water use benefits of various industries through input–output of water resources. The results showed that the mechanical industry and the transportation industry had the highest relative output coefficients, reaching 12.17 and 15.21, respectively. According to the results, the economic benefits of water resources in the secondary and tertiary industries of Hubei Province were relatively ideal. In practical development, industry-leading advantages could be utilized to optimize water resources management, innovate water use models and technologies, promote the improvement of agricultural water utilization rate and thus promote sustainable development of water resources.

Key words: economic benefits, input–output model, sustainable development, water resources

HIGHLIGHTS

- Water resources are the fundamental element of the ecological environment and an important support for agricultural development.
- To relieve environmental stress on water resources and promote stable socio-economic development, this article combined input–output models to analyze the water resources.

GRAPHICAL ABSTRACT



1. INTRODUCTION

Water resources are important natural resources that ensure the normal operation of human production and life. With the gradual expansion of the social production scale, problems and contradictions such as unequal distribution of water resources and limited total amount are evolving increasingly intensely, which not only restricts regional development but also affects agricultural production and food supply. Under the condition of water resources shortage, selecting appropriate analysis methods to analyze the economic benefits of water resources is crucial for promoting the adjustment of industrial structure and achieving the optimum distribution and management of water resources. With the development of economic mathematical theory, input–output models have made great progress and are widely used in economic activity analysis in multiple fields. In the analysis of water resources economic benefits, input–output models can comprehensively consider the complex relationships between water resources economic variables, provide reliable data support for water resources use and decision-making and have important practical significance for the sustainable development of water resources systems.

Water resources are a vital fundamental resource for social development, and analyzing its economic benefits has become a key direction for improving the social economy. Marchioni *et al.* (2023) provided a framework for analyzing the economic benefits of using unconventional water resources at the urban level. This framework was applied to two case studies in Milan, Italy, where the acquired economic indicators emphasized the significance of taking into account a thorough economic benefit analysis. The analysis could back up incentive policies that transfer some economic benefits to immediate users, thereby bringing gains to the entire community. Cuimei *et al.* (2021) evaluated the ecological and economic benefits of renewable water resources and proposed a new quantitative method based on energy theory. This method could be used to calculate the cost of different irrigation water uses and other benefits of saving tap water. He applied this method to the economic benefit analysis of recycled water and the results showed that the proposed method provided a quantitative basis for using reclaimed water to irrigate urban green spaces in water-deficient cities. To ameliorate the efficiency and sustainability of water resources used in construction operations, Mohd Zaini *et al.* (2021) conducted a detailed analysis of the economic benefits of water resources used in Malaysian buildings. From the field investigations, the results showed that replacing inefficient water pipe joints guided by green building tools is helpful in improving the economic benefits of water resources. Karandish (2021) investigated the social and economic benefits of the unsustainable and inefficient effective strategy to reduce human food-related blue water consumption while ameliorating the national environment and socio-economic status. According to his case study results, the strategy has increased international food exports by 87% and gross domestic product (GDP) by 54%. At present, the economic benefit analysis of water resources has made good progress, but with the continuous utilization of water resources, appropriate improvements and optimizations need to be made in its economic benefit analysis. Currently, research has not taken into account the issue between the economic benefits of water resources and the ecosystem.

The development of science and technology has provided more possibilities for analyzing the economic benefits of water resources. Gao *et al.* (2020) developed a siltation dam benefit maximization model to comprehensively maximize the expected water resources, ecosystem and socio-economic benefits of the siltation dam array. The model showed that water resources benefits accounted for 45.4% and the results indicated that water resources benefits were enormous, which could further provide reference for the planning and analysis of siltation dam systems. Coles *et al.* (2018) considered that complex interactions between ecological services might lead to poor or inappropriate water resources management decisions. He established a comprehensive and multifunctional analysis framework for water resources ecological services to provide better environmental and productivity results and provide guidance for water resources economic benefit analysis. Under the framework of advanced models and technologies, the analysis of water resources economic benefits has achieved further development, but there are still certain limitations in the comprehensiveness of most research and analysis.

This article conducts in-depth research on the economic benefits of water resources using input–output models and takes Hubei Province as an instance to analyze the input–output of water resources based on the various industries in Hubei Province. This not only objectively evaluates the water efficiency of each industry, but also provides objective guidance for its future water resources management and development. In practical development, the economic benefit analysis of water resources based on input–output models can effectively assist regional water resources development decision-making and advance the sustainable development of its water resources system.

2. ECONOMIC BENEFITS AND INPUT–OUTPUT MODELS OF WATER RESOURCES

2.1. Economic benefits of water resources

2.1.1. Water resource development

Water is an essential resource for sustaining industrial and agricultural production and people's lives, and water resource development is closely related to various fields of economy and society (Zhang & Zhou 2019). Therefore, to ensure sustainable economic and social development, water must be allocated reasonably. The economic benefits of water resources refer to the comparison between their input consumption and output results in development and utilization.

In general, the utilization of water resources is mainly based on surface water. When there is a severe shortage of surface water in the local area, shallow groundwater is used to supplement it. Water resource distribution and quantity limitations result in the use of shallow groundwater already in most areas. Currently, with industrial development, significant spatial differences exist in the green efficiency of water resources (Zhang *et al.* 2021; Zou & Cong 2021). Moreover, due to the seasonal nature of the river water, groundwater levels in many regions are getting lower and lower. Overall, most regions are still in a development state of water scarcity (Liu 2018).

The development methods of water resources include conventional and unconventional methods (Li & Qian 2018). Conventional water resources development refers to the development of water resources to meet the stable development of production and economic activities. Unconventional water resources are different from traditional water sources, as they are mainly used to assist in landscape environmental design and industrial and agricultural production activities. Unconventional water resources mainly include rainwater, recycled water, mine water, etc., which have the characteristics of randomness and low water supply rates. In the utilization of water resources, if the relevant parts are not scientifically and moderately developed, it can cause certain harm to the sustainable development of the water resources system. Under the development of a circular economy, the theory of sustainable development continues to deepen and various parts need to adhere to the concept of circular sustainability when carrying out their work (Schroeder *et al.* 2019; Sehnem *et al.* 2019). Based on the concept of sustainable development, it can standardize the process of water resources utilization and effectively improve the environment.

The regional water resources system can be divided into four subsystems, namely the water resources management system, water ecosystem, socio-economical system, and water environmental system, as shown in Figure 1. The water resources management system provides ecological water demand to the water ecosystem, while the water ecosystem provides hydrological regulation to the water resources management system. The socio-economical system provides ecological protection to the water ecosystem, while the water ecosystem can stabilize the development of the socio-economical system. The water environmental system allocates resources to the socio-economical system, which provides corresponding environmental protection to the water environmental system.

2.1.2. Classification of economic benefits of water resources

Generally speaking, the economic benefits of water resources are mainly analyzed based on different industries and uses. Therefore, the economic benefits of water resources vary greatly in industrial fields and specific uses and can be divided into marginal benefits, ecological service benefits, and regional comprehensive benefits.

2.1.2.1. Marginal benefits. From an economic perspective, there is a certain connection between relevant individuals and water resources in the process of water resources utilization. In the process of development and utilization, relevant individuals are crucial in the conversion of water resources. The economic benefits of water resources play a leading role in their subsequent utilization. According to the process of economic benefit analysis, the utilization efficiency of water resources should be quantified in terms of input and output through relevant formula algorithms, to provide a reference for optimizing water resources management and subsequent decision-making.

2.1.2.2. Ecological service benefits. Water resources can be seen as a special form of ecosystem, and its development and utilization can not only maintain the normal operation of human social production and economic activities but also improve the level of environmental development. Specifically, water resources ecosystems can produce or provide related products to meet human needs, sustain life, provide nutrients, protect biodiversity, and effectively regulate ecosystems,

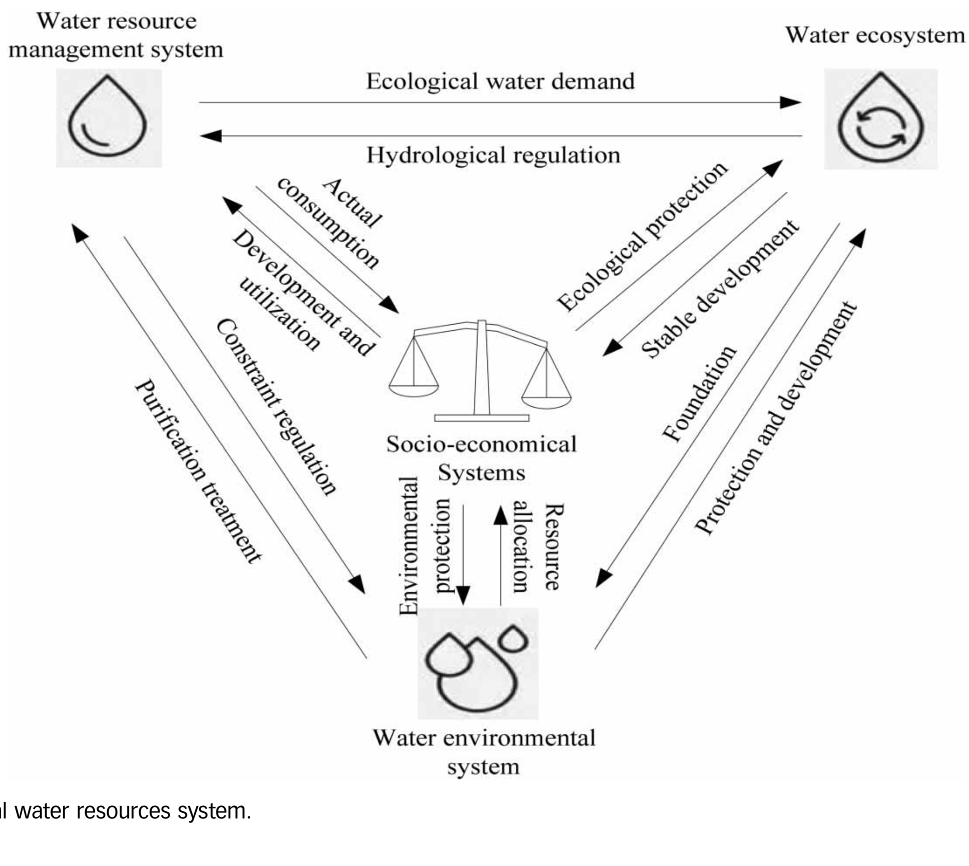


Figure 1 | Regional water resources system.

improve soil, and mitigate disasters. The hydrology formed in the development process of water resources systems can also bring people unique spiritual and esthetic experiences. Overall, the ecological service benefits of water resources are very significant.

2.1.2.3. Regional comprehensive benefits. Regional comprehensive benefits refer to the benefits brought by the ecological and economic attributes of water resources in the process of utilization and development. In practical development, the regional comprehensive benefits of water resources are mainly reflected in the scientific development and full utilization of water resources, which can meet the needs of the ecological environment and promote the stable development of the regional economy.

2.2. Input–output model

Input–output is a general method used in economic life to study the interrelationships between industries (Bruckner *et al.* 2019). By constructing an input–output model, it is possible to better analyze the relationships between various industries within the industrial structure (Malik *et al.* 2019). In the input–output analysis method, 'input' refers to the various products or labor inputs required by various industries to produce a certain product or provide a certain service, as well as their sources (Zhou & Gu 2020). Differing from inputs in other activity categories, from the perspective of economic theory, the 'input' in the input–output analysis approach includes not only material costs in the traditional sense but also profits, taxes, and corresponding money and wages generated in the process of creating products and services. 'Output' refers to the results achieved in production, consumption, and other aspects, as well as the roles they play in various aspects.

The input–output model can comprehensively and objectively reflect the correlation between the economic benefits of water resources in various industries in the industrial structure. To analyze the economic benefits of regional water resources, this article considers the balance between water resources input and output and constructs an input–output model with industry output value and water consumption as indicators. The overall framework of the model is shown in Figure 2.

Value-added output refers to the added value created by an industry based on a certain amount of water consumption, and its coefficient is the ratio of added value to the total output of the industry. It mainly includes the direct economic benefits created by the industry in production activities through the use of water resources (Sun & Yang 2020). Using a variable X to represent the row vector of the value-added output coefficient, then the value-added output coefficient of water use in the jth industry can be expressed as:

$$X_j = O_j/C_j (j = 1, 2, \cdots, n) \tag{1}$$

In Equation 1, O_j is the total output of the jth industry and C_j is the water consumption of the jth industry.

The complete value-added output coefficient measures the added value of industries created by water resources utilization in terms of absolute GDP. Using variable M to represent the complete value-added output coefficient matrix, it is expressed as:

$$M = (I - D)^{-1}\hat{X} \tag{2}$$

$$D = [D_{ij}] \tag{3}$$

$$D_{ij} = P_{ij}/U_j (i, j = 1, 2, \cdots, n) \tag{4}$$

The meanings represented by each variable in the formula are shown in Table 1.

The complete value-added output coefficient of the first industry is expressed as:

$$M_j = \sum_{i=1}^{n} M_{ij} (j = 1, 2, \cdots, n) \tag{5}$$

The water output multiplied by the numerical value represents the degree of impact of unit water consumption on the industry's total output value, which causes the growth of the entire industry's output value. The water output multiplier for

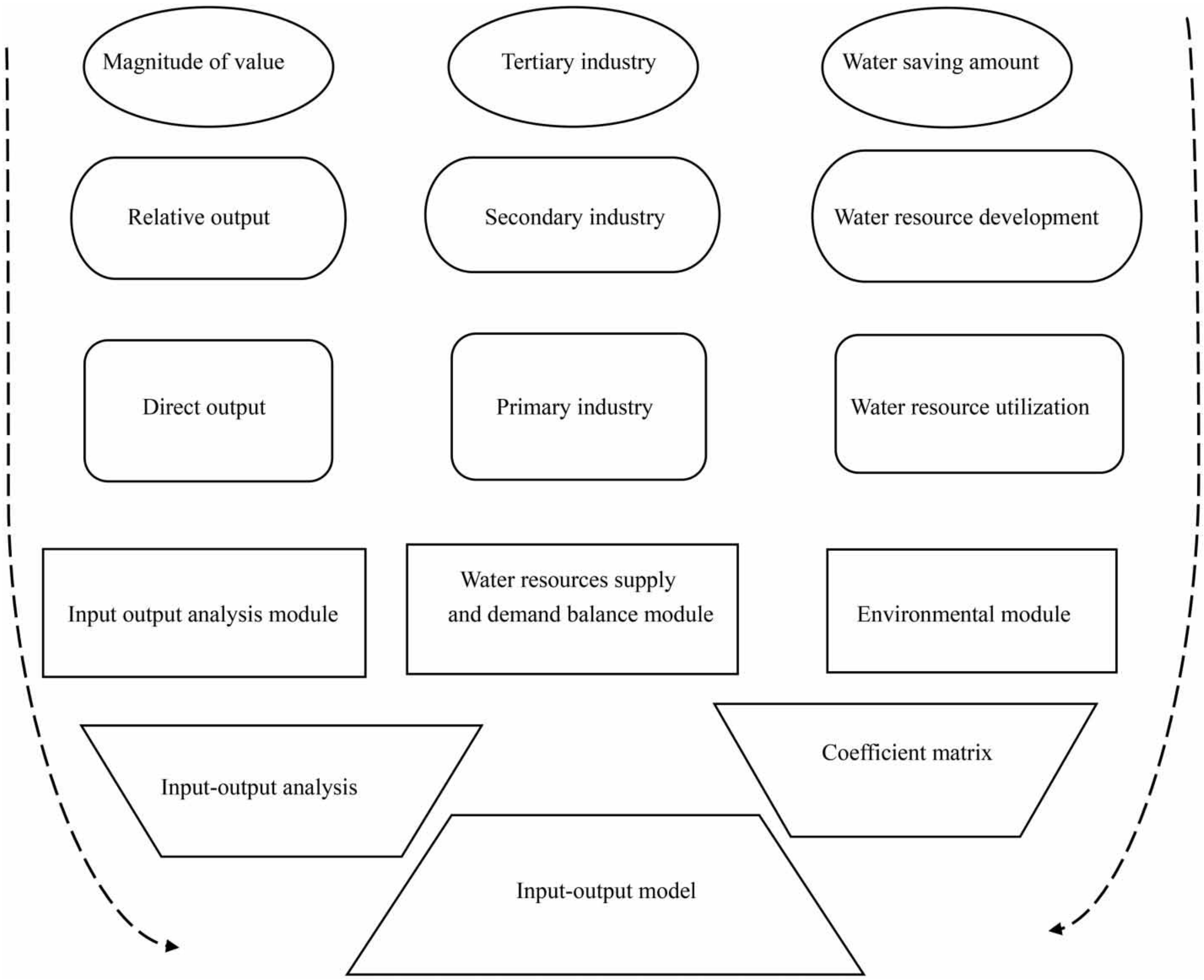


Figure 2 | Overall framework of input–output model.

Table 1 | The meaning of each variable

Sequence	Parameter	Meaning
1	I	Identity matrix
2	D	Direct consumption coefficient matrix
3	$\hat{X}$	Value-added output coefficient diagonal matrix
4	P_{ij}	The consumption of products in the ith industry during the production process of the total products in the jth industry
5	U_j	Total investment in the jth industry
6	$(I-D)^{-1}$	Leontief inverse matrix

the jth industry can be expressed as:

$$V_j = M_j/X_j(j = 1, 2, \cdots, n) \tag{6}$$

The relative water use output coefficient mainly consists of two parts: the relative output coefficient RX and the relative output multiplier RV. In the calculation process, the specific value of the relative output coefficient is generally obtained by dividing the value-added output coefficient X_j by the average value of the industrial structure value-added output coefficient X_a, namely:

$$RX = X_j/X_a \tag{7}$$

$$X_a = \sum_{j=1}^{n} O_j / \sum_{j=1}^{n} C_j \tag{8}$$

The calculation of RV requires the use of the output multiplier V_j of a certain industry divided by the average output multiplier of all industries, namely:

$$RV = V_j / \left(\sum_{j=1}^{n} V_j / n \right) \tag{9}$$

The relative efficiency of industry water use is determined by the specific value of RX. When the specific value is greater than or equal to 1, it indicates that the industry is a relatively efficient water use industry. When the specific value is less than 1, it indicates that the industry is a relatively inefficient water use industry. Similarly, the potential efficiency of industry water use is determined by a specific value of RV. When the specific value is greater than or equal to 1, it indicates that the industry is a potentially efficient water use industry. When the specific value is less than 1, it indicates that the industry is a potentially inefficient water use industry.

3. DEMONSTRATION OF ECONOMIC BENEFITS OF WATER RESOURCES

To verify the effectiveness of the input–output model-based analysis of water resources economic benefits, this article takes Hubei Province in the middle reaches of the Yangtze River as an example to analyze its water resources economic benefits, thus effectively reflecting the development and utilization of water resources in the region.

3.1. Regional overview

Hubei Province is located in eastern China in the middle reaches of the Yangtze River and is an important area for the South to North Water Diversion Project. The province has a land area of 185,900 km^2 and diverse landforms, mainly mountainous areas. Its terrain fluctuates greatly, with the eastern, western, and northern sides surrounded by mountain ranges, while the central part is low-lying, forming an incomplete basin that is slightly open to the south. The climate characteristic information is shown in Table 2.

Due to the unique terrain of Hubei Province, the distribution of water resources in the province is very uneven in time and space. At the spatial level, the southern and northeastern regions of Hubei Province have abundant precipitation, resulting in abundant water resources. However, the northwestern region is relatively scarce due to relatively low precipitation. The flood season in Hubei Province is mainly concentrated in the summer and autumn seasons, which range from May to September. Eighty percent of the annual precipitation comes from the flood season, while precipitation in winter and spring is relatively rare (Wu *et al.* 2023). Overall, due to the high annual precipitation, Hubei Province is rich in water resources, with both a large amount of surface water and sufficient reserves of groundwater resources. Taking 2017 as a reference, its water

Table 2 | Information on climate characteristics

Sequence	Content	Information
1	Annual average temperature(most regions)	Approximately 3–5 °C in January Approximately 27–29.5 °C in July
2	Annual average precipitation	1,200.7 mm
3	Frost-free period	230–300 days
4	Annual average sunshine hours	1,100–2,075 h
5	Flood season	Mainly concentrated from May to September

resources area could reach 10% of the total area of Hubei Province. The specific information on water resources in the province is shown in Table 3.

3.2. Data dissection

This article analyzed the input–output data of different industries in Hubei Province and obtained the input–output data of water resources in Hubei Province. According to the statistical system, the input–output tables of each province should be compiled every 5 years and the input–output tables should be expanded after every 3 years. This article analyzed the input–output data and related information of Hubei Province in 2017. Based on the water use data of various industries in the province, 42 industries in its industrial structure were integrated into 18 industries. Based on water resources data, the water use efficiency and benefits of each industry were evaluated and analyzed. The water use efficiency evaluation table is shown in Table 4.

Table 3 | Water resources information

Sequence	Content	Information
1	Total amount of water resources	175.471 billion m^3
2	Total surface water resources	173.496 billion m^3
3	Total groundwater resources	38.167 billion m^3
4	Per capita water resources	3,038 m^3
5	Total length of river	59,200 km
6	Total area of lakes	2,983.5 km^2

Table 4 | Water use efficiency evaluation table

			Water output coefficient	
Sequence	Industry	Specific industries	Value-added output coefficient (yuan/m^3)	Full value-added output coefficient (yuan/m^3)
1	Primary industry	Products and services of agriculture, forestry, animal husbandry, and fishery	1,261.36	3,595.81
2	Secondary industry	Metallurgy	627.14	1,035.72
3		Petrochemical industry	3,152.47	6,056.75
4		Electronic instrument	1,584.95	5,210.64
5		Power industry	5,286.46	10,994.71
6		Building material manufacturing industry	1,732.81	4,569.73
7		Food	4,023.16	10,421.88
8		Machinery	10,590.59	29,912.71
9	Tertiary industry	Transportation industry	10,033.15	36,035.83
10		Accommodation and catering	6,849.57	14,532.49
11		Finance and real estate	603.24	2,682.06
12		Leasing and business services	8,431.62	16,736.12
13		Scientific research and technical services	2,916.83	5,361.25
14		Water conservancy, environment and public facility management	65.92	374.93
15		Education	5,147.23	15,611.78
16		Health and social work	1,952.47	5,043.19
17		Culture, sports, and entertainment	1,563.95	2,859.73
18		Public administration, social security, and social organizations	5,017.41	19,062.56

According to Table 4, the value-added output coefficients and complete value-added output coefficients of the primary, secondary, and tertiary industries can be calculated, as shown in Table 5.

From Tables 4 and 5, it can be seen that there were significant differences in the economic benefits of water resources among different industries in Hubei Province. The value-added output coefficient of its primary industry is 1,261.36 yuan/m^3, while the full value-added output coefficient was 3,595.81 yuan/m^3. The value-added output coefficient of the secondary industry was 3,856.80 yuan/m^3, while the full value-added output coefficient was 9,743.16 yuan/m^3. In the secondary industry, the mechanical industry had the highest water efficiency, with a value-added output coefficient of 10,590.59 yuan/m^3 and a full value-added output coefficient of 29,912.71 yuan/m^3, respectively. The value-added output coefficient of the tertiary industry reached 4,258.14 yuan/m^3, while the full value-added output coefficient was 11,829.99 yuan/m^3. Among them, the transportation industry had the highest water efficiency, with a value-added output coefficient and full value-added output coefficient of 10,033.15 and 36,035.83 yuan/m^3, respectively.

The output multipliers, relative output coefficients, and relative output multipliers of various industries in Hubei Province are shown in Figure 3.

From Figure 3, it can be seen that the difference in output multipliers and relative output multipliers among various industries in Hubei Province was relatively small, while the difference in relative output coefficients was relatively significant. Among them, the minimum output multiplier for the primary, secondary, and tertiary industries was 2.55, while the maximum value was 4.77. The relative output coefficients of the petrochemical and mechanical industries in the secondary industry, as well as the transportation, cultural, sports and entertainment industries, the public management, social security, and social organization industries in the tertiary industry, all reached above 2. The relative output coefficients of the

Table 5 | Industry value-added output coefficient and full value-added output coefficient

Industry	Value-added output coefficient (yuan/m^3)	Full value-added output coefficient (yuan/m^3)
Primary industry	1,261.36	3,595.81
Secondary industry	3,856.80	9,743.16
Tertiary industry	4,258.14	11,829.99

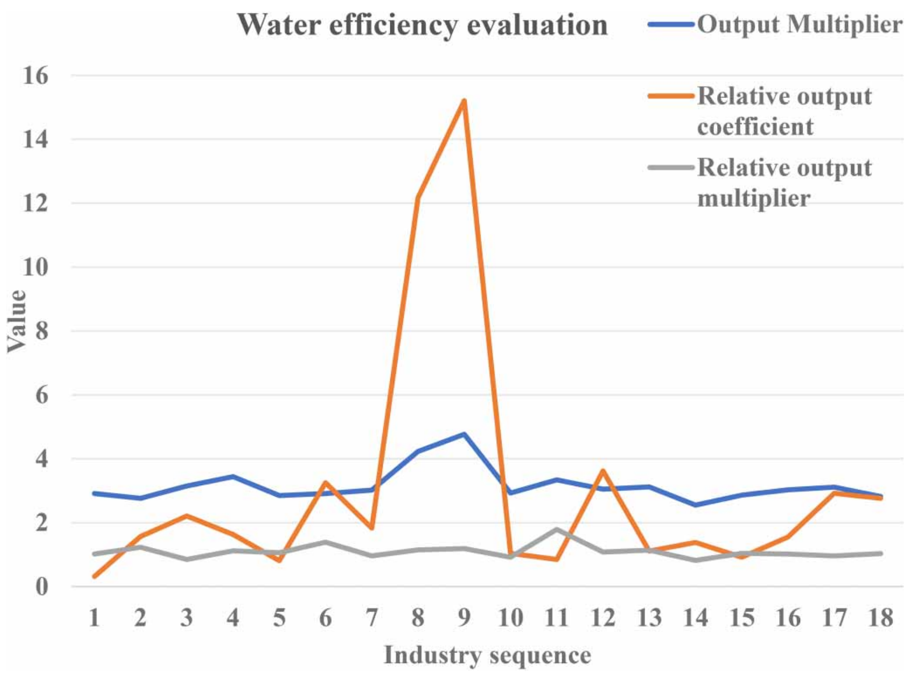


Figure 3 | Water efficiency evaluation results.

mechanical industry and the transportation industry were the highest, reaching 12.17 and 15.21, respectively. The relative output coefficients of the products and service industries of agriculture, forestry, animal husbandry, and fishery were less than 1. The relative output multiplier of various industries remained between 0.8 and 1.8, and the relative output multipliers of the products and service industries of agriculture, forestry, animal husbandry, and fishery were greater than 1. Overall, the mechanical industry in the second industry and the transportation industry in the third industry of Hubei Province had higher water efficiency.

This article regarded various industries as sample objects and used their water use data as sample data to conduct principal component analysis on each industry in Table 4. Ten principal components were obtained and their characteristic values are shown in Table 6. The results of their variance contribution rate and cumulative variance contribution rate are shown in Figure 4. Finally, based on the sample data matrix and the correlation between samples, the final scores and ranking sequences of each industry were determined, as shown in Figure 5.

According to Table 6, the eigenvalues of all 10 principal components were greater than 1.

Table 6 | Eigenvalue results

Sequence	Industry	Eigenvalue
1	Transportation industry	5.514
2	Machinery	5.062
3	Power industry	3.583
4	Leasing and business services	3.373
5	Food	2.871
6	Education	2.842
7	Public administration, social security, and social organizations	2.527
8	Metallurgy	2.304
9	Accommodation and catering	2.268
10	Petrochemical industry	2.116

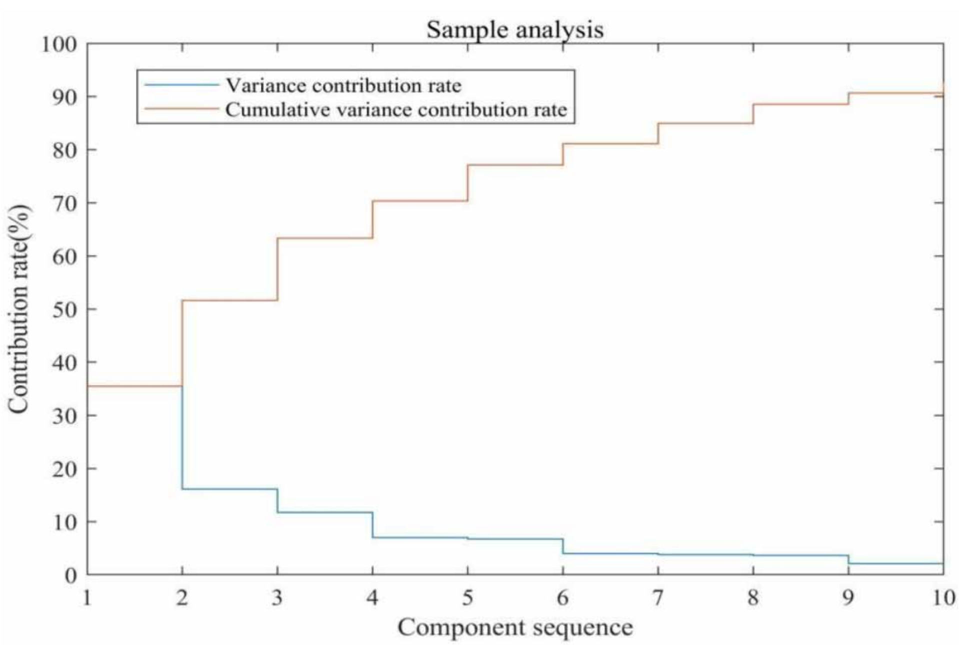


Figure 4 | Sample analysis results.

Figure 5 | Industry scores and ranking results.

According to Figure 4, the transportation industry had the highest contribution rate of variance, with a specific result of 35.49%. Second, the mechanical industry and the power industry had variance contribution rates of 16.11 and 11.74%, respectively. The variance contribution rates of the leasing and business services industry; food industry; education industry; public administration, social security and social organization industry; metallurgical industry; accommodation and catering industry; and petrochemical industry were 7.01, 6.75, 4.02, 3.79, 3.63, 2.11 and 2.07%, respectively.

From Figure 5, the industries ranked 1–5 were transportation, machinery, leasing and business services, accommodation and catering, and power, with scores of 46.82, 41.54, 38.07, 35.28 and 31.72, respectively. The industries ranked 6–10 were the education industry; public management, social security and organization industry; food industry; petrochemical industry; and scientific research and technology service industry, with scores of 30.16, 28.79, 26.44, 25.38 and 22.93, respectively. The industries ranked 11–15 include the health and social work industry (Hu *et al.* 2022); the building material manufacturing industry; the electronics industry; culture, sports and entertainment industry; and the products and service industries of agriculture, forestry, animal husbandry and fishery (Qiu *et al.* 2023; Zhang *et al.* 2023), with scores of 19.16, 18.77, 16.54, 14.79 and 12.72, respectively. The last three industries were metallurgy; finance and real estate; and water conservancy, environment and public facility management (Zheng *et al.* 2023), with scores of 10.32, 9.22 and 8.07, respectively.

4. DISCUSSION

This empirical analysis evaluated the water use efficiency of various industries in Hubei Province to reflect the economic benefits of water resources. Based on the evaluation criteria of relative output coefficient and relative output multiplier, it can be seen from the evaluation results of water use efficiency that the secondary and tertiary industries in the province had good water use economic benefits. Among them, the petrochemical and mechanical industries in the secondary industry, as well as the transportation, cultural, sports and entertainment industries and the public management, social security and social organization industries in the tertiary industry, all had relative output coefficients of over 2, indicating a relatively efficient water use industry. As the primary industry, the products and services industries of agriculture, forestry, animal husbandry and fishery had a relative output coefficient of less than 1, which belonged to a relatively inefficient water use industry. However, their relative output multiplier was greater than 1, indicating that the products and services industries of agriculture, forestry, animal husbandry and fishery belonged to a potentially efficient water use industry. From the sample analysis results, it can be seen that the transportation industry, machinery industry, leasing and business services industry, accommodation and catering industry, and power industry ranked high, with high industry scores. This indicates that they had a significant influence on the development of water resources utilization in the entire industry of Hubei Province.

The task of agricultural development in Hubei Province is still very arduous and although there are still certain challenges in improving the economic benefits of agricultural water resources, there is still great potential in agricultural water-saving. In the future development process, it can be considered to strengthen comprehensive land and water resources management practices and adjust crop structure and agricultural water use methods (Pan *et al.* 2018). Starting from various aspects such as environmental regulations, innovating water-saving technologies, and strengthening the management of agricultural water resources, a water-saving irrigation agriculture is built. This enables limited water resources to fully utilize their economic benefits, improve water resources utilization efficiency and meet the needs of food production (Wu *et al.* 2018; Wang & Wang 2021). By trading and transferring water rights, the saved agricultural water resources can be used to develop secondary and tertiary industries with high economic benefits, thereby improving the overall level of the regional economy. Besides, in developing the industrial structures, the influence and correlation of leading industries can be fully utilized to advance the economic improvement of water resources in other industries. For example, in the transportation industry, machinery industry, and the leasing and business service industry, the concept of circular economy development is implemented and clean production technology is innovated, encouraging enterprises to reduce unnecessary water resources consumption. This promotes the optimization of water resources management in other industries and improves the development of the overall regional water resources economic benefits.

5. CONCLUSIONS

With the gradual development of market construction and economic activities, the role of water resources in the development of various industries is becoming increasingly significant. To optimize water resources management and fully utilize the function and value of water resources, this article conducted in-depth research on the economic benefits of water resources by combining input–output models. This article took Hubei Province as an example to empirically analyze the water use efficiency of its various industries in terms of industrial structure. It not only objectively evaluated the economic benefits of water resources in each industry, but also provided an objective data analysis basis for its future water resources development and utilization. Compared to the primary industry, the water efficiency of the secondary and tertiary industries in Hubei Province was more ideal. In future development, water resources management in the primary industry should be optimized, and should also be the main focus in secondary and tertiary industries in order to improve water resources utilization and economic efficiency in other industries. Although the economic benefits analysis of water resources based on input–output models in this article had certain guiding significance for the sustainable development of regional water resources, there were still certain limitations in this article. Future research should examine the shortcomings of industrial structure and input–output analysis and expand the scope to ameliorate the quality of research in order to further promote the healthy development of water resources.

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DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

CONFLICT OF INTEREST

The authors declare there is no conflict.

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