Local Legislation of Rural Water Supply:an Empirical Study Referencing Inner Mongolia's Regulation of Its Rural and Pastoral Areas' Drinking Water Supply

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Abstract

This article takes "The regulation of drinking water supply in Inner Mongolia Autonomous Region rural pastoral area "as the research object. The basic conclusion after the legislation is that the implementation of this regulation to improve the drinking water safety public service system of peasants and herdsmen,maintenance water user and the water supply unit Legitimate rights and interests, regulate the rural and pastoral areas of drinking water supply project planning and construction, to ensure that the project for a long-term running. In order to solve the problem of drinking water supply planning and construction, operation and maintenance in rural and pastoral areas, water supply and distribution in centralized water supply system, and water security system for water users in rural and pastoral areas, the problems of drinking water safety management system in rural and pastoral areas, Level people's government financial input, improve the rural and pastoral areas of drinking water pricing mechanism, strengthen the rural and pastoral areas of drinking water safety management measures and other recommendations.

Keywords

Rural and pastoral areas; water supply and water supply system; post - legislation evaluation; countermeasures and suggestions.

1. Introduction

This article takes the 2011 regulations regarding drinking water supply in the Inner Mongolia Autonomous Region's rural and pastoral areas as its research object. The regulations were enacted to ensure the supply and improve the safety of, drinking water to farmers and herdsmen in these areas, and defined the rights and responsibilities of all parties involved – from the constructors of water supply projects, to the maintainers of the water supply, to the actual water users themselves. The regulations enacted and promulgated, comprised rigid local laws and regulations, and to date, are the only normative local legislation dealing with pastoral area regulations that have a distinct regional bias. To comprehensively establish the overall success or otherwise of the regulations as a whole the authors initiated a post-legislative review of these regulations, and present both their findings on them, and suggestions for their continued effective implementation, in this paper.

In December 2010, at their nineteenth meeting, the Inner Mongolia Autonomous Region ("IMAR") Eleventh People's Congress Standing Committee adopted certain new regulations dealing with rural and pastoral areas' water supplies, and these became effective on January 1, 2011.

The regulations enacted and promulgated, comprised rigid local laws and regulations, and to date, are the only normative local legislation dealing with pastoral area regulations that have a distinct regional bias. To comprehensively establish the overall success or otherwise of the regulations as a whole – that is to say, whether its overall system design is scientific and reasonable, and its core provisions are both effective and enforceable – it is timely to study and summarize the experiences of their propagation. The authors (hereinafter "We") have hence initiated a post-legislative review of these

regulations, and present both their findings on them, and suggestions for their continued effective implementation, in this paper.

The structure of this paper is as follows. Section I provides a brief introduction and this 'road map'. Section II of this paper presents a broad overview of the Regulations and describes the remit of the assessment team and the research activities carried out. Section III of this paper summarizes the assessment teams analyses on the effectiveness of the implementation of the Regulations. Section IV of this paper provides an analysis and evaluation of certain key Regulations. Finally, the paper concludes with recommendations on how to solve or mitigate the problems seen in the effective execution of the Regulations.

2. An Overview of the Regulations and the Team Review

2.1 The Regulations

The "Regulations of the Inner Mongolia Autonomous Region on Drinking Water Supply in Rural and Pastoral Areas"1 (herein after referred to as "the Regulations") of December 2, 2010 was adopted by the IMAR Eleventh People's Congress Standing Committee at their nineteenth meeting, and came into force on January 1, 2011. To date, the Regulations are the only normative local legislation dealing with pastoral area regulations that have a distinct regional bias.

The Regulations were formulated in accordance with the "Water Law of the People's Republic of China" 2 and the "Law of the People's Republic of China on Prevention and Control of Water Pollution" ,3 together with other relevant laws and regulations, regarding actual conditions in IMAR. The primary objectives of the Regulations are to strengthen the management of drinking water supply in rural and pastoral areas, maintain the legitimate rights and interests of both water supply entities and water consumers, and ensure the safety of drinking water across the rural and pastoral areas of IMAR.

The Regulations cover a variety of related aspects, including planning, construction and provision of the drinking water supply in rural and pastoral areas. The actual water and its quality, as well as the water operation and management and all other aspects to ensure comprehensive provision of the safety of drinking water for farmers and herdsmen, are all catered for. Finally, they contain specific requirements for systems to be promulgated and implemented into the local laws and regulations.

In a general sense, all entities and individuals are encouraged and supported to donate or invest in the construction of drinking water supply engineering projects in rural and pastoral areas. The People's government at banner and county level commits, according to the drinking water supply development planning in rural and pastoral areas, are to make reasonable arrangements for the use of surface water and groundwater, develop new sources of water, prevent the exhaustion of water sources and water pollution, and ensure the safety of drinking water for farmers and herdsmen.4

The People's government, also at both the banner and county level, retains responsibility to make delineation of drinking water source protection zones in rural and pastoral areas. and reports to the regional government for approval and promulgation. The price of water supply shall be determined in accordance with the specific measures stipulated by the regional government, and where the price of drinking water supply in rural and pastoral areas is lower than the cost, the governments shall establish special funds for overhaul and maintenance of the centralized water supply projects.5

The promulgation and implementation of the Regulations clearly defined the legal responsibility of local governments and relevant functional departments to guarantee the safety of drinking water for farmers and herdsmen, and all to be carried out under the four principles of "unified planning, safety and health, water conservation and all-round consideration"6.

2.2 Specific Regulations Reviewed in this Paper

The Regulations consists of 49 articles divided into 8 Chapters: General provisions (I); Planning and construction (II); Water sources and water quality (III); Water supply and water use (IV); Operation and management (V); Safety management (VI); Legal liabilities (VII); Supplementary provisions

(VIII). While this paper considers the Regulations as a whole, certain individual Articles7 deserve particular attention, and will be dealt with individually later in this paper.

For now, a high level look at these few is as follows.

Article 5, which specifies the fundamental principles to be followed by all rural and pastoral drinking water supply projects;

Article 9, which notes that comprehensive planning must precede, and approval from relevant authorities must be sought for, all such projects;

Article 14, which notes the mandatory requirement for inspection of all such project completions;

Article 16, which reassures that the People's Government will provide all assistance to areas who have difficulties with their projects;

Articles 18, 22 and 23 which together delineate the various responsibilities of water-supply units;

Article 19, which delineates the responsibilities of the relevant public health departments in such projects;

Article 27 which delineates the responsibilities of the water administrative departments in such projects; and

Articles 29, 30 and 31 which deal with the costs to end users of their water supply, and instances where local government would offer cost-subsidies.

2.3 The Research and Assessment Team

A team of six persons,8 all from the School of Law of the Inner Mongolia University, and led by the primary author Prof. Ding Peng, carried out the research and assessments that comprise the findings in this paper. Assessments were carried out over the period August to October 2014, via three sub-groups, each consisting of one teacher and one postgraduate student, and each responsible for a specific segment of the IMAR.

The first sub-group was assigned the "East IMAR" segment which comprised three Xingan Meng9 counties of Wulanhaote, Keerqinyouyizhong and Aershan, and the two Pingzhuang and Nailin towns of the Chifeng city's Yuanbaoshan and Kalaqin counties, respectively. The second sub-group was assigned the "Mid-IMAR" segment, which comprised the Xilinguole Meng Xilinhaote County Beilike pasture and town of Lamawan in Hohhot City's Qingshuihe County. The third sub-group then dealt with the "West IMAR" segment which consisted of four towns – Xiashihao (Baotou City, Guyang County), Maodai (Baotou City, Tumoteyou County), Hongqinghe (Eerduosi City, Yijinhuoluo County) and Ganzhaomiao (Bayannaoer City, Linhe County).

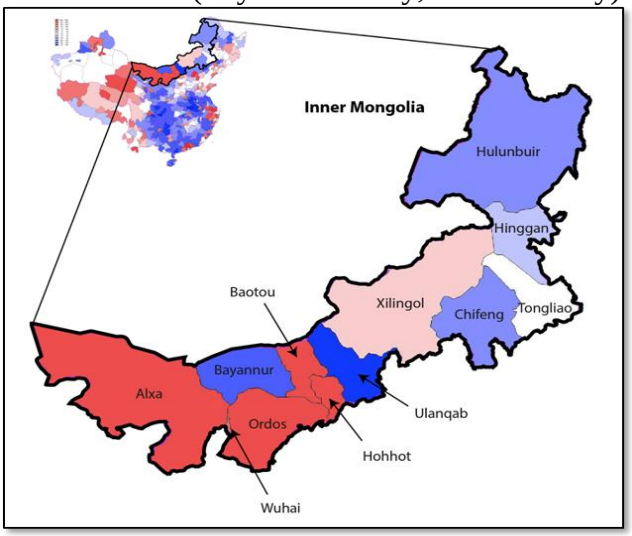

Figure 1. The research and assessment was carried out on a variety of ways

The research and assessment was carried out on a variety of ways, and covered individual water users (both rural and pastoral), water administration departments, water storage and supply organizations as well as sundry other entities who were involved in any aspect of water supply, administration or management.

Many of these entities were either visited in person by the research teams, or in person accompanied by relevant local government officers,10 and teams recorded all their findings for later combined analysis;

Where in-person visits were not feasible or possible for whatever reason, questionnaires were instead sent out. Of the 590 questionnaires that were dispatched, 455 were returned, a return-rate of approximately 77.1%;

The teams also reviewed 86 memoranda and reports on water related issues in the IMAR territories published by water suppliers, water users, water administrative departments and other local government entities;

Finally, on six occasions over the August to October 2014 period, the team held forums with all the relevant parties, both to allow participants to share experiences and to gather pertinent information for subsequent assessment and analysis.

2.4 First Look at the Results of the Implementation of the Regulations

2.4.1. Relevant Key Statistics

The following records11 from the IMAR Bureau of Statistics gives some clarity to both the intent of the Regulations and their affect both now and in the future to the rural and pastoral population (R&P Population) of the IMAR – a subset of the total IMAR population, numbering almost thirteen million people (12,999,700 as seen in the table below).

Table 1. IMAR Population Statistics

	IMAR Population	
Total Urban	12,100,400	48.2%
Total Rural & Pastoral	12,999,700	51.8%
Total IMAR	**25,100,100**	*100.0%*
	Rural & Pastoral Population	
Enjoyed Safe Water Pre-Regulations:	5,914,000	
Safe-Water Post-Regulations, 1st Year	1,306,200	
Safe-Water Post-Regulations, 2012	1,285,000	
Safe-Water Post-Regulations, 2013 - Jul 2016	4,494,500	
	12,999,700	

Prior to the enaction of the Regulations, these records showed that almost six million of the R&P Population (5,914,00 persons12 as seen in the above table) already enjoyed adequate and safe water. The IMAR Bureau of Statistics records show:

Prior to the enaction of the Regulations, almost seven million persons of the R&P Population (12,999,700 – 5,914,000, as seen in the above table) still required access to adequate and safe water.13

In 2011 the first year following the implementation of the Regulations, drinking water problems were solved for a total of 1,306,200 people of the R&P Population.14 Additionally, of this total:

over 561,200 people no longer drink water with dangerously high levels of fluoride;15

128,100 people no longer drink brackish water;16

616,900 people no longer lack water;17

1,921 projects were completed to extend drinking water to pastoral areas, of which 1,377 were projects providing water on-tap, and the rest were projects of individual well-water supply, central water supply and water storage facilities;18 and

20,272 kms of water pipeline were laid, at a total investment of 912 million RMB.19

In 2012, the IMAR invested a further 950 million RMB20 to solve another 1.285 million21 drinking water issues. Since then, 13 counties22 have set up special water management institutions in rural and pastoral areas, 15 counties23 have set up a water supply project maintenance fund, and each of the region's 101 counties have prepared a water supply "emergency plan" to further strengthen the rural pastoral water supply management mechanism.

Over the period 2013-2016, the IMAR claim to have solved the supply of safe drinking water of 74% of the municipality,24 and plan that by 2020 at least 80% of the municipality will have been catered for.25

It is claimed therefore by participants in the exercise, that the implementation of the Regulations has not just solved the supply of safe drinking water for farmers and herdsmen in the IMAR, but has also greatly improved their production capabilities.26 Further, their living conditions, health and hence quality of life has significantly improved,27 so narrowing the gap between urban and rural basic public services in the IMAR.

3. Effects of the Implementations of the Regulations

3.1 An Overview of our Analysis

As mentioned earlier, we gathered data on experiences with the implementation of the Regulations across agricultural, pastoral and forest areas in the IMAR28 over the period August to October 2014. Data collection was carried out in a variety of ways: we randomly visited rural farmers and herdsmen and questioned them; we visited actual water works to interview those in charge of managing and maintaining water suppliers; and we held a forum between the parties to survey experiences with the implementation of Regulations .

Our survey revealed that, 64% of farmers and herdsmen water users reported that the implementation of the Regulations had "markedly improved" or "substantially improved" their drinking water supply (Figure III-1) – findings which can be summarized in three aspects, as described below:

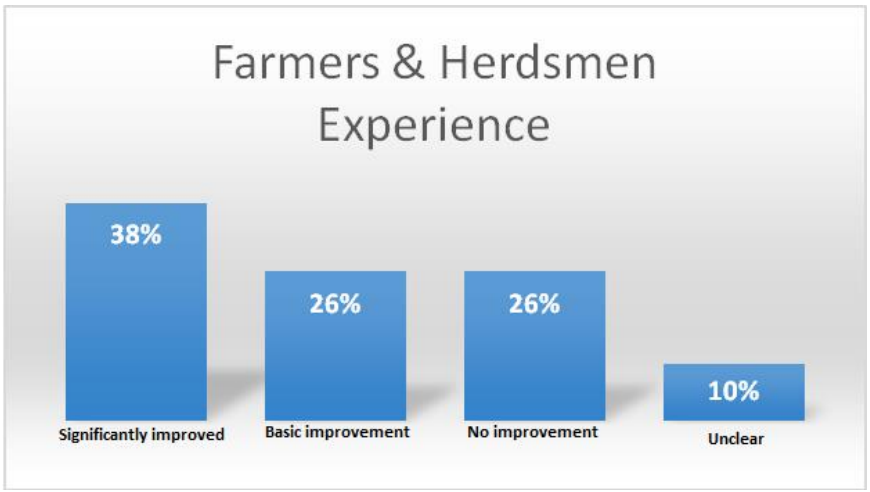

Figure 2. Questionnaire on improvements of drinking water by farmers and herdsmen after implementation of the Regulations

#	Experience Claimed by Farmers & Herdsmen	%age	
1.	Significant Improvement	38%	Total of 1 +2 = 64%
2.	Basic Improvement	26%	
3.	NO Improvement	26%	
4.	Others / Not Clear	10%	

3.1.1. Aspect A: Success in Solving Many People's Problems

As can be seen from the data in Figure III-1 above, the promulgation of the Regulations and their subsequent implementation has indeed promoted both the availability and security of safe public water supply to great numbers of farmers and herdsmen already.

3.5.2. Aspect B: Effects on The Legitimate Rights and Interests of Water Users and Water Supply Units

Economic and Social Development Aspects

In respect of the rights and obligations of both water users and water supply units, the Regulations made clear provisions to promote safe water supply in rural and pastoral areas to ensure the laying of a solid foundation to ensure sustainable economic and social development. Our questionnaire survey data showed that as high as 97% of the Water Departments administrative staff respondents believe that the Regulations had either achieved or basically achieved that original purpose. (Figure III-2)

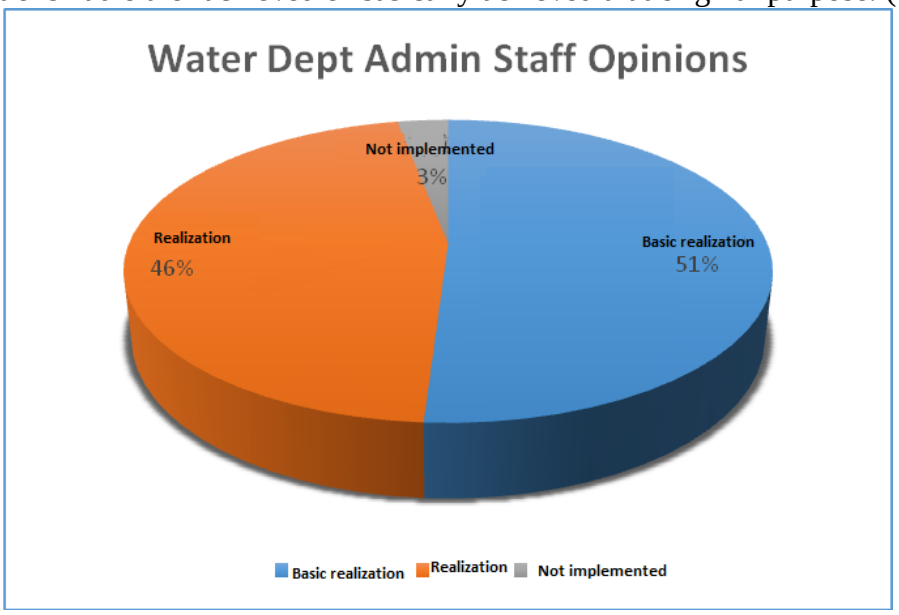

Figure 3. Regulations had either achieved or basically achieved that original purpose

#	Opinions Made	%age claim
1.	Basic Realization of purpose	51%
2.	Purpose Fully Achieved	46%
3.	Not Implemented	3%

One example indicating the purposes' achievement may be seen in Chifeng City Kalaqin county, where, for the first time, a strict contract stipulating a minimum standard of quality and safety of water was imposed29 on the water works of eight administrative villages comprising more than 6600 households.. Another example was Tuoyou Mao Dai Village of Baotou, where water supply companies installed a free magnetic card water meter scheme for farmers, and signed an agreement with them for the installation, management and ongoing maintenance of the technologies involved,30a scheme that made the lives of both the water supply companies and the farmers so much

more convenient. These are just two examples, but many more exist, and together it can be said that two positive effects of the implementation of the Regulations are, first, that it provides a clearer legal basis for the rights and obligations between the water supply unit and the water user, and second, that it further enables and incentivizes the water supply companies to provide a better service to their water users.

Water and Electricity Supply Prices

In addition, to actively ensure the Regulations also served to reduce water supply unit operating costs, and hence reduce the costs to the end user of the actual water supply, the IMAR Development and Reform Commission issued a "water supply and electricity security electricity price direction" 31 to rural and pastoral areas requiring them to ensure that once their water safety projects had completed, residential electricity prices were to be set at a residential level, and not the typically higher industrial price levels. At present, all counties and districts of the rural pastoral water supply projects now offer residential pricing to all users of domestic, agricultural irrigation or drainage electricity.32

Importantly, electricity prices have indeed reduced, and have done so in the range of 25% - 45%. As example, the NaiLin water plant reduced its prices from 0.981 yuan / kWh to 0.512 yuan / kWh. 33 This reduction in prices was a result of three aspects – first, the access to residential pricing, as briefly noted above. Second, the directions made jointly by the Ministry of Finance and the State Administration of Taxation in the report "The support of rural drinking water safety project construction and operation of the Tax Policy"34 and other preferential policies together which reduced water project related taxation. Third, it should be noted that in October 2012, the National Tax Bureau exempted water supply units from National income tax,35 a move that resulted in forest water plant spending reduction of nearly 10 million Yuan per annum.36 These aspects measures served to reduce the cost to water supply companies and in turn, indirectly facilitated their ability to ensure safe water supply.

3.5.3. Aspect C: Planning and Construction of Drinking Water Supply Projects

Our review showed that the promulgation and implementation of the Regulations effectively regulated the planning, construction and supervision of drinking water supply projects in IMAR rural and pastoral areas. We also learned in our survey and actual visits, that the water administrative departments regard the Regulations relating to the design of water supply projects as maintaining a clear legislative purpose, being clear, well-defined and actively implemented successfully.

(i) Active coordination and effective promotion between the Departments.

According to Article 2737 of the Regulations, the administrative departments of the county governments are together responsible for the drinking water supply, supervision and management in their respective regions. Development and reform, finance, health, environmental protection, construction, land resources, audit and other departments in accordance with their respective responsibilities, are seen to do a good job in successfully implementing the drinking water supply projects. A practical example can be seen from Sumu Township (itself a town in one of the 13 counties that make up Chifeng). Sumu township's People's Government is responsible for the administrative areas of rural pastoral areas of drinking water supply organization and coordination. The data from our survey shows that 92%38 of the respondents of Sumu Township are satisfied with the degree of cooperation between all the various departments responsible for the construction of R&P Populations' drinking water supply projects. (Figure III-3)

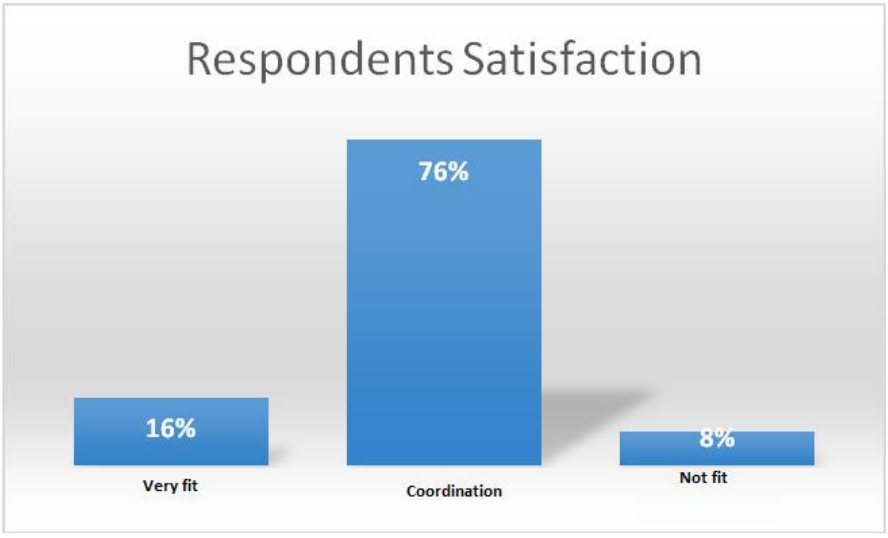

Figure.4 Investigation of Departments Cooperation on Rural and Pastoral Areas' Drink Water Supply Projects

#	**Respondents Experiences**	**%age claim**
1.	Very Good Co-operation in evidence	16%
2.	Good Co-operation in eidence	76%
3,	No Co-operation in evidence	8%

In 2011, the IMAR issued a notice designating the development of the Sumu township centralized drinking water source protection area in the region.39 Chifeng People's Government in accordance with the requirements of the IMAR issued a delimitation notice "Chifeng People's Government Shall Delineate and Develop a Centralized Drinking Water Source Protection Area to Serve the Entire Sumu township". Development then commenced, headed by the Environmental Protection Agency, and drinking water source protection zones were delineated by county departments, across the region.

(b) Adherence to the principles40 of "decentralization after concentration" , and "the general after the priority", led to the water supply projects extending first from the urban centers, then into rural areas, to ensure the planning village had a centralized water supply, and decentralized supplementary coverage where needed. As example, adhering to these principles, Bayannaoer City planned and executed its rural and pastoral areas of drinking water safety projects to the extent that as at the end of 2015 94%41 of its rural and pastoral areas now have safe drinking water, an extent of coverage greater than any other city in the IMAR.

(c) In any given area, water supply projects cannot be executed on a standard, 'one-size-fits-all' basis, as factors such as population distribution, terrain conditions, existing water quality and numerous other factors differ across the land and so specific measures need to be refined in light of local conditions. For example, in Sumu Township, while a centralized water supply project solves the township and administrative center's issues, it cannot serve the more dispersed population in the surrounding pastoral and mountainous areas. Consequently, the solution for these areas is is to sink independent water supply wells, build water storage facilities and other such individual additional water-treatment facilities to ensure water quality, supply and security. As example, the city of Xilinhot solved the Gacha village's drinking water issue through the laying of water pipes, the sinking of deep wells drum wells, and the installation of solar water pumping and purification facilities. Needless to say, the solution for the more isolated farmers and herdsmen scattered far and away from such water facilities is much more difficult to achieve.

(d) To ensure that the Regulations are efficiently and readily implemented, a variety of interrelated systems and procedures also need to be successfully accommodated. As example, a county government embarking on a water supply project typically needs to take into account, or formulate

aspects such as drinking water safety management approaches, project management systems, centralized water supply maintenance fund management, construction management measures, and instructions contained in various other normative documents, as may be required to better implement the Regulations.

3.2 Overall Evaluation of the Effect of the Regulations

In general, we are of the opinion that the Regulations have, since their implementation, indeed improved the protection of rural and pastoral areas' drinking water supply and security, have ensured the safeguarding of the legitimate rights and interests of water users and water supply units, and promoted economic and social development in the rural and pastoral areas they applied to. Besides creating a good legal environment for the supply and management of drinking water, they have also achieved valuable social benefits, and taken all together, the Regulations' legislative objectives are seen to have been realized. Consequently, the quality of overall legislation has been raised, is in accordance with the law of the higher authorities, the legislative purpose is clear, the system is adaptable and flexible in design, and adjustable to suit particular, differing, conditions. It has pertinence, applicability and requisitely necessary local characteristics, and can be summarized as follows:

First, from the legislative point of view, the Regulations have played a positive role as they were promulgated and implemented to promote the autonomous region rural pastoral areas of drinking water supply. While being consistent with the provisions of higher law, they provide strong relevance and distinctive local characteristics in their solutions to to local practical problems faced in day to day in rural and pastoral areas,.

Second, from the perspective of legislative technology, the term Regulations is used to describe the norms. The rules are strict in terms of logic, applicability and maneuverability. The system design is mature and conforms to the actual situation of the autonomous region.

Thirdly, from the perspective of legal effect, by their promulgation in the form of local laws and regulations, the Regulations ensure that the supply of drinking water to rural and pastoral areas is carried out in a legal way, and hence in a manner that has improved both the respect for and protection of the whole society. Ensuring the legitimate rights and interests of the farmers and herdsmen to safe drinking water, has been both very beneficial to and a real security for them.

4. Analysis and Evaluation of the Regulations and Their Implementation

The focus in our post-legislative review was to investigate and analyze the quality of the core provisions of the Regulations, evaluate the enforceability of the key provisions and their effects once implemented, and conclude with any problems encountered and the reasons for their existence. Consequently, we analyzed and evaluated the problems that were experienced in the planning, construction, operation and maintenance of the drinking water supply systems in rural and pastoral areas, in their relationship to centralized water supplies.

4.1 Water Supply Project Construction and Ongoing Maintenance

(1) The Main Provisions Involved

The main provisions of the Regulations are found in: Article 9 and Article 14 respectively in rural and pastoral areas of drinking water project planning and construction. Article 30 provisions further deal with the costs of the water supplies, and maintenance of a special funds system.

Article 9: The water administrative departments of the people's government at or above county level shall conduct comprehensive planning in accordance with the plan of developing rural and pastoral drinking water supply projects issued by relevant departments. The projects shall be conducted with examination and approval from the water administrative departments of the higher people's government, and with the approval from the people's government at the same level.42

Article 14: After rural and pastoral drinking water supply projects have been completed, the water administrative departments of the People's Government shall conduct inspections in accordance with

relevant law. Projects without inspection or that fail to pass the inspection cannot be put into service.43

Article 30: In areas where the rural and pastoral water price cannot compensate the cost of their supply, the People's Government at the county level shall establish a special fund for the maintenance of centralized water supply projects, and determine the specific measures required.44

(2) Assessment of the situation

95%45 of the areas in our survey have a "rural drinking water supply development plan" . In the process of assessment, we have learned that the establishment of drinking water supply planning in rural and pastoral areas not only promotes the construction and management of their drinking water supply projects, but also facilitates coordination with other special development plans to jointly promote the economic and social development of those areas.

When formulating the 'Five-year Plan'46, the IMAR Government considered the Regulations' relevant contents (for example, Article 14 above). According to the 'Five-year Plan', water supply projects in rural and pastoral areas cannot come into service immediately after completion, an inspection carried out by the water administrative bureau at county or above county level is first required.47 Also, it is planned that the centralized water supply penetration rate for rural and pastoral areas shall increase to 80% in 2020, from 74% in 201548.

Through the analysis of the data collected from field research, the Assessment Team concluded that the Regulations provisions have been objective, the system design reasonable and well in line with the actual situations in IMAR rural and pastoral areas, the responsibilities of the various players and parties are clearly defined, and the whole system has both strong maneuverability and effective execution.

(3) The Main Problems Seen, and Analysis of Their Causes

(3.1) Our analysis revealed that the lack of investment funds for construction projects, is a continuing problem. Typically, investment in the construction of drinking water projects in rural and pastoral areas is carried out by the central government and funded in a local financial share system as seen in the table below.

For example, in the entire IMAR over the period 2014 to 2016, investment for rural and pastoral drinking water projects was listed as follows:49

Table 2. Investment in Water Supply Projects

INVESTMENT BY	BILLION YUAN	% OF TOTAL
PRC Central Government	**9.867**	7.92%
IMAR Government	**15.111**	13.13%
County	35.493	28.18%
Other	64.146	51.47%
Total	**124.617**	**100%**

In China, many infrastructure constructions are funded partially by central government and partially by local government. The situation in the IMAR is the same. From 2014 to July 2016, the central government spent 9.867 billion on infrastructure constructions in IMAR, representing 7.92% of the total investment. As can be seen from the above table the IMAR government, the government at city level and non-government bodies have spent 15.111 billion, 35.493 billion and 64.146 billion, respectively, representing 12.13%, 28.48% and 51.47% respectively. This shows that Government investment at city level represents more than a quarter of the total investment.50 Therefore, whether water supply projects – which are just one element included in infrastructure constructions – can be sufficiently funded largely relies on whether the Government at city level is able to provide sufficient

investment. Unfortunately, not every city in the IMAR is well developed, and as a result, cities with limited financial income can hardly spend sufficient money on their water supply projects.

As can be seen from Figure IV-1, County supporting funds accounted for more than a quarter of the total project investment – and as Counties typically raise funds from the Central Finance department, local financial supporting funds play a crucial role here. Within the scope of the IMAR, cities and counties have uneven economic developments, and local financial investment in rural and pastoral areas of drinking water project construction mirror such unevenness as well.51

(3.2) It is noted that once a water supply project has successfully completed and is in daily use, its continued daily operation and maintenance produce their own difficulties. Article 30 of the Regulations stipulates that a "special fund for the maintenance of water supplies" is to be established when situations demand it.52

The Assessment team learned that only 34% of counties (i.e. 35 counties out of a total of 102 in the IMAR) 53 have established a special maintenance fund, the implementation of which invariably posing great difficulties. The main reason for this state of affairs is the level of economic development constraints, and so this negatively impacts the county People's Government's ability to provide such funds. Clearly, if the county government's access to such funds is limited, then the daily operation and ongoing repair and maintenance of the water-supply equipment will suffer, the effectiveness of drinking water supply projects in rural and pastoral areas will decline, and.their water administrative departments and construction management units will be overwhelmed with work. Inevitably, such negative situation will affect the long-term operation and success of their projects.

4.2 Relationships between Water Supply Units and Water users

(1) The Main Provisions Involved

Article 22 of the Regulations describe how the county's water supply units are to ensure and safeguard water supply. Article 23 of the Regulations specifies that the relationship between the water supply unit and the end user of water, is to be contractual.

Article 22: Water supply units shall ensure the normal use and supply of drinking water in rural and pastoral areas and shall not suspend or terminate water supply without authorization. If it is necessary to suspend or terminate water supply, they must inform the local water administrative departments of the People's Government at least 30 days in advance.

When water supply is suspended or terminated the water administrative departments of the People's Government at county level shall employ all requisite emergency safeguard measures.

Article 23: The water supply unit shall sign a water supply contract with the water user, clarify the rights and obligations of both parties and regulate both the water supply and the use of the water supplied.

Further, Article 16 places responsibility with the county government to ensure the quality of water provided to those whose situations deserve extra assistance:

Article 16: The People's Government at or above county level shall provide water treatment equipment and financial subsidies to the water user whose residential area is not suitable for a centralized water supply, or. whose self-provided water cannot meet the drinking water standards.

(2) Assessment of the situation

In regard to the Article 22 obligations, 74% of water users who were surveyed54 indicated that their water supply was stable, and 94%55 indicated that the water supply met their water demands. In regard to Article 23's stipulations for a contractual agreement, our survey showed that only, 44%56 of water supply units considered such a contract valuable and signed such contracts with their water users.

As the Regulations provide the core content of the contract between, and hence the rights and obligations of, both parties, the fact that less than 50% of contracts have been signed is indication that the implementation of the Regulations must be further strengthened in terms of publicity of their

content and value, and guidance in their execution. It is the Assessments Team's view that the low percentage of water contracts is a result of at least two issues. One, neither party typically have any experience of legal matters; two, there is no enforcement over not signing a contract. Unfortunately, it is also the Assessment Team's view that lack of a formal contractual relationship can only result in serious problems when disputes arise, as they inevitably will do in te future.

(3) The Main Problems Seen, and Analysis of Their Causes

(a) Our survey showed that following the completion of the typical water supply project, the water supply price was low and the operation of the water supply proved more difficult than first envisioned. Article 29 of the Regulations stipulates:

Article 29: Rural and pastoral drinking water supply shall implement the paid use system: The price shall be determined in accordance with the principle of compensating cost, reasonable income, higher quality with higher price and fair burden. The specific measures shall be determined by the departments of pricing and water administration of the People's Government of the autonomous region in accordance with their respective authorities.

For example, the average price charged to water users in rural and pastoral areas is about 1.5 yuan per ton in Hohhot, while the average cost of water supply is about 1.85 yuan per ton (around 23% higher).57 Clearly, the price of water is lower than its cost to supply. The main reason for this is that the majority of water users are farmers and herdsmen, groups whose economic income is generally much lower than that of urban dwellers in the IMAR. The traditional water consumption concept should not be too high. In addition, water charges are not58 uniformly calculated across the IMAR. For example, 59 some areas charge for water by the year, others ignore time and charge by volume used, irrespective of number of users. In some areas household income is ignored, in others, it is considered. Extensive water tariffs also directly affect the long-term development of water supply units. Although the Regulations stipulate in Article 31 that concessions for taxes and other fees should be made, the fact is that these preferential measures are not sufficient to cover the operating costs of water supply units. 60

Article 31: The water resource fee and sewage treatment fee shall not be levied for rural and pastoral drinking water. The relevant departments shall provide concessions for the tax and fees arising from operation of rural and pastoral drinking water supply projects.

Water supply units are hence placed in the conflicting position of being burdened with both the need to ensure profitability and the need to provide affordable public welfare. Most of the water supply units we surveyed confirmed that it is more difficult to cope with unexpected water supply accidents as the water fee is not sufficient to cover the operating costs of the water works.

(b) To ensure decentralized water users of drinking implement requisite health measures is to be too optimistic. As noted earlier, Article 16 of the Regulations reassures that "… water treatment equipment and financial subsidies…" would be made available to those users whose situations demand such relief.

In the Assessment Team's opinions, the purpose of this legislation is mainly to protect the water quality of rural households in scattered pastoral areas, but the actual implementation of water-quality assurance is unsatisfactory, and the legislative intentions have proven difficult to achieve. Forty-three61 percent of the respondents indicated that their county water administration department promoted the availability of household water treatment equipment, 16% said no such promotion was made, and 41% of the respondents did not even know such relief was available. Even where household water treatment equipment was promoted and taken up in the region, the actual use of the equipment is less than satisfactory. There are two main reasons for the above problems: First, some household water treatment equipment processing capabilities are too low to meet the drinking water needs of people and livestock, and so farmers and herdsmen decline their use; Second, to ensure ongoing quality of treatment, the equipment needs to be maintained continuously including periodic replacement of filters, and even, if the Government provided a one-time grant to purchase the

equipment, user are reluctant, or find it too costly, to bear ongoing maintenance and replacement-filter costs, and thus soon cease use of the equipment.

(4) Drinking Water Safety Management Systems

(a) The Main Provisions Involved

Articles 18 and 19 of the Regulations deal with the water quality testing requirements of the water supply units, and the inspection and supervision duties of the administrative department of public health, and Article 2762 deals with the management systems for both centralized and single-use water supply facilities.

Article 18: The water supply units shall establish well inspection systems, equipped with professional testing personnel and necessary equipment, and shall be responsible for the daily inspection work as well as reporting to the water administrative departments and public health administrative departments of the People's Government at county level.

Article 19: The public health departments at or above county level shall be responsible for the inspection and supervision of the rural and pastoral drinking water hygiene within the administrative region, and shall publish the test results to the public regularly. The cost of inspection shall not be levied to water supply units or water users.

(b) Assessment of the Situation

The information and data collected by the Assessment Team regarding the management of drinking water safety under the Regulation, either through investigation visits or a thematic discussion, shows that there is no doubt about the need for the regulation of drinking water safety, as clearly ensuring safe drinking water is greatly important to both human and animal life. It is hence one important purpose of the protection legislation in the Regulations. However, due to the subjective and objective factors listed above, there still exists many difficulties and problems in ensuring water safety processes are fully and properly implemented.

5. The Existing Problems and an Analysis of Their Causes

(1) As argued earlier, water quality testing cannot be carried out effectively if there is a general lack of funds.

Despite the provisions of Article 18 and 19 as listed earlier, there is real doubt as to whether the implementation of these provision can be successfully acheived. For example, in Chifeng City, test results in 2013 showed that: the overall rural water quality ranked between 50% and 70%, and further, the test coverage and frequency were not up to "drinking water health standards"requirements anyway, as only 19-28 out of a possible total of 40+ test items were evaluated. This is a figure far below that of the municipal and county water quality testing laboratory, where the average detection capacity of 47 items and 30 items, among which the average test ability of routine indexes is 33 items and 27 items.63 Our research showed that Chifeng City's drinking water quality testing difficulties were not an isolated case, but rather reflects the universality of typically faced problems. (Figures V-1 and V-2)

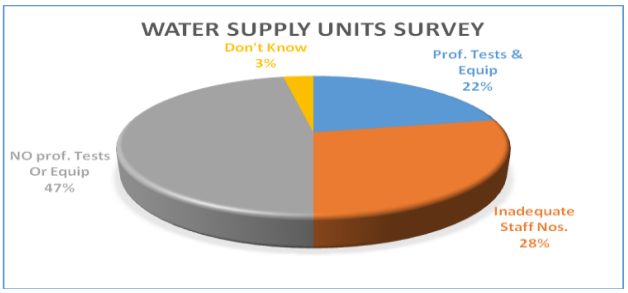

Figure 5. Water Supply Units: Professional Testing Personnel and Necessary Equipment survey

RESPONSE	%
Both Professional Tests and Equipment	22%
Have Professional Staff, but inadequate numbers of such staff	28%
Neither Professional Tests nor Equipment	47%
Don't Know	**3%**
Total	**100%**

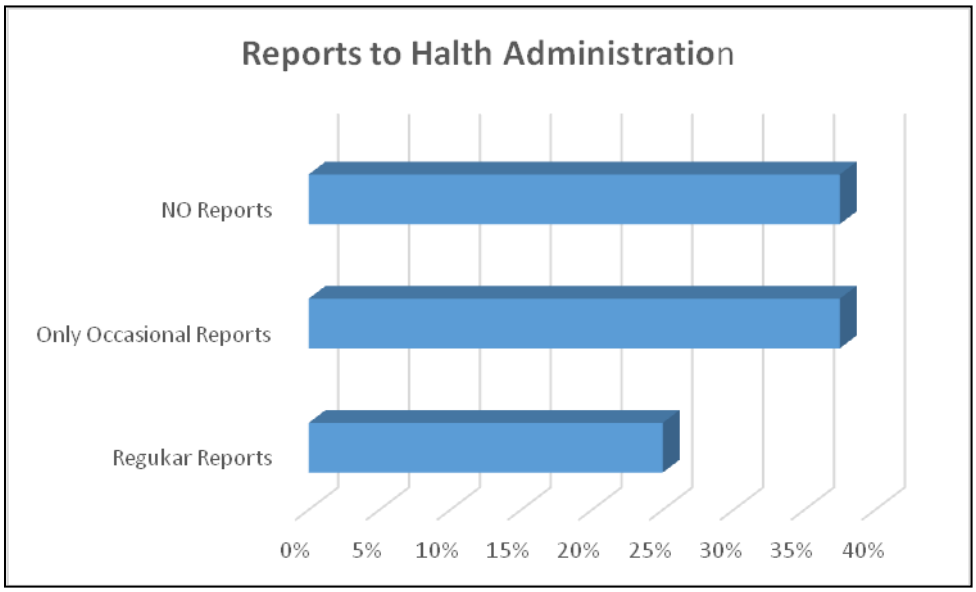

Figure 6. Water supply units reporting daily inspections to health administrations on a regular basis

RESPONSE	%
Have Regular Reports	25%
Only Occasional Reports	37.5%
No Reports	37.5%
Total	**100%**

The main reasons for this problem lie in the fact that most water supply units in rural and pastoral areas cannot receive payment – essentially, they have produced no profit, and hence suffered accumulating losses for many years.64 Consequently, the water supply unit cannot establish its own detection system or recruit professional testing personnel or acquire the necessary instruments and equipment. Although some water plants also have a laboratory65, is the facilities tend to be relatively

small, equipment relatively old, and no funds are available for either the purchase of water quality testing reagents or for the hiring of suitable personnel.

The problem of lack of funds is first a result of the county level people's government health administrative department's prohibition of charging for tests of water supply units and users, resulting in the people's government health administrative departments then being unable to bear the cost of testing. So far, the county water quality inspection center under the water administrative department have been set up in a few places, but most counties have yet to be able to afford to set up their own.66 Further, the daily routine of the water supply unit does not include enough tasks to meet testing standards, there is a lack of authoritative influence and general public awareness remains low.67Relative to the centralized water supply project's water quality testing, rural pastoral areas of water supply decentralized water quality testing is more difficult to acheive, largely because of the lack of decentralized equipment, and as a consequence, water testing is seen to cease altogether in time. 68

(2) Legal Awareness of Drinking Water Management for Farmers and Herdsmen.

As noted earlier, Article 27 of the Regulations stipulates the various parties who are tasked with the responsibility of supervision of the water supply projects. We found in our research that the centralized water supply facilities or single village water supply facilities managed by the village collective or the water cooperation organization are often managed by a villager appointed by a village commission (Gacha), and if entrusted management personnel's safety consciousness is weak, this simply leads to improper management and maintence of the centralized water or single village water supply facilities. Typically, drinking water facilities and their reservoirs, pump-houses etc., have locks and locking equipment, however in many cases, these locking device have been damaged and either their timely repair or replacement is often just abandoned. The management system is not standardized, and this too causes a lot of security risks. In our research, we also learned that, due to weak legal awareness, drinking water and agricultural use of water often engage in a mutual "fight for the water". For example, in Bayannaoer City and Baotou City, some areas appear to have illegally diverted drinking water to agriculture, resulting in downstream depletion of drinking water supply lines and resulting negative phenomena. Our questionnaire revealed that, only 6% farmers and herdsmen understand the main contents of the Regulation, 32% farmers and herdsmen know or have heard of the Regulations, but do not know the specific provisions, and 62% farmers and herdsmen do not know of either the formulation or implementation of the Regulations. (Figure 7) shows that increasing the Regulations of the popularization improve the awareness of farmers and herdsmen and the drinking water safety management plays an important role.

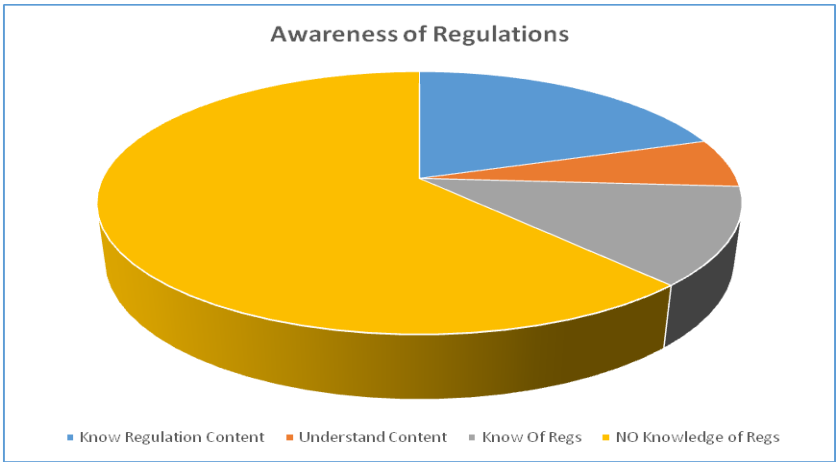

Figure 7. Farmers' and Herdsmen's Awareness of the Regulations

RESPONSE	%
Know the contents of the Regulations	20%
Understand the contents of the Regulations	6%
Know of the Regulations	12%
Don't Know of the Regulations	**62%**
Total	**100%**

6. Recommendations and Countermeasures

Following our evaluations, and based on the analysis of the problems found, we now propose both the factors that should be taken into account in any future implementation or revision of the Regulations, and provide suggestions and countermeasures for the revision and perfection of certain relevant provisions of the Regulations.

(1) Suggestions and countermeasures for improving the construction, operation and maintenance of drinking water supply projects in rural and pastoral areas.

Rural drinking water supply projects involve the vital interests of farmers and herdsmen, and strong public welfare in general. As such they need strong financial capabilities to protect and maintain the construction of water supply projects, and especially post-construction, to support their ongoing operation and maintenance costs. It is suggested that the IMAR and the People's Governments at all levels should increase their financial contributions to reduce the financial pressures at the county level and so effectively solve not just the costs of construction of the drinking water projects in rural and pastoral areas, but also their ongoing daily operation and maintenance costs. Only by adhering to the principles of both construction and management can we ensure the construction, management and utilization of the project to maximize the benefits of the project and achieve the purposes embodied in the original legislative intent of the Regulations.

(2) Suggestions and countermeasures for improving the pricing mechanism of drinking water tariff in rural and pastoral areas

We also recommend that the IMAR Price Department establish a scientific water pricing mechanism, to help standardize and strengthen price management – considering first of all, through the operation of the cost subsidies, such as water provision, the progressive realization of the Regulations provisions in Article 29 dealing with "compensation costs, reasonable income, higher prices for better quality, fair burden of water pricing" and billing mechanisms. To make the formulation and adjustment of drinking water prices more reasonable in rural and pastoral areas, we recommend that the IMAR Price Department implement the "hearing system and notice system" . The "three open systems"of water price, water quantity and water fee shall be introduced, developed and adjusted to ensure transparency. Second, the enforcement of relevant water regulations, and a venture to enhance water conservation awareness of farmers and herdsmen. In regions with abundant water resources, (for example, Xing'an League and Hulunbeier League69) it is suggested to test a two-part water price scheme, namely a "basic" water price and a "measured" water price in water conservancy projects. The "basic water" price is to be based on the principle of compensating the direct cost of water supply, management fees and 50% of depreciation and repair costs. It reflects the minimum fee that the water conservancy project unit should charge to the water user to maintain the most basic normal water conservancy project unit Running. The "measured" water price shall be based on the principle of compensating water resources fee, material fee and other expenses other than the basic water price, plus provision for the reasonable profits and tax liabilities of the water supply units. The measured water price is obtained by multiplying the actual water supply quantity by the measured water fee, and will hence rise and fall in accordance with actual water usage, hopefully therefore conducive to conservation of water use. Thirdly, in the decentralized water supply areas and the shortage of water resources, it is proposed to implement the water quota management (over-quota overrun increase) system, to implement the basic principles of "water conservation and balanced use of resources".

(3) Rural drinking water safety management recommendations and countermeasures

(a) We propose to increase rural and pastoral areas' drinking water quality safety testing by increasing capital investment in water testing systems. Further, we propose the following: first, that the cost of drinking water quality monitoring and supervision in rural and pastoral areas should be included in the budget of the people's governments above the county level and, second: that the health administrative departments of the people's governments above the county level should be responsible to ensure the implementation of drinking water sanitation inspections in rural and pastoral areas within their administrative areas. On these bases, to strengthen the water supply unit self-inspection, water quality inspection center inspection, health administrative departments at all levels to monitor water quality inspection and supervision system and mechanism, optimize the detection index and monitoring frequency, improve the test results to the public system, improve the authority of the test results and the majority of farmers and herdsmen of water quality test results of awareness.

(b) Encourage innovation in rural and pastoral areas in drinking water supply projects and promote scientific management systems. Encourage the promotion of the "small to large, small joint"rural drinking water project centralized management model. It is recognized that a unified management model is difficult to achieve when taking into account the centralized water supply project in a single village, hence, according to the project type and scale, and in accordance with the principle of beneficial to the masses, which is conducive to the effectiveness of the project, to (i) ensure sustainable use of water resources exploration and innovative project management, (ii) guide and actively support the village group, farmers and herdsmen (iii) the water cooperation organizations, water supply service organizations (iv) new agricultural production, operation of the main involved in project management and protection, (v) a clear property rights and management methods, and (vi) the implementation of management institutions and personnel. Water departments will have to strengthen the effective operation of their project supervision, to help project management and maintenance organizations and their personnel to improve the rules and regulations, and standardize operations. The ultimate realization of scientific management, the new mechanism of water to raise water, so that water supply projects truly operate in a virtuous circle.

(c) Increase and improve farmers and herdsmen drinking water safety awareness. On the one hand, we recommend that the IMAR Water Administrative Department make full use of radio, television, newspapers, Internet and other media means, to carry out multi-level, multi-format views and explanations of the rule of lawand the value of safe drinking water to public welfare. We further recommend to increase publicity and popularization of the Regulations, as well as guidance and encouragement to farmers and herdsmen to understand and appreciate rural water conservancy project management, and to increase their legal awareness of their rights and responsibilities. On the other hand, we recommend that the IMAR Water Administrative Department increase case investigation and issue more effective communications, so to provide the double benefits of (a) ensuring offenders are motivated by sanctions to correct their behaviors, and (b) educating the general public on the benefits inherit in proper use and care of water supplies.

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