Original Article

Comprehensiveness in policy makings of water participatory-strategic management in Iran

Mohammad Salarian[1], Kamran Davary[2]*, Amin Alizadeh[2], Mohammad Lagzian[3], Mohammad Fazeli[4]

[1] Ph.D. student of Water Engineering, Irrigation and Drainage, Ferdowsi University of Mashhad, Mashhad, Iran. [2] Professor of Water Engineering, Irrigation and Drainage, Ferdowsi University of Mashhad, Mashhad, Iran. [3] Professor of Management Department, Ferdowsi University of Mashhad, Mashhad, Iran. [4] Assistant Professor of the Faculty of Literature and Humanities, Shahid Beheshti University, Tehran, Iran.

Correspondence: Kamran Davary; Professor of Water Engineering, Irrigation and Drainage, Ferdowsi University of Mashhad, Mashhad, Iran.
E-mail: k.davary@um.ac.ir

ABSTRACT

Currently, the physical development of water resources has been somehow limited and water supply is only practical with exorbitant expenses; therefore, non-structural measures that have been neglected over the past years can be used at a relatively lower cost in various water management issues. In Iran, this tendency has been largely the result of the clumsy adherence to modernization theory as the dominant model of development in the years after World War II. In fact, water supply goal cannot be achieved in only one way; many different strategies and methods must be presented in a coherent and integrated strategic plan framework. It should be noted that improving water management requires comprehensiveness and strategic thinking. Today, policy makings for water supply in developed counties are founded on economic, cultural, political, social (custom) and governance structures. For this purpose, in this research, the expansion of logical measures has been considered aimed at improving the efficiency of strategic water management in different dimensions which have been intertwined with each other. The mentioned measures include increasing productivity, balancing supply and demand, valuating and pricing water, forming water market, making cultural capacity, engaging actors, decentralizing and social solutions. Totally, the one-dimensional insight on the water management problem is completely false and rejected, since it complicates the problems and may lead to worse consequences. In order to maintain the efficiency in water management in the future, various dimensions must be identified and mere focus on the structural dimension and water supply avoided to improve the current situation.

Keywords: Strategic, Iran, Policy, Political, Social

Introduction

So far, many interpretations have been presented with regard to management and participation of managers and beneficiaries in the form of various types of water resources planning and management. In addition, many plans have been designed and implemented in the field of water management which were either fruitless, or inconsistent with the long-term Macro Policies of the country. But what have been the main drawbacks of water management programs in Iran so far? Why water management has been unsuccessful despite a wide range of planning? Some logical answers to these questions can be summarized as follows:

1. Lack of a system approach: A system approach identifies all the factors effective on the behavior of a system and avoids unnecessary factors that cause complexity. The factors that are really out of the system and have no effect on the system's performance are eliminated in the reviews.
2. The lack of comprehensiveness: The natural environment is always in interaction with the human environment, and the feedback of co-evolution of the social environments is represented in the natural environment. Therefore, the

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lack of comprehensiveness[1] in human and natural environments will result in uncertain consequences in the natural environment. Figure 1 shows the factors involved in the human and natural environments of water management.

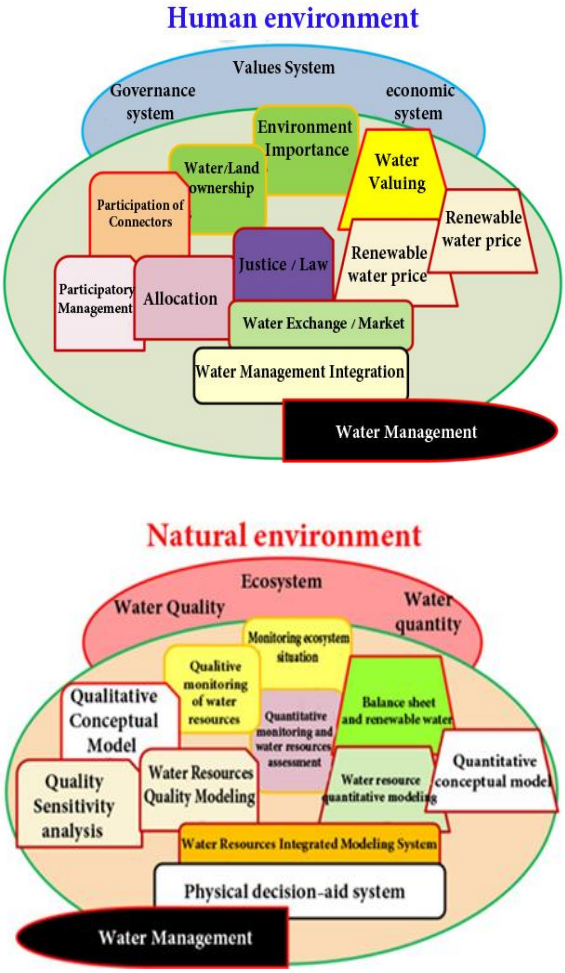

Figure 1. The natural and human environment related to water management

3. Lack of attention to environmental dynamism (development, climate change, etc.): A favorable situation can be achieved by recognizing the natural and human environment dynamism (Future Studies).
4. Lack of attention to people's ownership / participation: If all actors are not engaged in a program (from formulation to execution), it will neither remain dynamic, not observe justice. It should be noted that actors are a special group of stakeholders who play a role in the decision-making process. Therefore, an optimal program is the one that in addition to respecting the water users' ownership, it employs them in the formulation and execution of the programs. Figure 2 shows the subset of actors in the water domain [1].

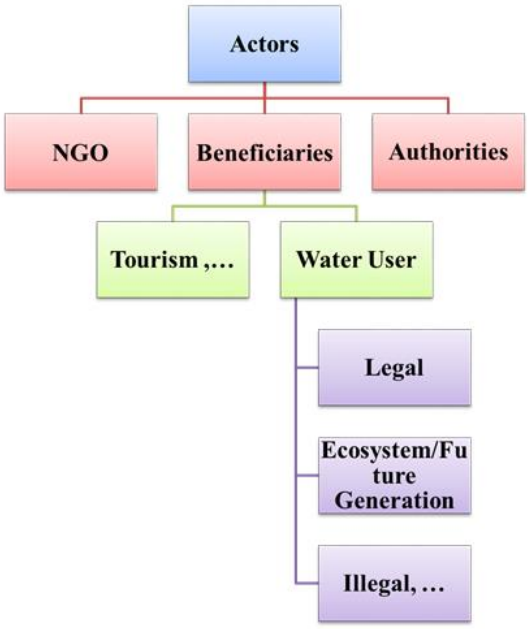

Figure 2 – The actors in the water domain

5. Negligence in the policy makings: The rules and principles have many errors at the time of the formulation as well as execution. An example of a legislative error can be found in the Fair Water Distribution Act (adopted in 1982). It has been established in this law that the consumers be provided with the share of water in agriculture section based on volume, while volumetric instruments and devices have been either unavailable so far or have been less employed. Therefore, during these three decades, water violation continued to exist [2].
6. Disregarding or paying less attention to non-structural aspects: Although water management plans and programs may be designed and approved without considering social, political and environmental criteria and indicators, there is no doubt that achieving sustainable development and the strategic objectives of these programs are not possible without considering these criteria. Neglecting or paying less attention to non-structural aspects in planning and designing development plans - especially social aspects, which is fairly a global problem- is largely the result of adherence of thecountry's planning system to modernization theory as the developmental dominant model in the years after World War II. However, in the course of time and consistent with the change in global attitude towards the concept of development, the necessity of conducting economic and environmental studies in the field of developmental activities has been taken into consideration. Unfortunately, social studies have not enjoyed the case, and mostly, they were limited to conducting surveys on the demographic characteristics, plans domain, and other unclear information in terms of usage. Conducting social studies can have achievements such as refining judgments and enhancing the knowledge of environment, improving the ability to identify the constraints of social judgments and enhancing people's

[1] Comprehensiveness means that economic, environmental, technical, and social issues, etc. are considered while ensuring the sustainability of water resources for future generations.

awareness about themselves and their social environment and the results of their activities, getting a clearer and more comprehensive understanding of policies for activists, providing a means to consider the community from different viewpoints, evaluating the practical implications of developmental plans and programs. Social studies can identify social and cultural capacities in society and use them appropriately for the development of society.

It should be noted that in order to achieve efficient and good water management, it is necessary to identify its various dimensions including economic, cultural, political, and social dimensions and water governance structure. The significance of this study is for initial evaluation of the importance and purpose of water strategic planning, then explaining the interaction of water management with different dimensions considering the lack of attention to non-structural aspects in Iran's water planning.

Water Strategic Planning

New approaches to water management require a new viewpoint with regard to its management plans, which has significant differences with previous customs of preparing comprehensive plans. Today, there is a great emphasize on a more flexible and dynamic approach in the preparation of comprehensive plans for a drainage basin. Therefore, the water management program is mostly a strategic plan with a comprehensive approach rather than a top-down approach, as observed in the past comprehensive plans. Strategic plannings are a systematic way to make decisions and take actions that form the future. Strategic management focuses on reaching the goal to deal with the widespread and complex issues. This planning is distinguished from other planning patterns due to using a set of specific processes, such as drawing actors' participation, formulating and evaluating strategies, and examining possible outcomes [3]. In strategic management of public domains (such as water), participation of actors is an essential part of strategy formulation since facilitating and ensuring the implementation of a strategic plan is directly related to the participation of actors. In fact, this leads to a sense of ownership in them concerning management plans [4].

The purpose of water strategic management

Strategic water management seeks to meet the water needs of human activities while maintaining the sustainability of development. Ensuring adequate water supply requires serious considerations of resiliency concept. Another necessity is maintaining the balance of development against the available resources. Promoting technological solutions and a water valuing approach results in the productivity and water resources increase; accordingly, they are considered important.

Although globally, the world's water resources are sufficient to meet the current and future needs of the world's population, many parts of the world face the problem of water shortage. Water shortage refers to the imbalance between the supply and demand of water in a place and is a temporary problem which can be solved by providing more water from the basin. While, water scarcity is defined within the drainage basin and is the result of consuming water more than the renewable capacity of the water resources (allocable) of that basin. Water shortage problem can be simply solved by reducing usage, re-distributing the population appropriately, changing consumption pattern, increasing water use efficiency, or transferring water to the basin (out of the basin). Some of the mentioned concepts are presented in detailed explanations in the following.

According to the definition, productivity is gained by dividing output into input. For example, in Figure 3, a list of outputs and inputs of irrigated agricultural section has been displayed as the country's largest consumer of water. In Iran, the most important input for irrigated agriculture is water, which plays an effective role in the production of agricultural products and food supplies. The evaluation of productivity depends on the managerial viewpoint, that is, the benefits (desirable advantages) of each group vary from another (individual, local, national, etc.) considering different viewpoints. But according to the outputs, if the total productivity (including all inputs and outputs) be considered, a currency (as a common measure) would be usually used for all outputs. According to the World Bank's data, the index of total water productivity (different uses of water) in Iran has been $ 4.3 cubic meter from 2000 to 2014; while, the global average for this index was 19.1 during the mentioned period.

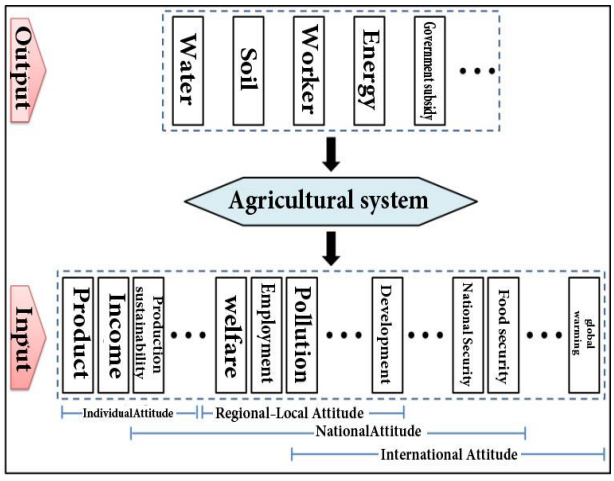

Figure 3. The inputs and outputs of Irrigated agricultural sector

Obviously, promoting productivity is merely one of the ways to manage the demands. Water productivity improvement programs at the level of a drainage basin are shown in Figure 4 from the perspective of the Water Research Institute.

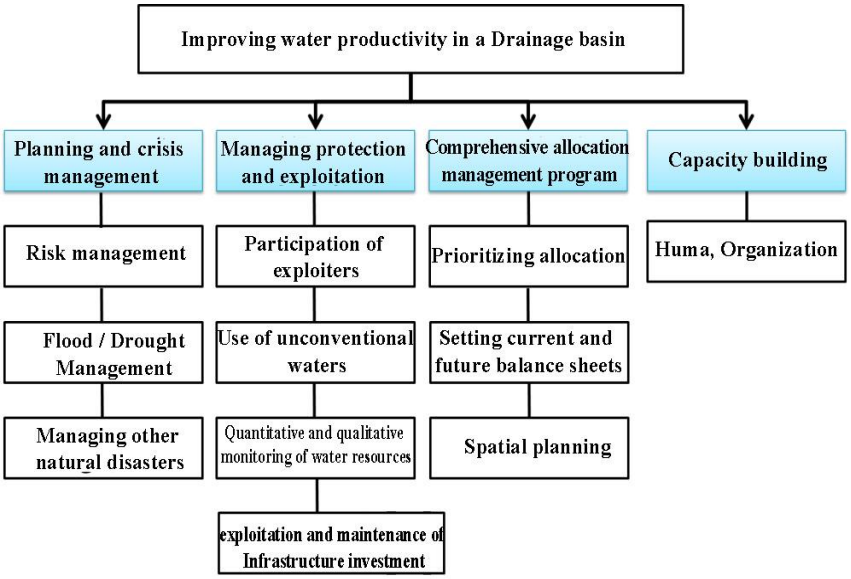

Figure 4. Increasing water productivity at basin [5]

The measures taken in the country have focused on the production and supply for providing the required water for agricultural, drinking and industrial activities, and demand management has been less considered. Today, water resources, both surface and underground, which are the most vital human needs, have turned to a social-economic product that in addition to being renewable, are limited. On the other hand, with population growth, this resource per capita is declining, and with the development of industry, the promotion of public health and welfare, the growth of water consumption, the intensification of competition for its extraction is inevitable.

Having been familiar with different types of management in the resources-consumption cycle (Figure 5), the relationship between demand management and other components of water management can be specified. According to this categorization, it is revealed that demand management is directly related to other components of water management, and includes supply management and consumer unit. It seems that a relatively comprehensive concept of demand management is possible through having such a perspective. The objectives of water demand management can be summarized as follows: 1) achieving the highest returns in the field of transfer, distribution and water usage; 2) maximizing the benefits from each cubic meter; 3) determining the responsibility of each actor in order to save water consumption; and (4) upgrading the existing systems and equipment in order to protect from water resources and wastewater recovery quantitatively and qualitatively.

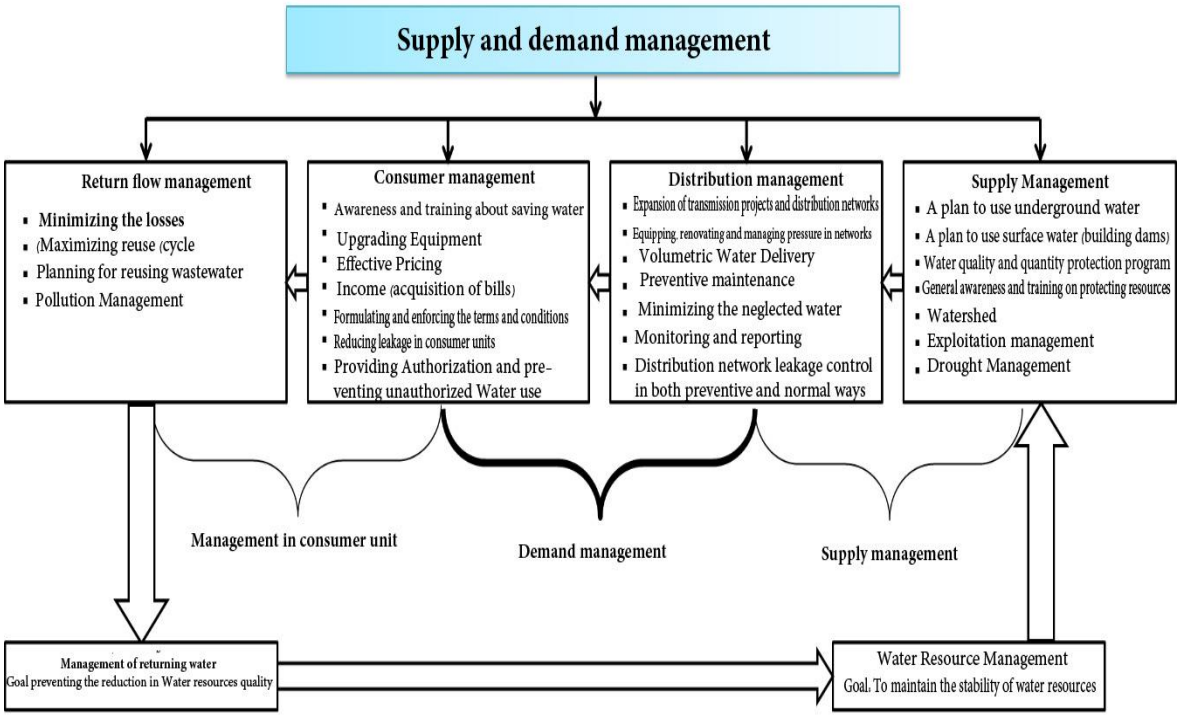

Figure 5. Different types of management in the Water resources - consumption cycle

Components of Water Management Strategies

Investigating the water management programs and measures indicates that identification and analysis of the environment, including social developments, macroeconomic policies and developments in other economic, cultural and structural sectors, have been considered in the formulation of water sector programs. In other words, the water sector management like other sectors in Iran often have introspective and retrospective insight (in an introspective and conservative way), and in this framework, both the origins of water problems and their solutions have been investigated internally, ignoring the fact that changing policies and measures in agriculture, housing and urban planning, energy, commerce, education, community and culture, and foreign affairs sectors affect water management, and the lack of knowledge and monitoring of these factors disrupts the success of the programs. This is while, in strategic perspective toward water management, it is necessary to explore the human and natural environments and understand the dynamics of these environments. Figure 6 illustrates a comprehensive model for water management and Table 1 describes the various components of this model.

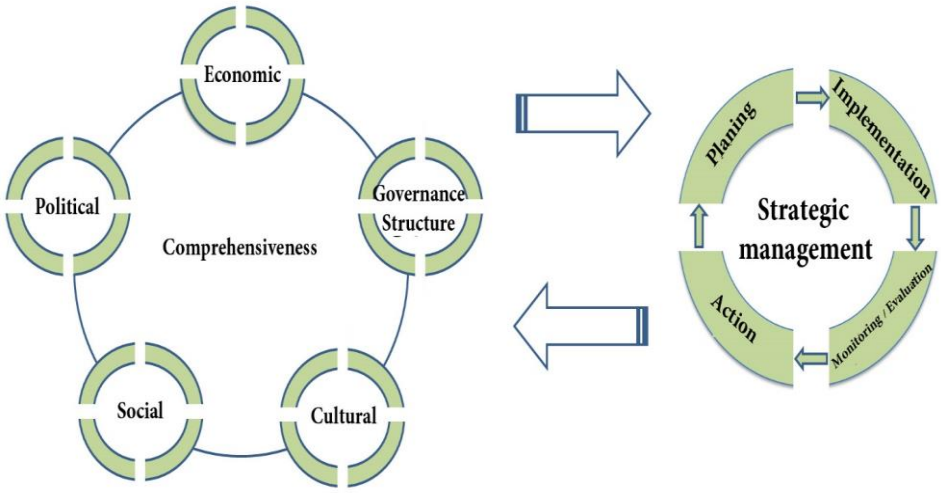

Figure 6 - Comprehensive Pattern of Strategic Water Management

Table 1: Explanation of Strategic Water Management Components

Component	The central element	Goal[1]	solutions
Political	Power	The relative consensus	Decentralization, collaborative structure and …
Economic	Wealth	Motivation for reasonable consumption	Pricing, water market, privatization and …
Cultural	Awareness	Implementation guarantee	Training, creating sensitivity and …
Social	Affection (belonging)	Applying public supervision	Development and empowerment of NGOs, promoting the level of activism and …
Governance structure	Comprehensive	science development	Involving economics, sociology, political science and …

[1]The goal of using any component from the perspective of strategic water management

In addition to identification of the exact components of water management and establishing an effective communication with them, water management needs to have sufficient and skilled manpower and an efficient monitoring and analysis system to succeed (assessment, monitoring, DSS, etc.).

Political component

Consensus is, in fact, the result of collective wisdom, and consensus-based programs are not only easier to be executed, but also last longer. Consensus whether carried out limitedly or at the surface, has a subject-based nature. Some cases need national and regional level consensus, and some others need local consensus. Decentralization is a recommended strategy for good governance. Of course, due to the continuity of national and local issues, the implementation of decentralization programs can be meaningful within the framework of national decisions. In this regard, establishment of connective organizations that provide the link between national governance and local governance is essential. Therefore, the country now needs to formulate appropriate rules for defining the status, authority and responsibilities of water local governance and these connective organizations. Moroever, for establishment of an efficient and effective water management, it is necessary to expand and strengthen the supportive rules in the field of government and private sector participation; this way the private sector as a national and independent industry will find enough incentives to participate in water management programs.

With the victory of the Islamic Revolution, the political participation of the people was considered seriously. Accordingly, in formulating the Third to Sixth Economic, Social and Cultural Development Programs of the country, "decentralization", identifying and assigning the tasks and activities of executive agencies were transferred to the nongovernmental sectors with the aim of releasing the government from responsibilities and attracting more and more people to participate in administration of their own affairs. Although in collaborative decision makings, although the decision-making process is faces with many challenges, more reliable and credible results will be achieved. Figure 7 indicates the obvious difference in unilateral and participatory decision making. Quick decision makings based on "me" in a unilateral approach will lead to a conflict and resistance in the implementation process in this approach. In contrast, the precision and focus of collaborative decision-making to identify the status quo and problems, as well as discussion and negotiation aimed at finding solutions, before reaching consensus and making a decision, facilitate the implementation of the process.

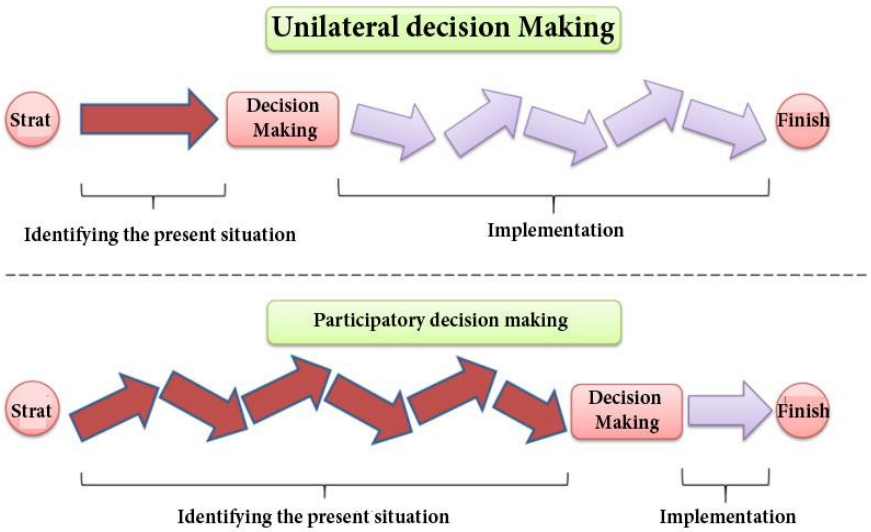

Figure 7 - Unilateral and participatory decision-making differences

Economic component

Political concerns have made the water managers traditionally respond to the increasing water demand by providing more water (not price change). This is while, increasing the price of water for household use in order to control demand is a serious and effective solution that should not be neglected [6]. Figure 8 shows the three water pricing options: 1. The invariable price (Fig. A); 2. Step price considers the minimum price for drinking and sanitary needs (Fig. B); 3. Variable Step Price (seasonal, drought/wet years), considering the minimum price to supply drinking and sanitary needs (Fig. C). Step pricing is a method that meets two goals simultaneously: first, compensating for the costs of water supply and distribution, and second, making the consumption reasonable in the conditions of resources limitation.

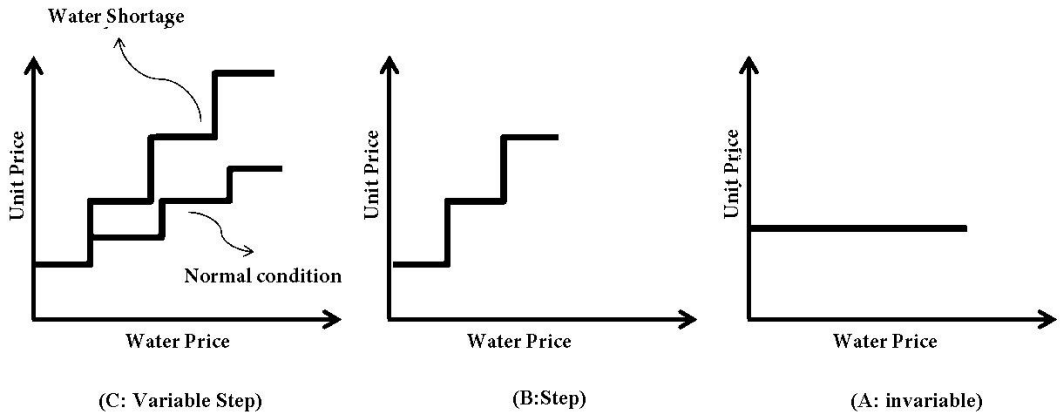

Figure 8. Water pricing options

Among the curves presented in In Fig. 8 (c), the upper curve is related to the conditions of water shortage and lower curvature is related to the normal conditions. Although both curves are consistent at minimum consumption (drinking and sanitary needs), in the next steps, it is evident that the price increases

rapidly under conditions of water shortage, which may lead to a reduction in water demand.

In Iran, water supply and the method of allocation of surface water right, have been often based on neighborhood right and closeness to a river. For example, in the water supply system of Zayanderud, the priority is with the water users closer to the river; while, it is different in the case of springs and Qanats such that water right holders, by investing and spending costs on the construction of the Qantas and wells, can extract water individually. In areas such as Kerman, Yazd and Khorasan, distribution of the Qanats and springs water has been carried out with the least conflicts. In the case of surface water, distribution and allocation of water has often been carried out with local understanding, and it has always been the responsibility of the representative to distribute water. Water exchange was also common and was customarily accepted. This exchange was sometimes carried out with the exchange of goods, cash, or water itself which is still common. For this purpose, water measurement tools have been designed and constructed that have previously been used in the calculations related to water purchase and sale. In addition, water usage time has been effective in determining the water sales' rate. For example, in some parts of the country, the price of water exchanges is different in day and night, and in the case of changing the water usage turn, the difference must be paid in cash or by exchanging goods. Drought and resource reduction are also effective in the price determination. In most parts of the country, two different prices are determined for agricultural and real estate land including with share of water and without any share of water. This share for agricultural land is the authorization to withdraw a certain amount of water from wells, Qanats, springs, seasonal and permanent rivers, or water resources plans. In most agricultural lands transactions, the water price is noted separately which is the result of market performance. The remoteness and closeness to water resources have a great impact on pricing, which indicates the value of water. This is true for non-agricultural uses as well. In the common market transactions, the existence of a well in a property or having a drinking water increase its price and always has more applicants.

Unfortunately, the current law does not recognize many of the above-mentioned exchanges (including water lease, water use change, etc.), and these exchanges are mostly carried out in the customary context. Appropriate legal solutions should be provided to organize water exchanges in a competitive and transparent environment. One of these solutions is the water market, which can recognize these customary relations through an appropriate mechanism. Market mechanism (stock) is one of the best ways to improve productivity under the terms of competitiveness. In fact, water Stock Exchanges is a place for fair and transparent water exchange among those who have water harvesting authorization, which will reveal the value of water in each region. Meanwhile, some oppose the creation of a water market, and there are major problems in setting up a water market, such as locking down the location of water harvesting with its consumption (land and water). Therefore, to get started, it is better to create water market pilots in the basins and areas with the following characteristics [7]:

- In the areas wheretheir resources are fully developed for consumer use.
- In the areas where there is a seasonal variability in the availability of water resources.
- In the areas where there are a lot of water consumers in the region.
- In the areas where the demand for drinking and industry water consumption is increasing.
- In the areas where there is pressure on the water consuming industries to change their current structure.
- In the areas with a more developed economic structure
- In the areas where there is variety in water consumers (variation in the economic value of water in different uses).
- In the areas where the economic value of water in the region is high.
- In the areas where the infrastructure for the transferring water is partly provided.

Today, the water has a low value in our country and its allocation is made as if the water resources are not limited. In fact, water consumers pay nothing for the water use. Urban and industrial consumers usually pay only for the cost of storing, transporting and delivering water; of course, the water price is very low in the agricultural sector as the largest consumer of water. If there is no opportunity for selling excess water, farmers will not have much incentive to protect the water. An efficient market should be planed based on the social, political, cultural, economic and climatic structures and conditions of each region, have the right to transfer ownership, and all the costs and benefits of transfer to the buyer and seller must be transferred. In 2005, Yang categorized the methods that are used to determine the economic value of water into deductive and inductive groups. The deductive methods mainly include the waste method (change in net economic benefits), alternative cost methods, input-output model, computational general equilibrium method, and finally mathematical programming (Table 2). The inductive methods also include analyses based on production and cost function, extraction demand from water market observations and implicit valuation method (Table 3).

Table 2. The most important deductive methodology for water valuation

Method	Explanation of the methodology and information resources	Uses
Waste	Models for extracting distances estimations from net income or profits related to increasing the amount of water used for producer, which are calculated through budget analysis.	Estimates the values based on the location of water consumption or supply in agricultural and industrial applications in multi-product and technologies.
Math planning	Models for the extraction of leases or net final production costs related to water produced which are solved through optimization models.	Estimates the values based on the location of water consumption or supply in agricultural and industrial applications in multi-product and technologies.
Input-Output Model	Net income models or economic benefits associated with water which are constructed through the value-added criterion derived from the input-output model.	A highly skewed method (extremely realistic estimate) is used in agriculture and industry
General equilibrium computational models	Models that are developed for extracting net income or economic benefits of water, and are used through Endogenous optimization models.	The method used for agricultural and industrial water use
Alternative cost	The cost of the best alternative project is considered as the benefit of the project.	It is used to estimate water at the place of supply or at the place of water consumption as a production input

Table 3- The most important inductive methods of water pricing

Method	Explanation of the methodology and information resources	Uses
Estimation of production and cost functions by econometric technology	Primary or secondary information from inputs and outputs of agriculture and industry which is analyzed by statistical techniques (usually regression).	It is used in the valuation of water at the place of consumption, for agricultural or industrial producers
Implicit valuation method	Analyzes the revealed preferences approach by econometric tools using real estate studies in different conditions of supply or quality of water.	With transactions conducted in agricultural or residential property, the demand for water supply at the place for changes in quantity or quality of water is gained.
Viewing the water market exchanges and agricultural land	The prices observed from the transactions are used for the permanent rent or sale of the water right and the Dryland farming agricultural land and Faryab.	The tendency to pay in the place of consumption or supply that has been revealed in transactions is used to determine the economic value of water in agricultural, industrial, urban and environmental uses.

In addition to the above factors, the role of the private sector has to be mentioned in the economic discussions on water. One of the most important and controversial current approaches in the field of global water is the rapid transfer of responsibility for the supply, transfer, distribution and management of resources or water services from public institutions to the private sector; this process is simply called "privatization". In general, privatization in the water sector can be in the form of a service or management contract (Turkey), renting contract (France and Spain), BOT (Australia, China), and Permanent Transfer (UK). The main difference between these options is the assignment of responsibility to the private company for the duration of the contract and the amount of supervision and public sector intervention. Considering the unsuccessful experiences of governmental management in the water sector of different countries, especially in developing countries, and on the other hand, a significant lack of government funding to invest on developing management and exploitation from water infrastructure, attracting private sector participation in various forms can significantly solve the existing and prior problems in water sector management.

Cultural component

One of the non-structural methods of strategic water management is "Building Cultural Capacity", which has three components of training, awareness, and sensitization. The purpose of training is to increase the perception and understanding of actors from the nature of the resources and the cycle of water and the natural environment; and the purpose of awareness is to provide transparent information on the current status of water resources/consumptions. This understanding from the nature (scientific), along with the knowledge of the current situation, will enable actors to have a deeper and more realistic attitude and subsequently take and implement more effective decisions / actions. Ultimately, the purpose of creating sensitivity in the people is to focus more on specific cases which damage public interest. For example, creating sensitivity, especially in women, toward the results of pollution (diseases, etc.) can lead to a social upheaval in relation to those who pollute environment and water. All of these three fields (Training, awareness and sensitivity) require a remote exchange and in person conversations between water community and management; and different media may be used for all of these three cases (Table 4). Obviously, in choosing the right method, not only the content of the message, but also the

audience' community (for example, students, housewives, etc.) will be effective. To formulate content and the method of presentation, it may be appropriate to consider behavioral patterns of actors (real or legal). However, there is a great diversity on the medias and contents, and even the audience (target community); therefore, there are numerous appropriate plans for different options. This diversity and scope require serious employment of relevant specialists.

Table 4- An example of a variety of methods for exchanging between water management and community

	In person	Remote
Collective	Workshop / Class: along with movie shows and teaching aids tools	Webinars and mass medias (newspapers, TV, radio)
Individual	Mutual conversation	Virtual Chat, Brochure

Advancing water management programs using cultural components in addition to water experts requires social and cultural experts . The first step in such programs is the initial assessment of the target community's attitude. Usually after the implementation of the program, a re-evaluation of the attitude of the target community is carried out and byy comparing the results of this assessment with the initial evaluation, the effectiveness of the cultural program is identified.

Another point that must be considered is that the action of each actor is the result of three elements including wealth, trade, and attitude (Fig. 9). Cultural capacity building happens after changing the attitude of the actor towards the surrounding environment through the growth of his comprehensiveness and realism. Another consequence of changing the attitudes of actors is the possible change in their commerce. This means that having a deeper understanding of the environment and the consequences of human behavior with the environment will make humans consider "what was profitable in the past, damaging today". For example, some water users, try to find more and more underground water sources because they think there is a sea full of water underground (the infinite source); but when they understand that the result of such behavior is underground water shortage and the destruction of all of these resources, they will probably seek a collective solution to stop it.

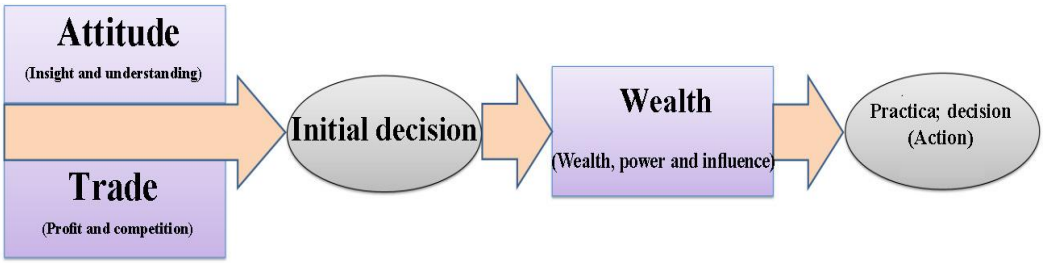

Figure 9. Behavioral model of actors

Social components

The social studies in the field of water are aimed at identifying and analyzing the situation of society and its mutual pressure with the water sector; these studies also examine the social consequences of water management measures in response to these pressures [8, 9]. Undoubtedly, it is impossible to carry out the task without the use of a valid theoretical concept. For this reason, it is possible to use the theory of "social change" that changes the lifestyle and situation and also changes the internal dynamics of the population, including changes in fertility behavior and mortality rates. Obviously, social change can affect both the formation of urban and industrial water consumption patterns and also farmers' behavior for using agricultural water.

There are many different definitions about social change, some of which have been collected and presented by Ebrahimi Loyeh and Ghaffari (2011), Javadi Yeganeh and Abbasi Lakhani (2001) [10, 11]. Social change is a process of quantitative and qualitative substitutions of social phenomena which may be programmed or un-programmed. This process consists of four dimensions [12] including 1) Change Identity: It is the phenomenon that is changed, such as mutual interaction patterns, structure, and production capacity; 2) Change Level: The type of change level is determined based on the method of division; it is a type of division that can be divided into individual, group, organizational, institutional and community levels; 3) Period: It is the time since starting the change process until its acceptance and duration; and (4) Change Direction: It recognizes the path of change and the direction of patterns' change. It should be noted that although changes in human societies are positive in the long term, changes may be progressive or retrograde or based on different patterns such as linear or rotational patterns. From the perspective of Motahari, changes direction in society, are not always positive and progressive; and according to the theory of human power and its electoral power, history has always been fluctuating [13]. Among the factors that create social change in a country, law, cultural values (priority of thoughts on manner), natural environment, technology, population, and transformational currents can be named. The complete explanation of each of these factors and their impacts on water management is presented in Table 5. Usually, a set of factors together create a context for social change. It is obvious that social change, like the strategic depth of water management, is inherently a time-consuming phenomenon. For this reason, its signs are not immediately apparent at short intervals. According to Table 5, firstly, the country's water management should first have a sociological insight (along with its specialized insight about water resources). In the next step, the sociologists'

contribution must be used for understanding the dynamic and interactive impacts of water management challenges and finding solutions for it.

Undoubtedly, monitoring the mutual relationship of society and water should be a part of the country's strategic water management missions and objectives. Social change, in one hand, and the requirement for its adoption on the other hand, require legal instruments and guarantees of its implementation. To achieve this goal, it is sometimes necessary to change society's belief in something; this issue requires more effective tools than "socialization," "pressure," and "social impossibility. "An effective tool for creating such social changes is embedded in the legal system. The legal order stabilizes social discipline, preserves the existing order, and organizes the social behavior of people, and social change is synonymous with the change in normative values of society. From one perspective, the legal order is an obstacle to social change, and from another perspective, according to its normative character, it is capable of influencing the behavior of society and completes the process of believing in change in society. Social change can also challenge the legal order by creating a change in the beliefs of the community, and on the other hand, it needs to use legal order tools to stabilize new values. Therefore, the interaction of these two (legal order and social change) is necessary in ensuring the balance of social life [14].

Table 5. The factors creating the social change and its adverse effects on the country's water issues

Law	The belief and determination of law enforcement by executives as well as other members of society, in other words, having a justice-centered look at water resources and consumption, will lead to the creation of a system-based attitude and appropriate policy making. Of course, it should be noted that in cases of improper water resources management or failure to enforce laws, the situation will be worse.
Cultural values	Beside productive activities or with economic factors, people in a society have a particular life and soul. Despite the legacy of its predecessors for finding solutions in this dry geography, the Iranian society, unfortunately, faces various challenges in the field of water shortage. To overcome these difficulties and problem, we need a common understanding and learning about this subject and its causes and consequences. Evidences suggest that, in the present situation, even elites and community reference groups are not in a position to reach a common understanding of this subject. Therefore, before making any unilateral decision, all of them must inevitably have the opportunity to reach a consensus, through conversation (which is itself an important subject in the field of culture); of course this issue reffers to communication dimension of culture with is gained by interaction of individuals and groups.
Natural environment	In the recent past, the exploitation and extraction of natural resources has been the focus of development in the country and has been pursued in the field of water, with the titles of "Water Resources Development". This approach is based on the successive steps of "forecasting needs" and "supplying resources", and emphasized on supply of water more than demand management. However, in water-rich areas, water management seems to be justified by adopting this approach; however, in areas with limited water resources and consumption growth, this approach, on the one hand, raises operating costs (for infrastructure) as well as social costs (awareness of people on the losses of this attitude) and, on the other hand, has exacerbated restrictions on the supply of water.
Technology	Technology can lead to positive and negative changes in lifestyle, social interactions, worldviews, values and social norms. Unfortunately, over the past five decades, the negative effects of using groundwater by pumping technology (through deeper well drilling) have been the source of major changes in the rural communities of Iran. Deep wells with specialization of ownership and utilization of water resources have not only limited the traditional irrigation organizations in the villages of Iran, which were based on collective labor and cooperation, but also caused the dryness of thousands of Qanats and subsequently destroyed the social relationships and leaded to evacuation of many villages.
Population	From the perspective of psychology and social psychology, different age groups have different morale, interests, and tendencies. Sociological surveys show that societies whose population structure is dominated by adolescent and young age groups, have a greater capacity for accepting social change. This age group is more likely to welcome new life styles, new values and norms, and adopting new behaviors. Over the past few decades, the age pyramid of the Iranian population has changed a lot. Reduce in mortality, increase in life expectancy and reduce in the overall fertility rate have made the Iranian population face aging phenomenon like many other countries.
Transformative flows	The occurrence of Islamic revolution and transformism in society is also a factor of social change. The Islamic Revolution of Iran has also led to changes in the water governance system, which has led to a lot of changes in social relations, especially in rural areas.

The component of governance structure

The governance structure means the responsible and effective organizations for water governance. The existing structure does not have the capacity to solve the country's water problems. Therefore, in addition to its current capacity in the field of hydrology and geology, water management in the country should now direct its capacities towards the demand management. In fact, to create non-structural management capacities in the country's water governance structure and to direct the power of responsible organizations toward management technologies, complementary expertise should be added to these institutions. These specialties include various branches of human sciences (strategic management, economics, sociology, political science, etc.). This very difficult and, at the same time, necessary change must be created as soon as possible. Therefore, water management in the country faces management available trend change in the development programs that its main core is shifting the governing method of water management in country from focusing on structural methods to considering non-structural methods. This attitude should be extended to all components of the country's water bodies (including politicians and decision-makers, actors, etc.). In this way, the reform of the water macro management structure and the impact on the development of the country's technical knowledge should be given special attention in development programs.

It must be accepted that today, government is not the only actor in water governance. In fact, in order to achieve a desirable result, not only the duties must be done perfectly, but also the context should possess the required readiness. As a principle, the effectiveness and sustainability of decisions made by the authorities are largely dependent on "reasonable" and "acceptable" consideration of them by all actors. Obviously, acceptability in turn requires the observance of "justice" and "fairness" in decision-making. In practice, the effectiveness of water management is deployed on both components of "good governance" and "integrated water management". Therefore, the four minimum qualities in effective water management can be specified as follows:

1. Ethical leadership and simultaneous focus on the rights of water users, environmental rights and public rights (especially vulnerable groups);
2. Trying to decentralize and employ the actors (especially water users) in the decision-making process and, at the same time, maintain the integrity of water management;
3. Providing easy access to timely, credible and adequate information for decision-makers and the people as an introduction to trust as well as creating trust, empathy and co-operation of them;
4. Creating mechanisms for "conversations" and "solving conflicts" with the presence of experts and representatives of civil society.

Reviewing the past shows that the lack of political will and a serious determination in legislative and executive institutions have had decisive impact on the inability to achieve program goals. Of course, lack of enough interaction with the private sector has also had a serious role in this failure. There is now a serious determination for change and evaluation, and the Ministry of Energy, as the country's water custodian, has begun supporting measures on the path of transformation from "past situation" to "favorable conditions." Strategic management provides a macro representation of the current situation and the optimum situation and gives managers the image of the gap between these two situations; He also provides some suggestions on how to move from the current state to the desired one.

Therefore, it must be accepted that the current structure of the decision-making system, no longer meets the needs of water management. Therefore, its evolution is one of the most important and effective steps to reform the structure of water governance. The most important action is the transfer of the approach style from purely operational to strategic (operational) approach. Table 6 illustrates some differences between the two current strategic and water management approaches in the country.

Table 6 - Differences in strategic approach and current water management approach

Current approach	strategic approach
1. In case of a problem, it responds.	1. It has a preventive approach and emphasizes on risk management.
2. To meet the needs, it thinks about more development.	2. To meet the needs, it works considering the comprehensiveness and observation of Spatial planning.
3. Focus on the activities of government agencies.	3. It has participating behavior and tries to attract the attention of actors.
4. Each agency prepares its own programs separately.	4. Integrated Water Management is a unforgivable principle.
5. Focused on structural solutions.	5. It has a balanced combination of instrumental and non-structural solutions.
6. Planning is up to the down.	6. It has a participatory and bilateral planning (go and return).
7. Time schedule is fixed and goals are Unchangeable.	7. By understanding dynamic environment, it has an intelligent, agile and adaptive management.
8. In the absence of a proper monitoring system, it focuses on data production, without considering the interpretation and evaluation of information.	8. To make informed decisions, it strongly relies on the monitoring and evaluation system.

Conclusion

The lack of a comprehensive perspective and water management strategy in recent years has led to the emergence of a current deterioration in many of the country's water basins. At the same time, the introspective (conservative) and supply-based performance of water management has had negative effects and damages during all these years. Some of them are: (1) the prevalence or continuation of irrational patterns of water consumption; (2) the formation of destructive competitions to exploit more water from common resources; 3) the creation and intensification of social tensions in different parts of the country on the basis of ethnic and cultural differences; or around the boundaries of political divisions; 4) the lack of confidence of the actors and lack of participation in water management (due to the prevalence of individualism); 5) the inadequacy of the quantitative and qualitative growth of NGOs in the water section; and (6) the emergence and spread of illogical and anti-development attitudes in society. Comprehensive management not only can properly determine the various specializations of the small, big, subsidiary and main components of water governance in order to be able to react appropriately; but also comprehensiveness can create a balanced view (i.e., attention to all aspects of management issues), to

form a less problematic and vulnerable future. Neglecting or disregarding the non-structural aspects (especially social aspects) in planning and designing development plans is a global issue. In Iran, this tendency is largely the result of the unbridled follow-up of modernization theory as the dominant model of development in years after World War II. It should be noted that improving the level of people's access to water and related services, improving health indicators related to available water quality, providing electricity and industrial growth, providing agricultural water and participation in food production and eliminating the poverty through job creation, income and developing the capacity of technical and engineering services and the conservation of water resources require efficient water management, along with the various aspects involved in this area. Therefore, multidimensional monitoring must be considered in water management by selecting appropriate indicators and measures to evaluate the effects of water management measures in achieving prosperity. The one-dimensional perspective on water management issues is completely wrong since it complicates matters and may lead to worse consequences than the current one.

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