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Research Paper

Evaluation of the factors affecting water-saving attitudes of urban life on the verge of the next century: a case study of the Mediterranean region of Turkey

M. Goksel Akpinar, Mevlut Gul, R. Figen Ceylan and Sinem Gulcan

ABSTRACT

The World Food and Agriculture Organization claims the percentage of the overall world population that will suffer from water scarcity and water stress by 2025 is estimated as 34% and 15%, respectively. Accordingly, it can be estimated that 40% of the 9.4 billion estimated world population will face water shortages by 2050. In this case, the ownership and efficient use of water stand out as common concerns for all communities in the world for today and for the future. In this research, the attitudes of consumers towards water saving were identified and factors that affect these attitudes were analysed within a sample from the Mediterranean region of Turkey. The survey was conducted through a face-to-face survey with 965 households in three Turkish provinces in 2009. SPSS statistical package was used for factor analysis to determine the affecting factors. Variables affecting water-saving decisions were reduced to seven factors via 0.792 KMO value. These seven factors explained 62.18% of the total variation in water-saving consciousness of the target group. Accordingly, it was understood that marketing policies should focus on water crisis awareness, environmental awareness, anxiety about water shortage, residential area characteristics, water pricing, the current awareness level and social willingness on reduction of water use to cope with possible problems.

Key words | consumer attitudes, factor analysis, Turkey, water saving, water usage

M. Goksel Akpinar
R. Figen Ceylan
Sinem Gulcan
Faculty of Agriculture, Department of Agricultural Economics,
Akdeniz University,
07070 Antalya,
Turkey

Mevlut Gul (corresponding author)
Faculty of Agriculture, Department of Agricultural Economics,
Suleyman Demirel University,
32260 Isparta,
Turkey
E-mail: *mevlutgul@sdu.edu.tr*

INTRODUCTION

Water has become inadequate in providing equal opportunities and benefits to the beneficiaries in societies of the world. It can be seen that the amount of water per capita has been decreasing and the number of countries suffering from declining per capita water stock has been increasing in the last 30 years (Deliktas 1999). As long as the population continues to rise and economic activities continue to vary, many more countries will be suffering from water shortage or the economic progress of these countries will be restricted in the long run.

Water crisis is expected to be one of the most significant problems in the world. In 1995, the percentage of the population suffering from water scarcity was 29% and from water stress was 12% (Hinrichsen & Tacio 2002). The estimation made by the World Food and Agriculture Organization shows that these rates will rise to 34% and 15%, respectively, in the upcoming years as referred to by the General Directorate of Water and Sewerage Administration of Turkey (Anonymous 2010). As an instance, overpopulated China, where 21% of the world's population resides and owning only 6% of global water resources, seems to be severely affected by clean water supply problems sooner than projected for the rest of the world with increasing industrial use (Yue *et al.* 2017). Yet, even if per capita water consumption in developed states such as the USA is a declining trend, the prospect of drinkable water supply concerns are still on the table (Brelsford & Abbott 2017).

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According to TUIK (Turkish Statistical Institute) data, per capita water stock per year is 1.519 m^3 for Turkey, and it is expected to decline to 1.120 m^3 by 2030. This is due to the expected rise in population, which was projected as 100 million by 2030 (Anonymous 2016; Senaras 2017). The situation should be considered in a broad perspective not only focusing on Turkey. In a study concerning the water stock and demand of Arab Gulf States, it was noted that almost all of the revenue earned from oil would be spent for meeting the water demand by 2050 (Fattouh & Mahadeva 2014; Amery 2017). Therefore, water should be used more consciously as it has no substitute.

Three fields should be considered in depth for water use. These are the agricultural, industrial and domestic use of water. Seventy percent of total water consumption in the world is allocated to agriculture for purposes of irrigation, 20% to industry and 10% is being used as drinking/potable water. According to the records of the General Directorate of Water and Sewerage Administration of Turkey, the consumption rates of water are 39% for irrigation, 46% for industry and 15% as potable water in the developed countries. However, these rates are 52%, 38% and 10% for developing countries and 86%, 7% and 7% for less developed countries (Anonymous 2010). These rates are 33%, 51% and 16% for the European countries. Yet, water used for irrigation is 72% of the available stock, with 18% for domestic use and 10% for industrial purposes in Turkey (Anonymous 2010). Accordingly, households' water consumption varies across countries. Per capita water consumption is stagnant in Europe and North America, while it is rising in many countries (Wild *et al.* 2010). Even if water management and monitoring systems have evolved significantly, the main objectives like the improvement of drinkable water resources by 13.6% by 2015, when compared with 2009, were not achieved by the European Union (Daly *et al.* 2016). The increasing water-saving awareness, as well as technological improvements, is expected to maintain its apparent importance in this progress.

Along with the social and economic development, the progress in living standards leads to a rise in the need for potable water. Countries with less than 1,000 m^3 annual per capita water reserve will have to endure severe water problems in the near future according to the records of the Turkish Ministry of Development (Anonymous 2000), and this rate is confirmed globally. Thus, the study focuses on increasing water use efficiency awareness, protection of water resources and development of education programmes on preventing water waste.

Referring to previous research, with an emphasis on domestic water use, the factors that affect households' water-saving attitudes were researched and determined within this study. In addition, the relationship between attitudes and socio-demographic characteristics of the households was demonstrated via factor analysis. The main objective was to clarify the potential for raising water-saving awareness in Turkey with a geographical orientation in the Mediterranean region via primary data collected through a face-to-face survey with households. However, it is also important to note that in-depth water demand and supply analyses based on primary data are very limited in the literature.

Similar studies

One of the studies conducted regarding efficient water use explored environmental beliefs and water-saving attitudes (Corral-Verdugo *et al.* 2003). This study was conducted through interviews with 510 households and focused on testing the relationship between water consumption and general environmental attitudes by a three-functional model. The results suggested that there is a powerful but negative relationship between water consumption and ecological awareness. It can be said that people who value water with a level of environmental consciousness are more conscious about water saving as well.

Randolph & Troy (2008) examined water-saving attitudes in Sydney, Australia and discussed the potential to reduce the water demand. The data were collected through focus groups and telephone interviews from 2,179 people selected out of 140 Census Collectors Districts via stratified sampling between December 2004 and April 2005. This study inferred the need for reconsideration of consumption methods, cultural behaviours and institutions according to the socio-demographic composition of households in order to proceed in policy development.

Gilg & Barr (2006) stated that the definition of a water saver's characteristics is a necessity to have more efficient targets for domestic and non-domestic water saving. They also examined behavioural attitudes about water saving.

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This study was conducted with 1,600 households in Devon, UK, and revealed a social, attitudinal and behavioural composition of water-saving activities. In the study, the relationship between water saving, energy saving, green consumerism, and waste management was evaluated, and water-saving attitude was examined as a part of various behavioural features and individuals were classified due to their attitudes towards environmental consciousness. The individuals were classified as either committed, mainstream, occasional environmentalists or as non-environmentalists. Accordingly, it was noted that these individual features and their weight in society should be considered in development and promotion of water-saving policies.

Clark & Finley (2007) studied the determinants of water-saving tendencies in Bulgaria. According to the study, 728 households in Blagoevgrad, Bulgaria were interviewed, and their feedback was assessed to determine water-saving attitudes. The Theory of Planned Behaviour (TBP) was investigated in this study. The theory refers to searching for existence of a possibility to predict a specific set of behaviours through observation of intentions, perceptions and subjective norms (Ajzen 1991). Therefore, the results of the indicative research checked the relationship between predicted environmental attitudes, including water-saving intentions, and real socio-demographic characteristics of the attendees. The results suggested there is a positive relationship between planned behaviour theory and water-saving attitudes.

The results were also confirmed by Lam (2006). The researcher checked the relationship between TBP and specified socio-demographic variables with regards to vulnerability, collective efficacy and subjective effectiveness of alternative solutions referring to the drought experiences of Taipei, Taiwan, in 2002. The survey study in Taipei and Kaohsiung led to the conclusion that TBP solely is inadequate to explain water-saving behaviour through the expected parameters.

In another study, Steg & Vlek (2009) tried to decompose factors affecting environmental behaviours. This study claimed that systematically planned and implemented changes in behaviours are more probable to take place, confirming the findings of Schoot Uiterkamp & Vlek (2007). This also means that prior to making a behavioural change in environmental attitudes of societies, the affecting factors need to be identified clearly and the expected change needs to be defined and monitored. Willis *et al.* (2011) evaluated the data collected from 132 households in Gold Coast City, Australia and used a research design incorporating field-based smart metering technology. They examined the impact of water saving and environmental attitudes on domestic water use. The data were analysed via confirmatory factor analysis, while households were classified through cluster analysis. The results revealed that people who have positive environmental attitudes consume less water. The effectiveness of urban water demand management tools, policies and practices were also measured in the study.

MATERIAL AND METHODOLOGY

Material

The main material used after stratified sampling was the consumer data retrieved in 2009 from three provinces of the Mediterranean region of Turkey.

Different sample sizes assuming specific confidence limits and specific population variances are used. The alternative sample sizes are described as 321 for more than 100,000 inhabitants and 322 for more than 500,000 inhabitants with 95% confidence limit and 0.21 (0.3*0.7) variance (Kurtulus 1998). The sample consisted of households residing in Antalya, Adana and Hatay provinces representing the Mediterranean region and the population data were retrieved from Turkish Statistical Institute (Anonymous 2009). The number of sample households was 965 for the three provinces in total. The standard deviation remained less than 0.05, and the confidence interval was 95% for the study along with the below test ($n/N \geq 0.05$):

Sample size: $965/2.327.427 = 0.00172 < 0.05$

Methodology

Factor analysis was used for setting the variables that affect the households' water-saving attitudes in the scope of this study. This multivariate analysis method, which transforms a criterion built from a set of dependent variables into another criterion representing a limited set of independent variables, was used to reveal the reasons of dependency between these variables (Korkmaz 2000; Isik *et al.* 2004).

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The equations that have linear relationships between p units of observed variables such as z_1, $z_2, \ldots$, z_p and p units of latent variables such as F_1, $F_2, \ldots$, F_p, are the regressions of concrete variables on the abstract variables and formed as $z_j = a_{j1} \cdot F_1 + a_{j2} \cdot F_2 + \ldots + a_{jp} \cdot F_p$ (Isik *et al.* 2004). The mathematical model of the factor analysis is described below accordingly (Ness 2002):

$$X_1 = b_{11}\, f_1 + b_{12}\, f_2 + \ldots\ldots\ldots + b_{1k}\, f_k + u_1$$
$$X_2 = b_{21}\, f_1 + b_{22}\, f_2 + \ldots\ldots\ldots + b_{2k}\, f_k + u_2$$
$$X_p = b_{p1}\, f_1 + b_{p2}\, f_2 + \ldots\ldots\ldots + b_{pk}\, f_k + u_p$$

where f_k = general factors (the importance or factor weight of k^{th} factor on the measurement of p^{th} factor); b_{pk} = factor weights (the correlation degree between p^{th} and k^{th} variables); U_p = unique factor (the unexplained change/variance).

For the analysis of factors affecting water-saving attitudes, the appropriate number of factors (principal components) was determined first by considering the Eigenvalue (>1). Twenty-three elements were reduced to seven factors thanks to this method. The variables greater than 0.50 were then identified using varimax rotation solution. The factors were defined and interpreted in the last stage.

The factors, representing the independent variables for the analysis, were determined as water crisis awareness, environmental sensitivity, the concern for water scarcity, the city of inhabitancy, water pricing, water use awareness and consumer willingness in consecutive order, which were determined due to the Eigenvalue correspondence as detailed in the Results section. The relations of these factors with the dependent 'water-saving attitude' were analysed one by one within the scope of this study. Water-saving attitude referred to 'tendency to save water or not'. Therefore, it was intended to determine the potentially most effective factors to promote water-saving behaviours in the society concerning the target region.

RESULTS

The socio-demographic characteristics of the households

According to the survey results, the rate of female respondents was 53.3% while the rate for male respondents was 46.7%. The 25–34 age range was regarded as the leading group with a ratio of 32.6%. The ratio of university graduates was 34.8%, 67.6% of the respondents were married, and the average household size was 3.51. The proportion of people who had income between 358 and 714 € was 34.3%, while it was 11.4% for more than 1,430 € (Table 1).

Table 1 | The socio-demographic characteristics of the households

Variables	N	%	Variables	N	%
Gender			**Household size**		
Female	514	53.3	1	60	6.2
Male	451	46.7	2	177	18.3
Total	965	100.0	3	254	26.3
			4	265	27.5
Age groups			5 and over	209	21.7
18–24	166	17.2	Total	965	100.0
25–34	315	32.6	Mean	3.51	
35–44	238	24.7	Standard deviation	1.474	
45–54	160	16.6			
55 +	86	8.9			
Total	965	100.0	**Educational level**		
Mean	36.26		Literate	19	2.0
Standard deviation	12.118		Primary school	136	14.1
			Secondary school	83	8.6
Marital status			High school	318	32.9
Married	652	67.6	University	336	34.8
Single	275	28.5	Master-PhD	73	7.6
Widowed	38	3.9	Total	965	100.0
Total	965	100.0			
Household income (Euro/month)[a]					
≤357 €	207	21.4			
358–714 €	331	34.3			
715–1,071 €	180	18.7			
1,072–1,429 €	137	14.2			
1,430 € +	110	11.4			
Total	965	100.0			
Mean	1,804.51				
Standard deviation	1,324.864				

[a]Ratio of exchange (15.08.2009) 1 € = 2.10 Turkish liras.

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The factors affecting water-saving attitudes

The appropriateness of explanatory variables for the analysis was measured via Kaiser-Meyer-Oklin (KMO) test. KMO sampling adequacy measurement is an index used in comparison with the size of observed correlation coefficients and partial correlation coefficients (Geng *et al.* 2014; Hasanlou *et al.* 2015). When KMO value decreases, the applicability of the factor analysis technique also reduces. KMO values that are greater than 0.5 are barely acceptable (Kaiser 1974). Accordingly, the corresponding evaluation of KMO values are as follows: values above 0.90 are 'very excellent'; values between 0.80 and 0.90 are 'great'; values between 0.70 and 0.80 are 'good' (Field 2009). In addition, values between 0.50 and 0.70 are 'medium' and values under 0.50 are 'unacceptable' (Hutcheson & Sofroniou 1999). The KMO value of this study was determined as 0.792. This value shows the appropriateness of the data for the factor analysis (Table 2).

The main criteria used for statistical interpretation of the factors are Eigenvalues, scree test and variances. The factors which had Eigenvalues greater than one were selected. Accordingly, seven main components are demonstrated in Table 3 having values above 1, and these components explained 62.18% of the total variance.

Table 2 | Factor analysis KMO test value

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.792
Barlett's test of sphericity	Approx. Chi-square	6,379.485
	Df	276
	Sig.	0.000

Table 3 | Initial solution results of factor analysis (water saving factors)

Main factors	Eigenvalues	Variances	Cumulative variances
1	5.121	15.337	15.337
2	2.750	13.993	29.330
3	2.037	11.279	40.609
4	1.547	5.919	46.528
5	1.238	5.807	52.335
6	1.186	5.425	57.761
7	1.043	4.416	62.176

The first factor affecting water-saving attitudes was identified as 'water crisis awareness'. This factor accounted for 15.34% of the total variance. It embodies the idea of today's possible water crisis and the future foresights for the world, for Turkey and the residential areas. It was estimated that the world may encounter a water crisis in the future, around the 2050s. Thus, consumers' opinions regarding the water scarcity were explored at local, regional, national and global levels. This likely crisis is assumed to be impacting consumer attitudes and behaviours.

The second factor was identified as 'environmental sensitivity'. It accounted for 13.94% of the total variance. Consumers' interests in social problems and on conservation of nature were the initial identifiers of the factor. Additionally, consumers' sensitivity regarding the studies about water resources, their preferences of having a stroll by water edges as well as whether they read newspapers regularly and whether they plan for the future were included in this factor referring to environmental sensitivity.

The third factor was identified as 'the concern for water scarcity'. It involved information on reduction of the water level in the dams, environmental pollution, the reduction of water resources and the water outages.

The fourth factor, which was effective regarding the consumer approaches towards water saving, was identified as 'the city of inhabitancy'. The change in city of inhabitancy accounted for 5.92% of the total variance in the change in water-saving attitude. The data were retrieved from three different provinces in the same geographical region. The differences between these provinces with regards to the existing water reserve also led to differences in consumer attitudes on water saving. As such, consumers in Adana and Hatay provinces, having limited resources in comparison with Antalya due to higher average temperatures, as mentioned above, demonstrated more consciousness than Antalya residents.

The comparison between cities was made first by considering the yearly rain amount received in comparison to Turkey's average. While the average amount of rain for Turkey is 643 mm/m^2, Antalya, being one of the most rain-fed regions of the Mediterranean, receives 1,057 mm per m^2 rain per year (Kocman 1993; Akin & Akin 2007). When total water potential of the three provinces respecting water basins are considered, Antalya is first again with

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11.06 billion m^3, followed by Adana 8.01 billion m^3 and Hatay 1.17 billion m^3 (Akin & Akin 2007).

The fifth important factor, which accounted for 5.81% of the total variance, was 'water pricing'. It refers to the comparison of the unit price of water with other public services (electricity, telephone) and water-saving foresights depending on the rise in water price. It can be noted that lower unit water price is a negative factor (correlation coefficient 0.808) and rising foresights for the price is defined as a positive factor for water saving with a correlation coefficient of 0.733. This means that a rise in apparent prices affects saving attitude negatively, while a higher future price expectation affects water saving positively.

The sixth factor was 'water use awareness' with a variance of 5.43%. It involves the perceptions on the sufficiency of informational activities on conscious water use and the attitudes of society. These two incidents affect each other positively with correlation coefficients around 0.7.

The seventh factor was 'consumer willingness'. The willingness to save water (correlation coefficient 0.605) and slogans on water saving (correlation coefficient −0.730) (Table 4) were used within the factor. The findings indicated that persuasion regarding water saving has inverse effects on water saving, while willingness to save affects water saving attitudes positively.

The overall findings indicated that consumer awareness regarding water saving is as important as consumers' willingness to save water. Unit price level can be a deterrent or incentive due to the timing of rising prices. Knowledge and awareness of the product and services offered seemed to be effective in shifting water demand. It was observed, for example, that the use of electricity and water might change places as a result of these informational activities.

DISCUSSION

It is considered that identifying the factors that affect water saving can play a guiding role in water demand management. At the international level, there is a rising sensitivity towards access to sufficient and reliable water. Conscious use of water, as a scarce commodity, has gained importance. As well, advancements in water-saving technologies are also being observed at the industrial level. Therefore, it is understood that saving domestic water resources is on the agenda of consumers.

The rise in daily water consumption per capita in urban settings was approximately 97% of the rise in rural areas due to the findings of this study. In this respect, taking action in order to increase consciousness towards water use is a significant issue that should be fostered by public policies both for rural and urban areas.

Changing needs and attitudes need to be considered as well departing from the findings of the field survey. Before proceeding with suggestions for increased awareness, it is necessary to consider what has happened in the water market during the 2010s and the awaiting problems.

In addition to apparent implementations to assure the security of water basins or dams or executing awareness campaigns using media tools, there is a need of propagating mass information through school education and information of adults in society (Cetinavci 2009). The crisis awareness or environmental sensitivity of households should be used to develop attitudes. This indication confirms findings of environmental psychology research of recent years (Gilg & Barr 2006; Schoot Uiterkamp & Vlek 2007; Steg & Vlek 2009). Many environmental psychologists emphasise the need to underline affecting factors and to map out a behavioural tagline (Lam & Chao 2003a, 2003b; Lam 2006). Therefore, it can be said that water consumption and water saving attitudes are related with psychological orientation and sociological stance of consumers and these significances need to be analysed in depth for differing target regions.

There are many differences identified in water resources or the potential in different provinces that also lead to differences in unit price, quality and reliability of water. In this case, the perceptions, attitudes and behaviours of the consumers towards water use and saving in these specific regions differ and need to be taken into consideration. Social media or marketing can be used to form or improve community awareness on water saving. Slogans to create awareness exert a considerable effect at a social level. However, the accurate identification of the target group along with the right tools is also of great importance, which was supported by the results. Addressing consumer awareness and consumer willingness as distinct items regarding water demand management should be considered as important as well.

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Table 4 | Factor analysis rotation solution

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communality
The idea that there is a water crisis in the world today	**0.758**	0.175	0.106	−0.150	0.009	−0.009	0.026	0.639
The idea that there is water shortage in Turkey today	**0.798**	0.078	0.057	0.030	0.077	0.008	−0.060	0.656
The idea that there is water shortage in the region (provinces) today	**0.608**	0.308	−0.072	0.494	0.123	−0.054	−0.057	0.751
The idea that there will be a water crisis in the world in the future	**0.807**	0.101	0.196	−0.152	−0.096	−0.074	0.112	0.750
The idea that there will be a water crisis in Turkey in the future	**0.844**	0.078	0.199	0.000	−0.073	−0.087	0.011	0.771
The idea that there will be a water crisis in the region (provinces) in the future	**0.714**	0.030	0.164	0.396	−0.063	−0.065	0.023	0.703
Interests in social problems	0.038	**0.733**	0.105	−0.003	0.042	−0.051	0.020	0.554
Interests in nature protection	0.079	**0.805**	0.095	0.001	−0.070	−0.031	0.040	0.671
Sensitivity on studies about water resources	0.053	**0.793**	0.031	0.087	0.029	−0.039	0.003	0.642
Preferring the edges of water source for a walk	−0.068	**0.583**	−0.014	0.184	0.004	−0.161	0.186	0.440
Reading newspaper regularly	0.170	**0.567**	0.027	−0.092	−0.105	0.119	−0.063	0.388
Having a consistent habit of making plans for the future	0.171	**0.591**	0.197	−0.207	−0.026	0.080	0.097	0.477
Reduction in the available water resources	0.210	0.178	**0.741**	−0.003	0.024	−0.111	−0.063	0.642
Reduction of the water level in the barrages	0.203	0.094	**0.826**	−0.002	−0.054	−0.086	−0.028	0.744
Environmental pollution	0.162	0.105	**0.760**	−0.102	−0.026	−0.129	−0.062	0.646
Water outages	0.002	0.032	**0.713**	0.190	0.099	0.172	0.088	0.592
Provincial inhabitancy in the regions	−0.084	−0.041	0.073	**0.803**	−0.241	0.113	0.067	0.735
The comparison of unit price of water and other public services (electricity, telephone)	0.072	−0.021	0.183	0.037	**−0.808**	−0.003	0.101	0.704
Rise in unit water price	0.036	−0.005	0.328	−0.173	**0.733**	0.030	0.149	0.700
The social water use awareness	−0.148	−0.092	−0.102	0.069	0.099	**0.724**	−0.098	0.589
The sufficiency of informational activities on conscious water usage	−0.009	0.018	−0.011	0.002	−0.062	**0.745**	0.068	0.564
Slogans about water saving	−0.056	0.071	0.171	0.104	0.119	−0.157	**−0.730**	0.620
Willingness to save water	−0.003	0.134	0.126	0.178	0.151	−0.213	**0.605**	0.500

CONCLUSION

It is possible to note that the research did produce familiar results with previous studies focusing on water scarcity and environmental protection. There is a need for extensive information on the future of water supplies according to the consumers surveyed in the Mediterranean region of Turkey.

The results show that water-saving awareness and water crisis consciousness are important for water-saving behaviours of households in the targeted provinces of Turkey. The need for informational activities on efficient use of this natural resource emerges at this point.

On the other hand, it can be acknowledged that people who are deeply concerned about nature and environmental problems, who follow studies, news and improvement of water resources management, are expected to take the lead and responsibility for water saving. Therefore, they should be considered as key actors in changing society's perceptions and attitudes,

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and this rising sensitivity should lead the expected change when utilised correctly. As the importance of raising community consciousness is also of great importance, volunteer projects, publicising several water resource studies as well as gaining the habit of reading newspapers might be useful.

The problem of water shortage is not invisible. On the contrary, authorities should maintain constructive practices and awareness-raising activities. For example, some crucial issues like reduction of water resources and declining water level in dams should be emphasised strongly to people who have no idea about them, than those who are already concerned with these issues.

Another factor that encourages people to save water is rising price expectations for tap water. In fact, the prices will continue to rise due to the shortage, without adequate policies. Thus, the future price expectations need to be emphasised so that households will focus on saving water in order not to be faced with rising prices. It was also understood that slogans would have a boosting effect on water-saving willingness.

At the same time, inhabitancy area was found be effective, when the communities' perceptions on conscious use of water are high in cities facing shortages. Different models on raising awareness should be developed and implemented, while organising training and seminars and public notifications are essential as well to stimulate and reshape community perceptions. The results also mark that catchy slogans increase the effectiveness of campaigns or activities (for example, 'Water for life!') in this regard. Furthermore, the personal willingness to save water emerged as an important factor. Accordingly, each individual should be educated, starting from her/his early childhood, about environmental consciousness that would lead to water saving in society and could be gained easily and at an early age (Jørgensen 2016).

In addition to identification of the factors affecting water-saving attitudes reached within the scope of this study, public policy development is essential for raising and maintaining water security awareness. One of the conclusions derived from the study is that public policies need to take regional differences and psychological and sociological assessment of water saving into account and identify the affecting factors separately.

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